RĪGA STRADIŅŠ UNIVERSITY INTERNATIONAL STUDENT CONFERENCE 2025

Abstract Book

HEALTH SCIENCES

RSUSP EST.1993

RSU ISC 2025

RĪGA STRADIŅŠ UNIVERSITY

Rīga Stradiņš University

INTERNATIONAL STUDENT CONFERENCE 2025

March 24th—25th, 2025

Abstract Book

HEALTH SCIENCES

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Dear students,

It is with great pleasure that I welcome you to the International Student Conference in Health and Social Sciences 2025 at Rīga Stradiņš University (RSU). This conference has become a cornerstone event for aspiring researchers and young professionals, fostering academic excellence, innovation, and international collaboration.

This year's conference will be particularly remarkable, gathering over 5000 participants and featuring 432 student presenters from 13 countries, including Latvia, Poland, Serbia, Lithuania, Italy, the United Kingdom, and many more. Their research will be evaluated by an esteemed international jury of 175 experts from 12 different countries, ensuring a high standard of academic rigor and professional insight. The program is extensive, with 39 research sections, 35 hands-on workshops, 4 panel discussions, and 12 social events and excursions, providing an enriching experience for all attendees.

RSU takes immense pride in facilitating this global scientific dialogue, offering young researchers an opportunity to engage with distinguished professionals and peers. The submission of 558 research abstracts this year—the highest in the conference's history—demonstrates the growing significance of this platform in shaping the future of health and social sciences.

Our commitment to advancing knowledge extends beyond this event. Through continuous collaboration with international institutions and experts, RSU strengthens its role as a leading research and educational hub. This year, we are especially honored to welcome Dr. Guillem Bouilleau from France, who will not only serve as a jury member but also mentor participants in the Medical Wrestle simulation competition on March 24th. Additionally, teams from Estonia and Lithuania will actively contribute to the conference's dynamic exchange of ideas and expertise.

As we embark on these two days of insightful discussions and groundbreaking research presentations, I encourage you to embrace this opportunity to expand your academic horizons, establish new collaborations, and contribute to the advancement of science. Let this conference be a source of inspiration and a stepping stone toward your future achievements.

Once again, welcome to the International Student Conference 2025 at Rīga Stradiņš University. I wish you all a productive and inspiring conference experience.

Thank you!

Professor **Aigars Pētersons**
RECTOR OF RĪGA STRADIŅŠ UNIVERSITY

Dear friends and guests of Rīga Stradiņš University,

The International Student Conference in Health and Social Sciences (ISC) is the largest annual student-led scientific event at Riga Stradiņš University (RSU). This year marks the 11th anniversary of the international conference and the 75th year of RSU students presenting their research. Organized for the 11th consecutive year by the RSU Student Council, the ISC has grown into the largest student-organized conference in the Baltics. It provides students with a platform to present their research through both oral and poster presentations.

A defining feature of the ISC is that it is organized entirely by students. A dedicated team of volunteer students invests nine months in meticulous planning to ensure the success of the conference, which takes place each March.

Beyond academic excellence, this conference also celebrates the rich culture and history of Riga. The Art Nouveau architecture, prominently featured in our conference visuals, is more than just a backdrop - it represents excellence, creativity, and innovation. These same principles drive us as researchers, medical professionals, and future scientists.

If you look closely, you will notice that the symbol of this conference - the bee - holds deep significance. Bees represent community, collaboration, and perseverance - values that not only define this conference but also resonate with each student and scientist. Much like bees that work together in harmony to create something greater than themselves, we too grow through shared knowledge, cooperation, and a commitment to a common purpose.

I want to emphasize that this conference focuses on utilizing science for a greater purpose. In a time when the world faces global health challenges, humanitarian crises, and rapid scientific advancements, our roles as students, researchers, and medical

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ONCOLOGY, HEMATOLOGY

FACTORS AFFECTING THE RESPONSE TO NEOADJUVANT PEMBROLIZUMAB THERAPY IN PATIENTS WITH LOCALLY ADVANCED TRIPLE-NEGATIVE BREAST CANCER

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Keywords. Triple-negative breast cancer (TNBC); Pembrolizumab

Objectives. Breast cancer is one of the most common cancers in the world. Triple-negative breast cancer is more likely to recur than other types and accounts for a disproportionate number of breast cancer deaths. Pembrolizumab in combination with chemotherapy was approved for TNBC patients in 2020. The aim of this study is to identify the factors that influence the effectiveness of treatment.

Materials and methods. This is a retrospective study including 52 patients treated between September 2023 and June 2024 at Pauls Stradins Clinical University Hospital and Riga East Clinical University Hospital/Latvian Oncology Center. All patients received platinum-containing neoadjuvant chemotherapy (NAC) and pembrolizumab therapy before surgery in accordance with the ESMO guidelines (2023). The collected data included patients' age, primary tumor diameter, BMI, cTNM, ypTNM, BRCA gene mutation, menopause status, family anamnesis of breast cancer, TIL, Ki67, surgery type and blood test results. All analyses were performed using IBM SPSS Statistics (Fisher's Exact test, nonparametric test). $P<0.05$ was considered to indicate that data was statistically significant.

Results. After NAC, all patients achieved varying degrees of remission. The average age of patients was 51.21 years. After NAC, 57.69% of patients achieved pathologic complete remission (pCR, ypT0N0), 57.69% of patients achieved radiological complete remission (rCR), 63.46% of patients achieved Miller-Payne grade 5 in the primary tumor or lymph nodes (ypT0N+). Patients with pCR had smaller mean primary tumor diameters vs. patients without pCR (31.43 mm vs. 39.95 mm; $p=0.016$). Patients with rCR had lower BMI (24.51 vs. 28.30; $p=0.010$). Patients with Miller-Payne grade 5 had higher Ki67% (62.58 vs. 47.63, $p=0.049$).

Conclusions. This study observed that patients with a higher remission degree after NAC in TNBC had smaller primary tumor diameters, lower BMI, and higher Ki67 scores. More patient data are needed to confirm these conclusions.

MULTIDISCIPLINARY TEAM APPROACH IN THE MANAGEMENT OF SARCOMA PATIENTS: IMPACT ON TREATMENT OUTCOMES

Authors: ***Gintarė Runzaitė*** [1], ***Aušrinė Šerėnaitė*** [1]
Scientific research supervisor: Dr. ***Laura Kairevičė*** [1], Dr. ***Lina Simaškaitė-Pužauskienė*** [2]

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Keywords. Sarcomas; Multidisciplinary Team; Radicality

Objectives. Sarcomas are rare, complex tumors originating from mesenchymal tissues, known for their histological diversity and challenging clinical presentations. Their management requires a multidisciplinary approach due to the complexity of diagnosis and treatment. Multidisciplinary team (MDT) consultations integrate expertise from various specialists to optimize treatment strategies. This study aimed to evaluate the demographics, clinical characteristics, and outcomes of sarcoma patients, focusing on the impact of MDT consultations on surgical radicality, preoperative planning, and overall care quality.

Materials and methods. This retrospective study analyzed 67 sarcoma cases diagnosed between May 22, 2022, and October 30, 2023, at Kaunas Clinics, Ocology and Hematology Department. Statistical analysis was performed using IBM SPSS Statistics version 29.0.2.0.

Results. The study included 67 patients, 44.8% female (n=30) and 55.2% male (n=37), with a mean age of 58 years (range 10–92). Most patients (79.1%, n=53) presented with primary tumors. Tumors were most commonly located in the extremities (54.5%, n=36) and retroperitoneum (22.7%, n=15). Soft tissue sarcomas were the most frequent (43.3%, n=29). Surgical treatment was performed on 56 patients; 25 had no prior biopsy, and 9 lacked preoperative imaging. Among 11 recurrence cases, 8 had incomplete resections (R1/R2) without MDT consultation. Recurrence rates were significantly associated with surgical radicality (p=0.004). MDT involvement reduced incomplete resections from 60% to 26%. MDT consultations occurred in 76.1% of cases, mostly for surgical planning (28.4%, n=19). Neoadjuvant therapy guided by MDTs was used in 13.4% of cases. Four patients died due to advanced disease.

Conclusions. MDT consultations significantly improve sarcoma management by enhancing surgical outcomes and reducing incomplete resections. Neoadjuvant therapy guided by MDTs contributes to better preoperative planning, emphasizing the value of multidisciplinary collaboration in optimizing treatment and patient outcomes.

EPIDEMIOLOGICAL ANALYSIS OF DIGESTIVE TRACT TUMORS IN YOUNG PATIENTS IN LATVIA FROM 2010 TO 2019

Author: ***Anna Pimanova*** [1],
Scientific research supervisors: Dr. ***Renārs Erts*** [1] , Dr. ***Evita Gašenko*** [2]

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Keywords. Digestive tract cancers; Young patients aged 18–50 years

Objectives. Given the global rise in cancer diagnoses among younger populations, the aim of the study is to assess changes in the incidence of digestive tract cancers in young patients (age 18–50) in Latvia from 2010 to 2019.

Materials and Methods. This study is a retrospective epidemiological analysis of digestive tract tumors in Latvia, covering the period from 2010 to 2019. Data was obtained from the CDPC. Statistical analysis was conducted using IBM SPSS (29.0 software).

Results. The incidence rate of digestive tract cancers among individuals aged 18-50 years increased from 16.7 per 100,000 in 2010 to 18.9 per 100,000 in 2019. The Annual Percent Change (APC) was +1.24%.

Comparing the data from 2010 to 2019 the 30–34 year age group had the most significant increase in digestive tract cancer diagnoses, number of cases rising from 9 (6.6 per 100,000) to 16 (11.4 per 100,000), reflecting an APC of +5.62%. The 35–39 year group experienced a decline, with number of cases dropping from 23 (16 per 100,000) to 8 (6.1 per 100,000), resulting in a negative APC of -9.19%.

Increases in Digestive Tract Cancer Incidence (2010–2019). 18-29 years: Colon Cancer APC:+5.11%. 30-39 years: Stomach Cancer APC:+6.81%. Colon Cancer APC:+2.8%. Rectal Cancer APC:+0.69%. 40-44 years: Colon Cancer APC:+6.03%. 45-49 years: Esophageal Cancer APC:+7.38%. Small Intestine Cancer APC:+7.92%. Colon Cancer APC:+1.43%. Rectosigmoid Junction Cancer APC:+4.14%. Rectal Cancer APC:+0.54%. Liver and Intrahepatic Bile Duct Cancer APC:+11.80%. Pancreatic Cancer APC:+5.15%. 50 years: Esophageal Cancer APC:+2.32%. Stomach Cancer APC:+2.13%. Rectosigmoid Junction Cancer APC:+2.32%. Anal Cancer APC:+2.32%. Liver and Intrahepatic Bile Duct Cancer APC:+9.52%.

Conclusions. This study of digestive tract cancers in young patients (18–50 years) in Latvia from 2010 to 2019 reveals a slight overall increase in incidence rates.

REAL-WORLD DATA ON STAGE III INOPERABLE NSCLC TREATMENT: A SINGLE-INSTITUTION ANALYSIS FROM LITHUANIA

Authors: ***Ignas Lapeikis*** [1], ***Vakarė Baranauskytė*** [1], ***Gabrielė Nešta*** [2]
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Keywords. Non-small cell lung cancer (NSCLC); Real-world data; Chemoradiotherapy

Objectives. Non-small cell lung cancer (NSCLC) is the most common lung cancer, with one-third diagnosed at inoperable stage III, leading to poor prognosis. Despite multiple radical treatment options, their real-world effectiveness remains unclear. This single-institution study assesses the impact of different treatment regimens on stage III inoperable NSCLC progression-free and overall survival (PFS, OS).

Materials and methods. A retrospective, single-centre study analysed all stage IIIA-C inoperable NSCLC patients, treated with curative intent in Kaunas Clinics (2021-2023, n=111). Three regimens were identified: radical radiation therapy (rRT, n=39), sequential and concomitant chemoradiotherapy (sCHRT, n=17, cCHRT, n=55) with immunotherapy, when indicated. Clinicopathological characteristics (age, gender, histology, ECOG status, T/N stages) in treatment groups were compared using $\chi 2$ test. Survival analysis included univariate and multivariate Cox proportional hazards models with significant clinicopathological covariates.

Results. Treatment groups were homogeneous in gender and histology. Significant differences ($p<0.05$) were observed in age (median: rRT 79 years, sCHRT 63, cCHRT 66); ECOG status (ECOG 1: rRT 59%, sCHRT 45%, cCHRT 65%; ECOG 2 <1%); T stage (T3-4: rRT 74%, sCHRT 82%, cCHRT 65%); N stage (N2-3: rRT 62%, sCHRT 76%, cCHRT 89%). Over 28-month median follow-up, 70 patients progressed, 55 died. Median PFS: rRT 11 months, sCHRT 21, cCHRT 20 ($p<0.05$); median OS: rRT 15 months, cCHRT 40, and not reached for sCHRT (mean 33.8 months) ($p<0.05$). In univariate analysis age and treatment regimen were significantly associated with OS and PFS ($p<0.05$). Multivariate analysis confirmed treatment regimen as independent prognostic factor for PFS (rRT 11 months, sCHRT 20, cCHRT 21) and OS (rRT 15 months, cCHRT 40) ($p<0.05$), other analysed indicators were not statistically significant.

Conclusions. Treatment regimen was independent key factor for OS and PFS in real-world patient data analysis. Study limitations: retrospective, limited sample, possible selection bias.

EFFECT OF PATHOLOGICAL TUMOR REGRESSION GRADE AND TOTAL NEOADJUVANT THERAPY TYPE ON PROGRESSION FREE AND OVERALL SURVIVAL IN PATIENTS WITH RECTAL CANCER

Author: ***Dace Brice*** [1]
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Keywords. Progression free survival; Overall survival; Rectal cancer

Objectives. Rectal cancer is the second cause of cancer-related deaths and many characteristics of it and chosen therapy methods can affect the outcomes. The aim of this study was to determine whether tumor regression and total neoadjuvant therapy can affect survival rates of patients with rectal cancer.

Materials and methods. The retrospective study included 43 patients with rectal cancer diagnosis who received neoadjuvant therapy at Pauls Stradiņš Clinical University Hospital from 2020 – 2023. Data used in this study was type of neoadjuvant therapy – total neoadjuvant therapy (TNT) vs. chemoradiation, tumor regression grade (TRG), calculated time till progression or death. For statistical analysis, IBM SPSS Statistics 29 program and Kaplan-Meier survival analysis was used.

Results. In total, 30% of patients achieved complete pathological remission. Pathological tumor regression grade showed statistically significant difference in progression free and overall survival distribution (p=0,003 and p=0,006, respectively). 2 year PFS in patients with complete pathologic remission was 67% vs. 22% in patients with no pathological remission after neoadjuvant treatment and 2 year OS was 100% vs. 48%, respectively. Total neoadjuvant therapy didn't show improvement in progression free survival (p=0,901), but overall survival was statistically significantly decreased (p=0,008). 2 year PFS in patients with chemoradiotherapy was 64% vs. 38% in patients with TNT and 2 year OS was 80% vs. 65%, respectively.

Conclusions. Pathological tumor regression grade affects cancer progression and survival, whereas total neoadjuvant therapy has shown differences only in overall survival. Further research with larger sample of patients and with testing of another biological aspects of cancer is needed to confirm conclusions.

THROMBOTIC RISK IN POLYCYTHEMIA VERA COMPARED TO SECONDARY ERYTHROCYTOSIS

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Scientific research supervisor: Asst. prof. ***Marina Dokic*** [1]

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Keywords. Polycythemia vera; Secondary erythrocytosis; Thrombotic risk; Thrombosis

Objectives. Cardiovascular events are the primary cause of death in patients with polycythemia vera (PV) and a common complication in the treatment in secondary erythrocytosis (SE). The evaluation of clinical characteristics, laboratory parameters, and thrombotic risk is crucial step in treatment of these conditions. The aim of this study is to determine and analyze the laboratory and clinical characteristics of patients with PV and SE, and to statistically establish differences and correlations between the examined factors and groups.

Materials and methods. A mixed retrospective and prospective study involved 70 PV and 50 SE patients at the University Clinical Center of Vojvodina. The analysis was based on medical documentation and on anamnestic data obtained from patients. Results are presented graphically and tabularly.

Results. No significant differences in the cardiovascular risk factors were observed between the patients with PV and SE. Patients with PV had higher values of erythrocytes, leukocytes, and platelets and more frequent splenomegaly ($p<0.001$). High-risk categories encompassed 83% of the PV group, where thrombosis incidence reached 19%, predominantly arterial (70%), compared to 6% in SE patients ($p=0.058$). The presence of previous thromboses and dyslipidemia was correlated with the occurrence of thrombosis in the PV group ($p<0.001$), and previous thromboses also correlated with the occurrence of arterial thromboses ($p<0.001$). In the SE group, no parameter correlated with the onset of thrombosis.

Conclusions. Patients with PV have significantly higher values of blood cells and more frequent splenomegaly, as well as thromboses compared to patients with SE. Previous thromboses and dyslipidemia are significant predictors of thrombosis occurrence in the PV group, while the SE group did not show significant predictors.

HOW DO SELECTED MITOGENS AFFECT CYTOKINE PRODUCTION BY CHILDREN'S MYELOID AND LYMPHOID-ORIGIN LEUKAEMIC BLASTS? - A PILOT STUDY

Authors: ***Anna Kozub*** [1], ***Rafał Szarek*** [1], ***Mikołaj Szczęsny*** [1]
Scientific research supervisor: Dr. ***Łukasz Sędek*** [1], Prof. ***Zenon Czuba*** [1]

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Keywords. Leukemia; Cytokines; Mitogens; Children

Objectives. Mitogens are particles that enhance cell division. The mitotic stimulation effect may be measured as the production of selected groups of cytokines in the cells. Non-frozen haematological samples are rarely examined. This study aimed to assess the influence of mitogens: phytohemagglutinin (PHA), phorbol 12-myristate 13-acetate together with ionophore A23187 (PMA+I) and lipopolysaccharide (LPS) on the production of cytokines by blast cells from childhood acute leukaemia of myeloid, B-cell progenitor and T-cell lymphoid origin.

Materials and methods. The study was based on 72 fresh cell cultures from childhood acute leukaemias. Firstly, the cells were isolated by density gradient centrifugation of bone marrow biopsy samples. After 48h incubation, the medium (RPMI) was changed, and the cells were seeded in a concentration of 1 million cells/ml of RPMI in each assay. Then selected mitogens were added to assess the stimulation effect. The dual control included assays with dimethyl sulfoxide and RPMI. After 24h incubation, the cultures were frozen and selected growth factors (G-CSF, GM-CSF), proinflammatory (IFN-γ, TNF-α), and anti-inflammatory (IL-4, IL-10) cytokines were analysed with a Bio-Plex assay for pilot investigation.

Results. We observed significantly higher levels of both G-CSF and GM-CSF in BCP-ALL and T-ALL samples after stimulation with PMA+I. Leukemic blasts of all lines responded with a significantly higher TNF-α release after stimulation with all stimulators, as compared to control samples. Pro-inflammatory cytokines (IFN-γ, TNF-α) production was higher in AML and T-ALL blasts after stimulation with PHA and PMA+I. Moreover, all mitogens moderately stimulated the release of anti-inflammatory cytokines by AML blasts, but not ALL.

Conclusions. The limitation of the study included the method of cell isolation resulting in blasts contamination with lymphocytes. This is a pilot study and further examination should be conducted to find potentially useful patterns for clinical practice.

SPORTS MEDICINE, SPORTS SCIENCE, REHABILITOLOGY, MEDICAL

EFFECTS OF REGULAR BALANCE AND LEG STRENGTH EXERCISE IMPLEMENTATION ON BALANCE, SHIN STRENGTH, AND FOOT FLEXIBILITY IN ADOLESCENT FOOTBALLERS.

Authors: ***Anastasija Šalajeva*** [1], ***Kristaps Slaidiņš*** [1]
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Keywords. Footballers; Dynamic balance; Static balance; Shin muscle strength; Feet flexibility

Objectives. Evaluation of the effectiveness of balance and leg muscle strength endurance exercises on static and dynamic balance characteristics, shin muscle strength, and feet joints' flexibility in adolescent male footballers.

Materials and Methods. Nineteen adolescent footballers (mean age: 14.8 ± 0.6 years) with a mean body mass of 63.1 ± 10.6 kg, height of 174.5 ± 6.5 cm, BMI of 20.6 ± 2.8 kg/m2, training volume of 7.5 ± 1.5 hours per week, and experience 8.2 ± 1.4 years participated.

Dynamic balance was evaluated as a Total Stability Index (TSI) and Trunk Total Standard Deviation (TTSD) angle. The active and passive range of motions (ROM) of the talocrural joint in the plantar and dorsal flexion, and the subtalar joint in inversion, and eversion of the foot were measured. The peak isometric strength of the shin muscles (plantar flexor dorsiflexor, invertor, and evertor muscles) was determined. Measurements were performed before and after the intervention.

Results. The eight-week intervention significantly improved dynamic balance (TTSD angle) standing on the dominant ($p=0.04$) and non-dominant ($p=0.03$) leg. Static balance improvements included reduced body pressure center area, trunk deviation angle, and medial-lateral body motion speed in the stance on the non-dominant leg. Peak isometric force and torque of dorsiflexor muscles increased significantly for both legs ($p<0.001$). Active plantar flexion ROM increased in the dominant foot ($p=0.034$), while inversion ROM decreased in the non-dominant foot ($p=0.027$). Passive plantar flexion ROM decreased in both feet (dominant: $p=0.008$; non-dominant: $p=0.0002$).

Conclusions. Football-specific balance and strength endurance exercises significantly enhance static and dynamic balance performance characteristics, shin muscle strength, and reduce passive flexibility of the talocrural joint. These exercises are recommended to be included in regular training sessions of adolescent football players.

THE RELATIONSHIP BETWEEN COGNITIVE RESERVE, SLEEP PROBLEMS AND SHORT- AND LONG- TERM MEMORY IN A SAMPLE OF MASTER BASKETBALL PLAYERS

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Keywords. Cognitive reserve; Sleep problems; Short-term memory; Long-term memory; Veteran athletes; Physical activity; Memory performance; Cognitive health

Objectives. This study explores the relationship between cognitive reserve (CR), sleep problems, and short- and long-term memory in master basketball players. Sleep disturbances are common in older adults and may accelerate cognitive decline, particularly affecting memory. CR may serve as a protective factor, helping preserve cognitive health and mitigating sleep-related cognitive impairments. This research addresses a gap in studies on active older populations in Latvia, where senior citizens represent a growing demographic group.

Materials and Methods. Fifty-seven male veteran basketball players aged 50–81 participated in the study. Data were collected using a 10-word memory test to assess short- and long-term memory, the Cognitive Reserve Index questionnaire (short version), and the Latvian clinical personality test (shortened version). Pearson's correlation coefficient (r) was used to analyse relationships between cognitive reserve, sleep problems, and memory.

Results. Significant correlations were found between cognitive reserve and sleep problems. In the 50–59 age group, higher cognitive reserve was associated with fewer sleep problems ($r = -0{,}545$, $p = 0{,}029$), while increased free time correlated with more sleep problems ($r = 0{,}509$, $p = 0{,}044$). In the 60–81 age groups, cognitive reserve was strongly correlated with education and work activity ($r = 0{,}850$; $0{,}53$; $0{,}53$, $p < 0{,}001$).

Conclusions. Higher cognitive reserve may be linked to fewer sleep problems, though this trend was not statistically significant across all age groups. The findings highlight the potential role of cognitive reserve in mitigating sleep disturbances in master athletes, however memory performance had no significant correlations. Further research should explore underlying mechanisms.

This study was funded by the National Research Programme "Sport": Innovations, methodologies, and recommendations for the development and management of the sports sector in Latvia (VPP-IZM-Sports-2023/1-0001).

THE EFFECT OF ULTRA ENDURANCE EVENT ON COGNITIVE FUNCTIONS OF AMATEUR CYCLISTS

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Keywords. Ultra-endurance exercise; Cognitive functions; Cycling

Objectives. It is well documented that short, acute exercise interventions improve cognitive functions (CF). Ultra-endurance events have become more popular among the general population, yet their effect on CF has not been fully explored. This study examined the effects of an ultra-endurance cycling race on CF of amateur cyclists.

Materials and methods. 43 amateur cyclists (mean age: 38.8±8.4 years) that participated in the ultra-endurance race "Veloreality" were included in this study. For the assessment of CF, computerised digital symbols test (DST), Stroop test (ST) and the finger tapping test (FTT) were performed 1-2 days before the race, ~5 min after the race ~20 hours in recovery.

Results. DST correct number count was similar before and after the race (68.1±10.1 and 68.4±10.9, correspondingly) however a significant increase (77.0±12.5, $p<.001$) was observed in the recovery period, resulting in a significantly reduced overall mean reaction time ($p<.001$).

In all three stages of the ST, the number of reactions remained unchanged, yet the average time to perform a correct reaction was increased after the race by 22, 35, and 68 ms, respectively ($p<.001$). In recovery, the average time correct reactions returned to baseline except for the second stage, where the result was further improved by 21 ($p<.001$).

In the FTT, the average number of taps and the intervals between them worsened significantly after the race only for the non-leading hand and returned to baseline in the recovery period.

Conclusions. Ultra-endurance exercise has a small effect test-by-test, which accumulates as a broad and significant effect on CF immediately after the race. A dampening of the learning effect and a decline in reaction time, working memory and speed, and fine motor speed was observed. The combined worsening of several CF domains may pose additional risks during and shortly after an ultra-endurance event.

VISCOSITY TESTING AND ADAPTATION OF ORAL NUTRITIONAL SUPPLEMENTS AVAILABLE IN LATVIA FOR PATIENTS WITH DYSPHAGIA ACCORDING TO IDDSI

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Keywords. Dysphagia; Swallowing disorders; Oral nutritional supplements; Nutritional thickener; Viscosity; Speech and language therapists; Nutrition

Objectives. This research aims to determine the viscosity of government-funded "Nutricia" oral nutritional supplements (ONS) and their adjustment possibilities with "Nutilis" food and fluid thickener according to International Dysphagia Diet Standardisation Initiative (IDDSI) classification.

Materials and methods. A quantitative, descriptive study was conducted. Nine government-funded ONS products were analyzed. Viscosity was tested using IDDSI testing methods, including the Flow Test, Fork Drip Test, and Spoon Tilt Test, to classify products into IDDSI levels. The adjustment of viscosity with "Nutilis Clear" nutritional thickener was evaluated by adding incremental amounts of thickener and reassessing IDDSI levels. The data were analyzed using descriptive and inferential statistical methods.

Results. Initial tests showed that most products without thickener were at IDDSI level 0 (five products), level 1 (one product), and level 2 (two products). By adding "Nutilis," products reached higher IDDSI levels. For instance, "Nutridrink Protein" reached level 4 after adding two scoops of thickener, while "Nutridrink Juice Style" did not reach higher viscosity due to poor thickening properties, likely influenced by higher citric acid content. The findings highlighted the variability in the viscosity of ONS and the necessity for individual adjustment based on patient needs.

Conclusions. The viscosity of government-funded ONS varies significantly. Adjusting their viscosity using "Nutilis" nutritional thickener is essential to meet individual patient requirements. The study underscores the importance of standardized testing and viscosity adjustment to ensure safety and efficacy for dysphagia patients. Future research should explore improved thickening processes and consider the adoption of smaller, more precise thickener scoop measurements for enhanced accuracy in viscosity adjustment.

EFFECT OF ADVANCED FOOTWEAR TECHNOLOGY ON RUNNING ECONOMY AND BIOMECHANICS IN ELITE MALE LONG - DISTANCE RUNNERS

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Keywords. Advanced Footwear Technology; Carbon shoes; Running economy; Running biomechanics; Long – distance running

Objectives. Advanced Footwear Technology (AFT) has gained significant scientific interest in recent years, reflecting its potential to enhance running performance and comfort. However, the underlying mechanisms driving its effectiveness still remain unclear, and optimizing its potential benefits continues to be a challenge. This study aims to evaluate the effects of carbon-plated running shoes on running economy and biomechanics compared to conventional shoes, "super spikes," and barefoot running. Additionally, different types of vertical jumps are incorporated, evaluating a novel approach to enhance the reliability and objectivity of the results.

Materials and methods. Six elite long – distance male runners completed four 5 – min trials in each shoe condition and barefoot at submaximal intensity with 10 min of rest in between. The sequence of shoes was randomized and blinded for subjects. Physiological data (heart rate, oxygen consumption, RER) and running kinematics (contact phase, flight phase, step length and frequency) were measured. After that six types of vertical jumps were performed with the same shoe conditions. We measured the ground reaction forces (GRF).

Results. Significant differences in running energetics were found across all tested footwear conditions. Carbon shoes demonstrated a similar RE to "super spikes", despite their heavier mass. Additionally, carbon shoes produced the greatest vertical GRF and take–off force values in both: 30–second repeated vertical jumps and two types of drop jumps. Barefoot running resulted with increased step frequency and shortened step lenght. Small individual variations were observed across all footwear conditions.

Conclusions. These findings provide a scientific basis for the superiority of AFT over conventional running footwear in elite male long-distance runners. The results highlight a clear positive correlation between shoe design and energy savings, emphasizing the biomechanical and physiological advantages conferred by AFT.

EFFECTIVENESS OF HIGH-INTENSITY AEROBIC INTERVAL TRAINING ON QUALITY OF LIFE AND PHYSICAL HEALTH IN BREAST CANCER SURVIVORS: TWO YEARS FOLLOW-UP

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Keywords. Breast cancer survivors; High-intensity interval training; Physical health; Quality of life.

Objectives. Women with breast cancer (BC) experience multiple symptoms related to neoadjuvant chemotherapy treatment that affect their functioning and quality of life even years after treatment. The aim of this study was to determine the long-term effects of HIIT on quality of life and physical health of BC survivors 18-24 months post-treatment.

Materials and methods. The Cancerbeat (2022-2023) implemented randomized control trial (RCT) investigating the effect of HIIT on physical health and quality of life in 37 women (mean age 48.56, SD =7.84) with stage II-III BC receiving neoadjuvant chemotherapy for 6 months. All participants from Cancerbeat were approached to assess physical fitness and QoL 12-18 months post-treatment. To assess the QoL participants completed the EORTC QLQ-C30. Physical health assessment included cardiorespiratory test (VO2peak), sit-to-stand (measures taken at 5 sec and 30 sec) test and 6 minutes walking test (6MWT).

Results. Between groups analyses demonstrated that HIIT group significantly exceeded CG in 6MWT (48.76 (95% CI 11.93, 85.60, ES= .276, p = .012), sit-to-stand test (5x) (-1.40, 95% CI -2.58, -.21, ES = .233, p = .023), and VO2peak outcomes (4.29, 95% CI 099, 8.49, ES=.186, p= .045). Within group analyses revealed that both groups presented significantly higher results in 6MWT at follow-up compared to pre and post-treatment ($p < .05$). HIIT group demonstrated significantly higher scores in VE, sit-to-stand test in follow-up, while CG did not present significant change. Both groups reported significant increase in Symptom scale of QoL measures at follow-up compared to pre-treatment ($p < .05$).

Conclusions. Results showed that 18-24 months after treatment participants of HIIT group demonstrated higher cardiorespiratory endurance performance and leg muscle strength compared to CG. However, QoL outcome demonstrated that BC survivors struggle with post-treatment symptoms (fatigue, insomnia).

Project study: Cancerbeat-2, nr. RSU/LSPA-ZG-2024/1-0001

THE IMPACT OF PHYSICAL ACTIVITY ON MAXIMUM OXYGEN CONSUMPTION IN LATVIAN MASTER BASKETBALL PLAYERS

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Keywords. Physical activity; VO2max; Master basketball players

Objectives. Maximum oxygen consumption measures aerobic fitness level and is associated with a lower risk for cardiovascular disease and increased longevity. The aim of the study was to analyse how the duration of physical activity per week in master basketball players correlates with their maximum oxygen consumption (VO2 max).

Materials and Methods. Latvian master basketball players completed a questionnaire in which they indicated the amount of physical activity per week and performed a cardiopulmonary exercise test, during which their VO_2 max was measured. All data was collected and analysed using SPSS Statistics (Spearman's Correlation).

Results. A total of 61 men master basketball players aged 50 – 81 years (medium age of 64 years, SD 7.8 years) participated in the study (enrolled March 2024 – September 2024). The amount of physical activity ranged from 60 to 870 minutes per week. The average VO2max was 31,34 ml/kg/min. The correlation in the 50–59 age group is moderate (ρ (17) = 0,463; p = 0,046). There was no statistically significant correlation found between physical activity and VO2 max in the 60-69 age group (p = 0,643p) and the 70+ age group (p = 0,913). This may possibly be contributed to the subjective intensity of exercise and game load, comorbidities, or other subjective factors.

Conclusions. The moderate positive correlation in the 50–59 age group (p = 0,046) and the lack of significance in the 60–69 (p = 0,643) and 70+ (p = 0,913) age groups may be due to subjective exercise intensity, game load, comorbidities, or other factors.

Project funding: National Research Programme "Sport": Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

DOES PLAYING BASKETBALL FROM YOUTH ENHANCE MAXIMAL OXYGEN CONSUMPTION IN OLDER AGE?

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Keywords. Basketball; Lifetime physical activity; Maximal oxygen consumption; VO2 max; Cardiovascular fitness

Objectives. Aerobic capacity, or maximal oxygen consumption (VO2 max), is one of the most important indicators of physical fitness and cardiorespiratory health. While VO2 max typically decreases with age, regular physical activity can help maintain higher levels of cardiovascular fitness. The aim of this study is to examine the association between youth basketball participation and higher VO2 max levels in older age.

Materials and methods. 49 male master basketball players aged 51-81(M age=64,2, SD=7,3 years) participated in the study. Participants were divided into three age groups: 51–60, 61–70, and 71–81 years. VO2 max was assessed using a RAMP test with continuous ECG monitoring on a cycle ergometer at the Latvian Academy of Sports Education‘s Sports Laboratory. Sports physical activities was assessed using the Motor Reserve Questionnaire (MRQ), which retrospectively evaluates physical activity levels from the age of 18.

Results. Pearson’s rank correlation analysis showed a statistically significant moderate positive correlation between lifetime sports physical activity and VO2 max into two age groups ages 61 to 70 years ($r = 0.326$, $p < 0.05$); ages 71 to 81 years ($r = 0.338$, $p < 0.05$). The ANOVA analysis revealed statistically significant differences between the groups in the time spent sports physical activities during youth ($p < 0.05$).

Conclusions. The study suggests that participation in basketball during youth is positively associated with higher VO2 max levels in older ages. These findings highlight the long-term benefits of early physical activity in maintaining cardiovascular fitness in later life, with further research needed to explore the underlying mechanisms and potential benefits of other physical activities.

Funding. State Research Programme “Sports” - Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001).

HYPERTENSIVE RESPONSE TO EXERCISE AMONG MASTER ATHLETES

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Keywords. Arterial hypertension; Master athletes; Exercise testing

Objectives. The aim of this study was to examine master basketball players exagerated blood pressure response (EBPR) during exercise test between group who uses antihypertensive medications and group who does not. Arterial hypertension elevates risk for cardiovascular morbidity and mortality.

Materials and Methods. A cross-sectional study was carried out to identify EBPR among master basketball players in Latvia, based on European Society of Cardiology guideline for EBPR threshold, during exercise test. The study was conducted in March 2024 to September 2024. Data was analyzed using IBM SPSS 29.0. using descriptive statistics.

Results. The study evaluated 61 master-level men's basketball team players. Mean age 64 (50-81 years). 77.04% (47) athletes had hypertension at rest. 1.64% (1) had elevated resting blood pressure. 21.31% (13) had normal or below normal blood pressure at rest. 19.67% (12) had EBPR, from which 25% (3) where 50 -59 years old, 58,33% (7) where 60 – 69 years old, 16.67% (2) were 70 – 79 years old. 18.03% (11) had hypertension at rest and EBPR. 37.7% (23) athletes used medication and had hypertension at rest, 9.84% (6) athletes had EBPR and used medication. 9.84% (6) of athletes used antihypertensive medication and had elevated blood pressure at rest and EBPR.

Conclusions. Prevalence of EBPR was in 19.67% master athletes, from which 50% where using antihypertensive medications, therefore showing the need for control of prescribed therapy and necessity to evaluate risk factors and adherence to medication.

Funding: National Research Programme "Sport": Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

OBJECTIVITY OF VO2MAX IN MASTER BASKETBALL PLAYERS USING THE ASTRAND TEST, DEPENDING ON THE INTENSITY OF THE LOAD

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Keywords. VO2max, Astrand test.

Objectives. Maximal oxygen consumption (VO2max) is the gold standard for assessing cardiorespiratory fitness and physical fitness. The aim of study is to determine the objectivity of the Astrand test to master basketball players depending on the intensity of the test load.

Materials and methods. 50 male master basketball players aged 51-81 (M age =64, SD=7.5 years). VO2max was assessed using the RAMP test with continuous ECG monitoring on a cycle ergometer. Astrand cycle ergometry test was performed using a Monark Ergomedic 939E programmed cycle ergometer and a Concept 2 cycle ergometer, performing 3 loads for 3 minutes each, increasing the load by 25W to submaximal load. VO2max was calculated at each load using a special Astrand fitness test calculator. The Astrand test results were compared with VO2max determined by direct gas analysis. The mean Bland-Altman Bias and the mean absolute error were evaluated.

Results. The mean peak VO2max in the cardiopulmonary exercise test is 30.44±7.32 ml/kg/min. Compared with the VO2max obtained by direct gas analysis, the mean Bland-Altman Bias systemic error and mean absolute error of the Monark Ergomedik 939E Astrand test were (-0.386±7.50 and 5.45±5.09 ml/kg/min), calculated from the lowest Concept 2 load (2.07±4.70 and 4.17±2.96 ml/kg/min), the middle load (2.14±5.39 and 4.27±3.88 ml/kg/min) and the highest load(2.12±5.55 and 4.53±3.80 ml/kg/min).

Conclusions. In the study, the Monark Ergomedik 939E programmed Astrand test had the lowest system error of the compared Astrand cycle ergometry test variants, while the lowest absolute error was observed during the lowest intensity exercise on the Concept 2 cycle ergometer (mean 109.5W, SF 116.8x/min, 75.6% of maxSF). The mean absolute error is similar at different load intensities, with no significant difference ($p<0.05$).

Funding. The National Research Programme “Sport”: innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

OBJECTIVITY OF VO2MAX IN MASTER BASKETBALL PLAYERS USING THE YMCA CYCLE ERGOMETRY TEST, DEPENDING ON THE INTENSITY OF THE LOAD

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Keywords. VO2max; YMCA test.

Objectives. Maximal oxygen consumption (VO2max) is the gold standard for assessing cardiorespiratory fitness and physical fitness. The aim of the study is to determine the objectivity of the YMCA test to master basketball players depending on the intensity of the test load.

Materials and methods. 50 male master basketball players aged 51-81 years (M age =64, SD =7.5) participated in the study. VO2max was assessed using the RAMP test with continuous ECG monitoring on a cycle ergometer. The YMCA test was performed using a Concept 2 cycle ergometer, performing 3 loads for 3 minutes each and increasing the load by 25W to submaximal load. VO2max was calculated from the last two and second to last two loads using a special YMCA test calculator. The YMCA test results were compared with VO2max determined by direct gas analysis, the mean systemic Bland-Altman Bias error and the mean absolute error were evaluated.

Results. The mean maximum VO2max in the cardiopulmonary exercise test was 30.44±7.32 ml/kg/min. Compared with the VO2max obtained by direct gas analysis, the mean systemic error of the YMCA test by Bland-Altman Bias and mean absolute error were, respectively, (-0.580±6.95 and 5.20±4.59 ml/kg/min) when calculated from the last two loads (0.902±5.80 and 4.56±3.65 ml/kg/min) when calculated from the second to last two loads.

Conclusions. In the master basketball group, of the YMCA cycling ergometry test variants compared, the lowest systematic error was found when calculating the test result from the highest test loads and corresponding SF, and the lowest absolute error was found when calculating the test result from the penultimate test loads and corresponding SF. The mean absolute error is similar, with no significant difference ($p<0.05$).

Funding. the National Research Programme “Sport”: innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

BIOMECHANICAL AND POSTURE ERGONOMIC ANALYSES OF LUMBAR INJURY RISK DURING SIMULATED PATIENT LIFTING AMONG PHYSICAL THERAPISTS

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Keywords. Patient lifting; Posture ergonomic; Biomechanic risk; Spine injury; Physiotherapy

Objectives. Physiotherapy is one of the professions at highest risk for the development of low back disorders, repetitive patient lifting tasks identified as a leading contributor. The objective of this pilot study was to identify risk factors of low back load in physiotherapy during patients lifting tasks.

Materials and methods. 50 participants participated in this study to perform three different simulated patient lifting tasks: when a patient is not assisting (1), the patient holds up about 30% of their weight (2), lifting with an ergonomic belt (3). Each of the participants performed three tasks, resulting in a total of 396 measurements. For physical and postural ergonomic analyses were used: anthropometric characteristics, BMI, spinal mobility, muscle strength, and lumbar stability (Lafayette Manual Muscle Tester and McGill's Torso Muscular Endurance Test); patients lifting movements were collected by a motion capture system Xsens Movella 17 IMU marker set; biomechanical loads to assess internal loads on low back were conculcated using the mathematical model.

Results. The average age of 17 men and 33 women was 28±12 years, a height of 174.60±12.18 cm, a weight of 75.40±12.77 kg, a BMI of 24.88±4.84. Physical, ergonomic, and biomechanical data showed significantly lower results for nurses than other subjects ($p<0.05$): older, lower training or physical activity level, decreased lumbar muscular stabilization strength or endurance, use of incorrect patient lifting techniques, rarely use the assistive devices.

Conclusion. Good physical state, spine muscle strength and endurance of lumbar stability, use of correct patients lifting techniques and assistive devices decrease risk of injury during patients lifting.

Ethics approval was obtained from the Vilnius Regional Bioethics Committee. Abstract authors will confirm any conflict of interest in our presentation at the congress.

EFFECTIVENESS OF VR-BASED DYNAMIC CLINICAL SCENARIOS AS A TRAINING RESOURCE FOR MEDICAL STUDENTS

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Keywords. Medical simulation; Virtual reality (VR); Medical education; Immersive technologies;

Objectives. Virtual reality (VR) is revolutionizing medical education by offering highly immersive and interactive simulation training for real-life patient care. This study, conducted at the Hospital of Lithuanian University of Health Sciences Kaunas Clinics and Lithuanian University of Health Sciences (LUHS), was aimed to evaluate the effectiveness of VR-based dynamic clinical scenarios as a training resource for medical students.

Materials and methods. The study enrolled medical students, offering a package of 15 different clinical case or patient examination scenarios by using Oxford Medical Simulation (OMS) software combined with Meta Quest 2 VR hardware. Participants were asked to provide feedback about their experience after the virtual simulation by using a questionnaire of 8-point Likert scales to assess the suitability and achievement of the training objectives.

Results. Feedback from 30 participants revealed that 96.6% would like to recommend this type of learning to colleagues (Kirkpatrick Level 1 - Reaction). Impressively, over 90% found the VR-based clinical scenarios useful for improving their competencies (Kirkpatrick Level 2 - Learning). Additionally, 81% expected to apply half or more of their experience in the near future (Kirkpatrick Level 3 - Behavior). This research suggests that realistic VR simulation scenarios can significantly impact professional development in medical education.

Conclusions. The use of VR-based dynamic clinical scenarios as a training resource for medical students has shown to be an effective method for enhancing the skills and abilities of medical professionals, making it a recommended approach for learning-by-doing in medical education.

THE IMPACT OF LOWER EXTREMITY AMPUTATION LEVEL SELECTION ON PATIENT'S QUALITY OF LIFE

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Keywords. Level of lower extremity amputation; Quality of life; WHODAS 2.0

Objectives. Selection of the level of lower extremity amputation includes curative and rehabilitative aspects. From the surgical perspective it is important that the operation is with a low probability of re-amputation choosing a higher level of amputation. However, to ensure postoperative mobility, facilitate effective prosthetic use, it is better to preserve the knee joint.

The aim of this study was to assess a patient's quality of life depending on selection of the level of lower extremity amputation.

Materials and methods. This retrospective-prospective cohort study included 24 patients who underwent lower extremity amputations at the Purulent Surgery Clinic of Riga East University Hospital in 2022-2023. Group 1 consisted of patients with amputation below the knee joint, Group 2 patients with amputation above the knee joint.

1-2 years after the amputation, patients were contacted via telephone to participate in an assessment of their quality of life, using World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0). Descriptive statistics, Independent-Samples Mann-Whitney U Test were used for data analysis.

Results. In Group 1 (N=12) patients WHODAS 2.0 median score was 49,50 (IQR: 28,25-72,25). In Group 2 (N=12) WHODAS 2.0 median score was 49,00 (IQR: 37,00-52,25). Independent-Samples Mann-Whitney U Test 60,50 (p=0,514).

The median mobility domain score in Group 1 was 65,63 (IQR: 57,81-79,69), in Group 2 was 75,00 (IQR: 62,50-79,69). Independent-Samples Mann-Whitney U Test 84,500 (p=0,478).

Conclusions. In this study there was no statistically significant difference in patient's quality of life depending on selection of the level of amputation, however, this can be due to small sample size and other factors - comorbidity, living conditions. In descriptive statistics, mobility domain results were better for amputees below the knee joint, which may indicate improved quality of life and need for further research.

VARIABILITY OF CENTRAL CORNEAL THICKNESS MEASUREMENTS – HEIDELBERG ANTERION, HEIDELBERG SPECTRALIS AND OPTOVUE ANGIOVUE OPTICAL COHERENCE TOMOGRAPHY

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Keywords.

Objectives. To compare the impact of short and long high intensity interval training (HIIT) on aerobic capacity and endurance indicators over a four-week period in badminton players aged 12 to 20.

Materials and methods. The study involved 16 badminton players, with 8 participants in the short HIIT group and 8 in the long HIIT group. Over four weeks, participants performed HIIT sessions twice per week, specifically adapted for badminton through match-play scenarios. The short HIIT group completed 12 repetitions (20 seconds work / 40 seconds rest), while the long HIIT group completed 8 repetitions (60 seconds work / 60 seconds rest). The HIIT sessions were performed at an intensity level that, based on subjective self-assessment at the end of each repetition, reached a score of 9 points on the Borg CR10 Scale.

To evaluate aerobic capacity and endurance indicators before and after the intervention, the Yo-Yo Intermittent Recovery Level 1 test was used. The data were analyzed using IBM SPSS Statistics (version 29.0.0.0), applying descriptive statistics and nonparametric tests. For within-group comparisons before and after the intervention, the Wilcoxon signed-rank test was employed, while for between-group comparisons of the short and long HIIT groups, the Mann-Whitney U test was used.

Results. VO2max improved by 3% in the short HIIT group and 8% in the long HIIT group, with both showing significant improvements ($p < 0.05$) but no significant difference between groups ($p = 0.878$). Similarly, distance covered increased by 140m and 400m in the short and long HIIT groups, respectively, with significant improvements ($p < 0.05$) but no difference between groups ($p = 0.959$).

Conclusions. The short and long HIIT protocols used in the study, provided badminton players with statistically significant improvements in aerobic capacity and endurance indicators. There were no statistically significant differences in the improvements between the groups.

EVALUATION OF ANAEROBIC AND AEROBIC CAPACITIES AND RECOVERY ABILITY AMONG SWIMMERS OF THE SPORTS CLUB "DELFĪNS" AFTER PHYSICAL STRESS TESTS

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Keywords. Athlete assessment; Physical stress tests; Recovery ability

Objectives. Great swimming performance results require precise assessment. Physical stress tests assess cardiovascular efficiency, fatigue tolerance, and recovery ability after exertion. Research highlights that monitoring physiological responses enhances the effectiveness of training programs (Dalamitros et al., 2016, Solovjova et al., 2017). This study implements two physical stress test protocols measuring the pulse and lactate levels before, immediately after, and after cool-down) to evaluate the aerobic, anaerobic capacities and recovery abilities.

Materials and methods. Physiological responses to two stress tests of 11 swimmers with at least 4 years of national-level competitive experience (5 male, 6 female, aged 15-23) were assessed in a 25-meter pool. Athlete main stroke, event distances, and training duration were surveyed. An aerobic (16x50m, with a 10-second rest) and an anaerobic (4x50m, with a 45-second rest) capacity tests were performed. Long-distance versus short-distance swimmer subgroups were analyzed. Athletes completed a structured warm-up and cool-down, with at least 48-hour recovery between tests. Pulse was measured by Garmin Fenix 7X Solar watch. Lactate levels were assessed using Lactate Pro 2 device. Measurements and survey data, including paired-samples T-tests, were analyzed using Excel and IBM SPSS 29.0.0.0.

Results. Stroke and training duration have less impact on recovery opposed to individual conditioning. The submaximal pulse suggests both tests operate under anaerobic conditions. Lactate level differences reflect varying intensities or rates of lactate accumulation, rather than distinct energy systems. Long-distance swimmers exhibited more consistent recovery, suggesting that aerobic conditioning enhances recovery even in anaerobic conditions.

Conclusions. Lactate and pulse monitoring in assessing aerobic and anaerobic capacity, as well as recovery ability, in competitive swimmers is valuable. Recovery variation between longer-distance and sprinter swimmers offers insight for tailoring individual rest intervals and training regimens. Further research is recommended to explore swim training specificity and recovery relationship.

COMPARISON OF AEROBIC FITNESS TEST RESULTS ACROSS CONCEPT-2 CARDIO MACHINES: BIKEERG, ROWERG AND SKIERG

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Keywords. Aerobic capacity; VO2max; Concept2 ergometers; Submaximal intensity; Indirect test; Ski-erg; Row-erg

Objectives. Aerobic capacity, measured by maximal oxygen consumption (VO2max), is an important indicator of cardiorespiratory health and fitness in individuals. In the general population, aerobic capacity shows a decreasing trend, which increases the need for effective, adaptable and safe methods of VO2max measurement and training. Objective of this study was to investigate the differences in fitness test outcomes across different Concept-2 cardio machines and to compare the results taking into account the different types of aerobic activities performed by the test participants.

Materials and methods. Participants – 10 women and 7 men without known health issues, aged 21 to 43, performed three intensity step submaximal aerobic capacity test on three different Concept-2 cardio machines: BikeErg, RowErg, SkiErg. The heart rate (HR) was recorded after every 3 minute step. VO2max was calculated using set formula. Data were analysed using nonparametric tests “Friedman” and “Kruskal-Wallis”.

Results. Aerobic test results vary significantly across different ergometers ($p<0.05$). Average VO2max on BikeErg is 39,7 ± 8,05 (ml/kg/min), RowErg 30,94 ± 5,88 (ml/kg/min), SkiErg 22,55 ± 3,55 (ml/kg/min). The highest HR at set intensity is on the SkiErg, followed by RowErg and BikeErg. The highest increase in HR between two intensities (75W and 100W) is on the SkiErg. No significant association was found between aerobic test results on the three exercise machines and participants’ aerobic activity types.

Conclusions. Aerobic test results on the three different Concept-2 ergometers vary significantly, with the highest VO2max results on the BikeErg, followed by the RowErg, and the lowest results on the SkiErg. Further studies with larger numbers of participants and more diverse groups are needed.

EFFECTS OF DIFFERENT REST INTERVALS DURING HIGH-INTENSITY INTERVAL TRAINING ON PHYSIOLOGICAL RESPONSES IN RUNNERS

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Keywords. High-intensity interval training; Lactate recovery; Running; Endurance; Physiological responses

Objectives. This study aimed to examine the effects of varying rest intervals on physiological responses during high-intensity interval training (HIIT). Eight recreational runners performed three HIIT sessions on a 1% incline treadmill at a submaximal pace, close to their race pace. Each session consisted of six repetitions of two-minute intervals, with rest periods of 1 minute (2:1 work-to-rest ratio), 2 minutes (1:1), and self-selected recovery based on subjective feelings without external guidance.

Materials and methods. Physiological parameters, including oxygen consumption (VO2) and heart rate (HR), were measured continuously during the training sessions. Blood lactate levels were recorded immediately after each interval and during the 2nd and 4th minutes of recovery.

Results. The one-minute rest interval resulted in the highest lactate concentrations and heart rates, reflecting the most intense exertion. The two-minute rest interval allowed better lactate clearance, leading to reduced physiological stress. In the self-selected recovery session, participants chose rest periods ranging from 40 seconds to 1 minute 30 seconds, exhibiting physiological responses similar to the one-minute rest condition but with the highest oxygen consumption.

Conclusions. Two-Minute Rest: Results in the lowest lactate and heart rate levels, providing optimal recovery and better readiness for subsequent intervals.One-Minute Rest: Produces the highest lactate and heart rate levels, highlighting its potential for high-intensity efforts and anaerobic capacity improvement.Freely Chosen Rest: Recovery intervals ranging from 40 seconds to 1:30 minutes result in physiological responses similar to one-minute rest but with the highest oxygen consumption, suggesting enhanced aerobic demands.Practical Rest Strategies: The differences in physiological responses emphasize the importance of adjusting recovery intervals to match specific training goals and individual needs.

THE IMPACT OF VARIOUS AEROBIC AND FUNCTIONAL STRENGTH TRAINING ON PERFORMANCE IN BALLET AND THE ASSESSMENT OF PHYSICAL FITNESS FOR BALLET SCHOOL STUDENTS

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Keywords. Ballet; Ballet school; Physical training; Power of strength

Objectives. To study the aerobic work capacity and strength indicators of the students of the Riga Ballet School and the effects of dosed physical exertion, in order to find out what type and intensity of training has the greatest impact on working capacity and performance in ballet.

Materials and methods. The study involved 24 students from the Riga Ballet School aged 10-18 years. Tests for physical fitness, maximum strength, aerobic power and ballet element performance were conducted in August and November 2024.
For testing ballet elements 5 ballet elements were evaluated, PWC170 veloergometry test was used to determine aerobic power using the veloergometer MONARK, physical fitness was assessed with an adapted EUROFIT Method, which tests the balance, strength of the back and abdominal muscles, jumps in distance and height, and the maximum force. The latter was tested with squatting, bench press and pulling from above. Divided into 3 groups and for 8 weeks one group performed functional strength, sprint interval and HIIT or continued ballet training without additional training created by the author. Descriptive statistics statistics methods were used for data processing using Microsoft Office Excel and IBM SPSS Statistics. Median differences were used to compare the applicant groups established based on preliminary testing.

Results. The strength and sprint groups showed statistically significant ($P<0.001$) improvements in ballet performance, as well as in PWC170, abdominal, back muscles, balance and maximum strength tests. But in jumps (in height and distance) the results varied. Some trends were observed in the control group but they were not statistically significant.

Conclusions. The group, which, in addition to ballet training, conducted strength training and sprint interval training, showed significant improvements in indicators of ballet performance, aerobic power, motor strength and strength endurance, as well as maximum strength.

LOWER EXTREMITY THIGH MUSCLE STRENGTH IMPACT ON DYNAMIC BALANCE FOR ALPINE SKIERS

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Keywords. Lower extremities; Muscle strength; Dynamic balance; Alpine skiing

Objectives. For skiers the involvement of the hip joint in maintaining balance is more important than the action of the foot joint. For alpine skiers, this particular balance strategy is observed both with and without boots. Skiers have a sport-specific balance strategy of making quick movements and transferring power laterally from one leg to the other in a semi-squat position. Skiers must learn movement techniques to maintain a balance turn during high radial forces and increased skiing speed. Poor balance affects biomechanical factors that determine speed and smooth application of support reaction force during a turn. Loss of balance can lead to compensatory body movements, leading to delayed turn initiation, less controlled force development, longer turns, and the use of a sliding technique.

Materials and methods. The research includes a review and analysis of scientific literature about the impact of lower extremity muscle strength on dynamic balance and methods for developing muscle strength and balance in alpine skiing. The study includes one test group with alpine skiers aged 12 to 16 years. To control the study and progress there were used functional muscle strength tests and "y" dynamic balance test. After testing is done the ascertaining experiment and mathematical statistical analysis was performed.

Results. Lower extremity muscle strength significantly correlates with dynamic balance in alpine skiers. The most effective method of developing muscle strength is through eccentric muscle work. Specific for alpine skiers, the exercises should be performed unilaterally.

Conclusions. Correlation between balance and strength is important for identifying at-risk individuals, as deficits in these neuromuscular components are associated with an increased risk of injury. Improvements in dynamic balance were seen when improving lower extremity muscle strength, using eccentric muscle work, and performing exercises unilaterally.

EFFECTS OF BETA-BLOCKERS AND DIURETICS ON MAXIMAL OXYGEN CONSUMPTION IN MASTER BASKETBALL PLAYERS

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Keywords. Beta-blockers; Diuretics; VO2max; Master basketball players

Objectives. The study aimed to evaluate the effects of beta-blockers and diuretics on maximal oxygen consumption (VO2max) in master basketball players. VO2max is a key measure of cardiovascular fitness, with higher levels strongly linked to lower mortality rates. It can be influenced by physiological as well as pharmacological factors. The analysis assesses the medication's impact across four groups: beta-blocker users, diuretic users, combined users, and non-users.

Materials and methods. A prospective cross-sectional study was conducted with master basketball players. Participants were grouped into beta-blocker users (n=7), diuretic users (n=6), combined users (n=2), and non-users (n=46). Data included anthropometric measurements, training history, and VO2max assessed via cardiopulmonary exercise testing (CPET). Statistical analyses, including ANOVA and regression test, were performed.

Results. 61 master basketball players aged 50–81 years (M=64 years, SD± 7.8 years).
The average VO2max was 31.07 ± 5.47 mL/kg/min, with non-users showing higher statistically significant mean VO2max 32.13(SD ± 5.46, p=0.014) compared to beta blockers users 27.25(SD ± 3.87, p=0.044) and diuretics users 28.69 (SD± 4.21, p=0.138).
Regression analysis showed that the combined use of diuretics and beta-blockers explained 11.5% of VO2max variability. Individually, diuretics accounted for 3.5% of the variability (p=0.138), while beta-blockers explained 7.7% of the variability (p=0.046).
Group differences in VO2max among beta-blocker and diuretic users were not statistically significant (p=0.094) compared to non-users, but the effect size ($\eta^2 = 0.120$) indicated a small-to-moderate impact of medications.

Conclusions. Beta-blocker and diuretic usage were correlated with lower VO2max in master basketball players (p=0.044 for beta-blockers; p=0.138 for diuretics), with an effect size of $\eta^2 = 0.120$(p=0.071 for between-group differences) highlighting their small-to-moderate impact on cardiovascular performance.

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DANCE AND MOVEMENT THERAPY TO PROMOTE PHYSICAL ACTIVITY AMONG SEDENTARY WORKERS

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Keywords. Dance and movement therapy; Physical activity frequency; Intensity; Sedentary work style

Objectives. A sedentary lifestyle, especially among workers with sedentary jobs, poses significant health risks. While physical activity programs are commonly offered to promote an active lifestyle, these often demand effort and intensity that sedentary workers struggle to maintain, leading to a decline in motivation. To address this, the pilot study within the project *"Multidisciplinary Approach for the Development of a Sustainable Habit of Regular Physical Activity Among Sedentary Workers"* (*No. RSU/LSPA-PA-2024/1-0013, Project "RSU Internal and RSU and LSPA External Consolidation," No.5,2,1,1.i.0/2/24/I/CFLA/005*) explored alternative approaches such as Dance and Movement Therapy (DMT). The aim of the study: to explore the impact of DMT on the dynamics of physical activity frequency and intensity among workers with sedentary jobs.

Materials and methods. The quasi-experimental pilot study involved 20 sedentary workers who participated in 9 DMT sessions over 21 days. Physical activity frequency and intensity were measured using the IPAQ and accelerometers before and after the intervention. The data were analyzed using the Mann-Whitney U test.

Results. Preliminary data indicate certain improvements in the frequency and intensity of physical activity in the experimental group; however, these results are currently initial, as further measurements are planned after three months. These additional data will provide a more comprehensive overview of the long-term effects of the intervention and help validate the initial findings.

Conclusions. DMT is might be an effective approach that promotes positive changes in physical activity habits among employees with sedentary work styles. Its integration into health promotion programs could help mitigate the negative effects of a sedentary lifestyle/work style.

PHYSICAL PERFORMANCE DEVELOPMENT EFFECT ON SELF-ESTEEM IN WOMEN

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Keywords. Strength training; Eight week training; Self-esteem; Repetition training method; Continuous training method

Objectives. To evaluate how the development of physical fitness affects women's self-esteem and its relationship with strength and aerobic performance indicators.

Materials and methods. The study involved 18 women aged 25 to 35, divided into two groups: an experimental group that participated in a training program and a control group that did not train. The training program lasted for 8 weeks and included 3 strength training sessions and up to 5 running sessions per week. The following tests were performed to determine performance and self-esteem. Strength endurance tests for squats with a barbell, bench press with a barbell, and upper body lifts from the floor. The "Tanita" bioimpedance test to monitor body composition. The "Concept 2" cycle ergometer test to measure aerobic capacity. Self-esteem test using the Rosenberg Self-Esteem Scale.

Results. In the experimental group, Vo2Max increased by 4.4 ± 5.3 ml/kg/min ($p<0.01$). Fat mass decreased by 1.9 ± 7.1 kg ($p<0.05$). Muscle mass increased by 2.4 ± 5.0 kg ($p<0.01$). Strength endurance for the bench press increased by 9.7 ± 7.1 reps/min ($p<0.01$). Strength endurance for squats with a barbell increased by 13.2 ± 6.1 reps/min ($p<0.01$). Strength endurance for upper body lifts from the floor increased by 10.1 ± 7.4 reps/min ($p<0.01$). Self-esteem increased by 3.6 ± 5.0 points ($p<0.05$). No significant changes in physical performance or self-esteem were observed in the control group, where self-esteem decreased over the 8-week period. A statistically significant correlation was observed in both groups between higher self-esteem and a greater number of upper body lifts from the floor ($R=0.641$, $p<0.01$) as well as a greater number of squats with a barbell ($R=0.449$, $p<0.05$).

Conclusions. Higher physical performance in women is closely associated with higher self-esteem. The development of strength endurance in the abdominal and leg muscles most significantly improves women's self-esteem.

TREATMENT OF CUBITAL TUNNEL SYNDROME IN PHYSIOTHERAPY PRACTICE: A LITERATURE REVIEW AND A RETROSPECTIVE SINGLE COHORT STUDY - RESEARCH PROTOCOL

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Keywords. Cubital tunnel syndrome; Physiotherapy; Non-surgical treatment; Rehabilitation plan; Diagnostics

Objectives. Cubital tunnel syndrome (CuTS) is a common nerve compression syndrome, yet there is no clear consensus on diagnostic and conservative treatment methods used in physiotherapy practice. This study aims to conduct a scoping review of diagnostic approaches and physiotherapeutic interventions for managing CuTS and evaluate the impact of a physiotherapy-led rehabilitation plan through a retrospective single-cohort study, to improve the clinical management of CuTS.

Materials and methods. The scoping review, following the Joanna Briggs Institute (JBI) guidelines, will synthesize literature on non-surgical CuTS treatment and diagnostic methods using keywords such as “cubital tunnel syndrome,” “physiotherapy,” “non-surgical treatment,” and “diagnostics.”
To explore conservative treatment methods and functional assessment tools for managing CuTS in physiotherapy practice at SIA “Concordia LL,” this research analyzes patient data from a retrospective single-cohort study, examining subjective and objective rehabilitation outcomes, including grip strength and pain (VAS), and progress across multiple stages of rehabilitation.
An application for approval has been submitted to the RSU Research Ethics Committee.

Results. The research offers evidence-based insights into CuTS treatment and diagnostic methods, emphasizing the role of structured physiotherapy interventions in clinical practice. The scoping review synthesizes current literature to provide a comprehensive understanding of non-surgical management strategies for CuTS, while the retrospective cohort study evaluates clinical data, encompassing subjective measures such as symptoms and pain, alongside objective indicators like grip strength, to analyze rehabilitation outcomes.

Conclusions. This research establishes a framework for analyzing CuTS diagnostic methods and physiotherapy-led rehabilitation practices. By consolidating knowledge on non-surgical management strategies through a scoping review and evaluating rehabilitation outcomes via a retrospective study, the findings aim to guide clinical practice and provide a foundation for future research to advance evidence-based care.

ASSESSMENT OF INJURY RISKS IN ADOLESCENT BASKETBALL PLAYERS

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Keywords. Functional movement screen; Y-Balance Test; Injury

Objectives. Basketball is a high-intensity sport involving rapid movements and direction changes, significantly increasing the risk of injuries. While all sports carry some injury risk, additional research is needed in youth basketball. This study aims to assess injury risks among basketball players.

Materials and methods. The study included 28 young athletes (girls (G) n=10; boys (B) n=18), aged 13–18 years, with an average age of 16 for girls (SD=1.4) and 15.8 for boys (SD=1.8). Girls played basketball for 7.6 years (SD=1.4), and boys for 6.6 years (SD=2.6). Data was collected at the start of the 2025 season. Functional Movement Screen™ (FMS™) and the Y-Balance Test (YBT) were used to evaluate strength, flexibility, and proprioception limitations.

Results. In the FMS™, G averaged 17.3 (SD=1.6) and B 17.2 (SD=1.9) out of 21 points. Scores of 15 were recorded in 10% of G(n=1) and 33.3% of B(n=6), maximum scores were achieved by 10% of G(n=1) and 5.5% of B(n=1). 10% of G(n=1) reported pain in the *extension clearing test*. Ankle mobility limitations were found in 10% of G(n=1) and 33.3% of B(n=6), shoulder issues in 5.5% of B(n=1),1 point in the *straight-leg raise test*, was scored by 20% of G(n=2) and 50% of B(n=9). Poor performance showed in deep squat (10% G(n=1), 5.5% B(n=1)), trunk push-up (50% G(n=1)), and rotary stability (10% G(n=1)). The YBT showed no significant asymmetry in leg performance for G and B.

Conclusions. Regular testing and appropriate training programs targeting movement and muscle imbalances are essential to reduce injury risk. Further research is needed to evaluate FMS in youth basketball.

This study is part of the National Research Program “Sports” project titled “Innovations, Methodologies, and Recommendations for the Development and Management of the Sports Sector in Latvia” (IMRSportsLV; No. VPP-IZM-Sports-2023/1-0001).

POST EXERCISE HYPOTENSION PREVALENCE IN MASTER ATHLETES

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Keywords. Postexercise hypotension; Master athletes; Hypertension

Objectives. One mild to moderate exercise session can lead to post exercise depression in blood pressure between hypertensive individuals. The aim was to investigate the prevalence of post exercise hypotension in master level athletes with and without arterial hypertension.

Materials and methods. A cross-sectional study was conducted to identify post exercise hypertension prevalence in master basketball players in Latvia after Cardiopulmonary exercise test. The study was conducted from March 2024 to September 2024. Data was analysed using IBM SPSS 29.0. using Descriptive statistics.

Results. The study evaluated 61 master-level men's basketball team players. Mean age 64 (50-81 years). 77.04% (47) athletes had hypertension at rest. 1.64% (1) had elevated resting blood pressure. 21.31% (13) had normal or below normal blood pressure at rest. 1.64% (1) athletes had hypotensive reactions in the first minute of rest. 11.48% (7) athletes had hypotensive reactions in the third minute of rest, from which 28.57% (2) had systolic blood pressure of 120 mmHg or less. 49.98% (25) athletes had hypotensive reactions in the fifth minute of rest, from which 64% (16) had systolic blood pressure 120 mmHg or bellow. 40.98% (25) had hypertensive reactions after the fifth minute of rest. 4.92% (3) athletes had normal blood pressure at the fifth minute of rest.

Conclusions. Blood pressure generally decreased progressively from the first minute of rest to the fifth minute of rest. 49,98% of athletes experienced post exercise hypotensive reaction, that indicates positive physiological adaptation.

Funding: National Research Programme "Sport": Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

FEASIBILITY AND OBJECTIVITY OF MEASURING MAXIMAL OXYGEN CONSUMPTION (VO2MAX) WITH DIFFERENT INDIRECT TESTS TO MASTER BASKETBALL PLAYERS

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Keywords. Maximum oxygen consumption; Indirect load test

Objectives. Determination of maximum oxygen consumption (VO_2Max) in the cardiopulmonary exercise test (CET) by direct gas analysis is costly and may not be achieved due to health complications.The aim of this study was to evaluate the objectivity of different indirect cycle ergometry tests and to develop a new methodology to measure maximal oxygen consumption (VO_2Max) in physically active master basketball players .

Materials and methods. Fifty male basketball players (age=64 SD±7.5years) participated in the study. CET was performed using the RAMP test with continuous ECG monitoring on a cycle ergometer in the Sports Laboratory of the LSPA. Indirect tests were performed at RSU MITC using Monark-HURErgomedic939E and Concept-2 cycle ergometer, stepping the load in 25W increments to 80-85% of maximum. One-, two- and three-load cycle ergometry tests were used to determine VO_2Max. In total, VO_2Max was determined in 12 different ways in the indirect tests and the mean systemic error according to Bland-Altman Bias and the mean absolute error (AvgAbs) were assessed.

Results. Comparing VO_2Max determined by CET and different distributed indirect tests, the systemic error Bias ranged from -0.386±7.50 to -5.70±4.44ml/kg/min and AvgAbs from 4.17±2.96 to 6.86±5.32ml/kg/min. A new methodology was developed to calculate VO_2Max using a linear regression equation to determine maximal aerobic power at maximal HR. With the help of artificial intelligence, a formula was developed to calculate VO_2Max with the smallest possible systematic error (Bias)0.006±3.81 ml/kg/min, AvgAbs 2.73±2.62ml/kg/min.

Conclusions. The absolute errors of the indirect tests are relatively large and similar.A methodology was developed, and a formula was found to measure VO_2Max with a stair-step incremental exercise cycling ergometry test, which most objectively assesses VO_2Max in a group of master basketball players.

Project funding. National Research Programme “Sport”:Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

DETERMINATION OF MAXIMAL OXYGEN CONSUMPTION (VO2MAX) WITH A STAIR-STEP INCREMENTAL EXERCISE CYCLE ERGOMETRY TEST IN MASTER BASKETBALL PLAYERS USING DIFFERENT FORMULAS

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Keywords. Maximum oxygen consumption; Indirect load test; Maximal heart rate

Objectives. There are relatively few data in the literature of indirect tests and methods for cardiorespiratory fitness based on changes in heart rate during exercise in specific populations.The aim of this study was to develop a new methodology for the most accurate determination of maximal oxygen consumption (VO_2Max) by step-ascending cycle ergometry exercise tests to master basketball players, and to evaluate the objectivity of the method using different formulas for the determination of maximal heart rate(MaxHR).

Materials and methods. Fifty male basketball players (age =64, SD=7.5 years) participated in the study. VO_2Max was determined using the RAMP test with continuous ECG monitoring on a cycle ergometer at the LSPA Sports Laboratory. The indirect test was performed using a Concept2 cycle ergometer increasing the load stepwise in 25W increments to 80-85% of maximal. A linear regression equation was used to calculate VO_2Max for maximal aerobic power at MaxHR and a formula was developed using artificial intelligence to calculate VO_2Max with the lowest possible systematic error (Bland-Altman Bias).

Results. Using a formula developed with artificial intelligence, VO_2Max was determined with HR set at maximal workload, Bias 0.006±3.81 ml/kg/min, absolute error (AvgAbs) 2.73±2.62 mll/kg/min. If MaxHR is calculated theoretically using the 220-age formula, then Bias-0.969±5.81, AvgAbs 4.69±3.50; MaxHR=208-0.7x age, Bias-3.41±6.14, AvgAbs 5.57±4.24; MaxHR=206,9-0.67 x age, Bias-3.69±6.19, AvgAbs 5.70±4.37; MaxHR=211-0.64 x age, Bias-5.70±6.58, AvgAbs 6.86±5.32; MaxHR=218.7-age, Bias-0.534±5.74, AvgAbs 4.55±3.48.

Conclusions. The developed formula shows the most objective results using MaxHR determined directly. When determining MaxHR by formulae, the most objective results are for the formula 218.7-age, adapted to this population, out of the widely used formulae 220-age.

Project funding. National Research Programme “Sport”: Innovations, methodologies and recommendations for the development and management of the sport sector in Latvia. (VPP-IZM-Sports-2023/1-0001)

THE IMPACT OF STRENGTH EXERCISES ON POSTURE, PHYSICAL PERFORMANCE, STRENGTH DEVELOPMENT, AND SUBJECTIVE WELL-BEING IN OFFICE WORKERS

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Keywords. Posture; Strength; Physical fitness; Office workers; Exercise; Home workout; Wellbeing

Objectives. To examine the impact of a bodyweight and resistance band exercise program on physical performance, strength development, posture correction, and subjective well-being in office workers.

Materials and methods. The study lasted for 8 weeks and involved 22 female office workers aged 30–40 with sedentary lifestyles and posture disorders. Participants were assessed before and after the study, evaluating posture, body composition, physical performance, strength, and subjective well-being.

Experimental group performed exercises three times a week: 4 mobility and flexibility exercises and 16 strength exercises for major muscle groups. Control group **s**tood up and engaged in 10–15 minutes of light activity every 90 minutes during working hours.

Data were processed with IBM SPSS using descriptive statistics.

Results. The experimental group showed significant physical fitness improvements: the Ruffier Index improved by 2 units (from 13 to 11), in the control group it worsened.

Push-up test results increased by 5 repetitions (from 5 to 10; $p = 0.003$) in the experimental group, remaining unchanged in the control group.

Statistically significant posture improvements noted: in frontal plane **s**houlder symmetry ($p = 0.0018$) and scapular symmetry ($p = 0.0009$). In sagittal plane head position ($p = 0.006$).

The experimental group's muscle mass increased by 300g ($p = 0.002$), while the control group lost 100g.

All experimental group participants reported improved subjective well-being, which correlated with muscle mass gain.

Conclusions. Bodyweight and resistance band strength exercises effectively improve posture, physical performance, strength, body composition, and overall well-being in office workers.

ASSOCIATION BETWEEN PHYSICAL ACTIVITY LEVEL AND QUALITY OF LIFE IN OLDER ADULTS

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Keywords. Physical activity; Quality of life; Seniors; WHOQOL-BREF; IPAQ; ANOVA; Pearson correlation

Objectives. With the global population aging rapidly, understanding factors that contribute to the well-being of older adults has become increasingly important. Physical activity is widely recognized as a key determinant of health, yet its specific impact on the quality of life in older populations requires further investigation. The study, conducted in November 2024, aimed to determine the relationship between physical activity levels and quality of life in seniors aged 65 and older. Hypothesis: seniors with higher levels of physical activity would have a higher quality of life.

Materials and methods. The study involved 105 seniors categorized into three groups based on their physical activity levels: physically active, moderately active, and inactive. Data were collected using the IPAQ and the WHOQOL-BREF. Descriptive statistics, ANOVA tests, and Pearson correlation were used to analyze the data.

Results. The findings revealed significant differences in quality of life among the groups, with active seniors achieving six times higher physical activity levels (3222 MET-min/week) than inactive seniors (469 MET-min/week). Quality of life scores in the social relationships and environment domains were significantly higher in the active group. Correlation analysis showed a moderate positive relationship ($r = 0.405616$) between physical activity levels and quality of life domains (physical health, psychological health, social relationships, and environmental factors) among inactive seniors.

Conclusions. The study confirmed a significant positive association between physical activity and quality of life in older adults. Physically active seniors demonstrated higher quality of life scores in all the domains compared to inactive seniors. The findings highlight the importance of promoting physical activity as a key strategy to enhance the well-being of seniors. These results suggest that health policies should prioritize initiatives encouraging regular physical activity to improve quality of life in the aging population.

BACK PAIN IN ADULTS WITH LEG LENGTH AND SHOULDER HEIGHT DISCREPANCIES

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Keywords. Leg discrepancies; Shoulder discrepancies; Chronic back pain; Adults; Genders

Objectives. Musculoskeletal disorders, which include chronic back pain, are one of the leading causes for longest years lived with disability. However, information about the effect of leg discrepancies on back pain is disparate, and information about shoulder discrepancies is scarce and inconsistent. Therefore, the study aimed to evaluate whether there is a relationship between gender, leg and shoulder discrepancies, and chronic back pain.

Materials and methods. A study enrolled 572 adult participants from a cross-sectional study carried out in Piebalga in 2024. Further, participants were divided into two groups by back pain prevalence. The back pain group consisted of 188 (32,7%) participants, while the control group contained 386 (67,3%) participants. The height of the spina iliaca anterior superior was measured from the floor with an anthropometer to evaluate leg length, and to acromion of the scapula for the shoulder length. A statistical analysis was performed with nonparametric tests to determine the association between back pain and gender; differences in both leg and shoulder discrepancies across back pain groups.

Results. The back pain group consisted of 32,6% males and 67,4% females, while the control group had 40,0% males and 60,0% females. The median for shoulder height discrepancy was 0,99 cm (IQR: 0,40-1,40) in the back pain group; 0,80 cm (IQR: 0,30-1,10) in control. While the median for leg length discrepancy was 0,50 cm (IQR: 0,20-1,00) in the back pain group; 0,30 cm (IQR: 0,10-0,60) in control. Mann-Whitney U test showed statistically significant differences in the distribution of shoulder ($p=0,015$) and leg ($p<0,001$) discrepancies across back pain groups.

Conclusions. Back pain prevalence did not differ amongst genders. A statistically significant difference was observed between shoulder and leg discrepancies across back pain groups, suggesting that discrepancies predispose to back pain.

IMPACT OF PILATES EXERCISES ON SHOULDER JOINT FUNCTIONALITY IN SEDENTARY WORKERS

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Keywords. Pilates method; Shoulder girdle; Movement functionality

Objectives. To investigate the effect of Pilates mat exercises on shoulder girdle functionality in sedentary workers.

Materials and methods. Experimental study. Before starting the study part, participants performed the ROM (Range of Motion) test to measure the range of motion in the shoulder joint, and a fitness screening test (Bholander, Geweniger, 2014) which is designed to determine the strength, functionality, mobility of the body musculature and formulates criteria by which to assess movement performance. In addition, participants fill in a questionnaire about their experience of physical activity and their subjective feelings. During the follow-up study, the participants of the first group perform independent exercise 3 times a week for five weeks according to a pre-prepared programs of video-recorded subjectively effective exercises to improve shoulder girdle movement functionality. Second group after Pilates general exercises. At the end of the study, participants repeat the ROM and fitness screening test and complete a questionnaire.

Results. Data were processed and calculated using Mann-Whitney test, P-value calculated using Wilcoxon Signed Ranks Test, correlation calculated using Spearman's rho. Statistically significant results were detected for the first group in ROM test and fitness screening test $P<0.05$. Negative correlation between length of employment and fitness screening test results for group 1, coefficient -.642 and $P=0.033$. When analyzing the post-test data, improvements were found in all positions relating to shoulder girdle functionality for participants in Group 1.

Conclusions. The data obtained after the study support the hypothesis that using subjectively selected effective Pilates mat exercises based on the Pilates Method can improve shoulder girdle functionality in sedentary workers better than Pilates general exercises. The results of the study show that it is possible to improve shoulder girdle functionality by doing Pilates exercises 3 times a week for 30 minutes.

THE POSITIVE IMPACT OF NORDIC WALKING ON BALANCE AND COORDINATION

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Objectives. To determine the impact of Nordic walking training on balance and coordination in older (57–64) and younger age groups (39–53) and to assess participants' opinions on the improvement of balance and coordination as a result of Nordic walking training.

Materials and methods. The study included 19 women (11 younger, 8 older) who completed an 8-week Nordic walking program twice weekly, learning proper techniques. Outcomes were assessed with the Flamingo, Y-Balance, and Four Square Step Tests. Participant opinions were gathered via a questionnaire. Data analysis used IBM SPSS (v29.0) with Mann–Whitney U and Wilcoxon tests.

Results. Significant balance improvements were observed in the Flamingo and Y-Balance Tests, particularly in the older group In the Flamingo Test, results for the older group significantly improved after the 8-week Nordic walking program ($p = 0.043$). In the Y-Balance Test, both groups demonstrated statistically significant improvements, with the younger group scoring ($p = 0.033$) and the older group ($p = 0.018$). In the Four Square Step Test, results for both groups showed a tendency to differ, but no statistically significant changes were observed. Survey results confirmed participants' perceptions of improved balance and coordination after Nordic walking, rated higher than before the training program.

Conclusions. The Nordic walking program enhanced balance and coordination, particularly static and dynamic balance in older participants. Improvements in younger participants were notable, highlighting Nordic walking's effective.

RISK AND PREVALENCE OF OSTEOARTHRITIS OF THE SOUND LIMB IN LOWER LIMB AMPUTEES : SYSTEMIZED LITERATURE REVIEW

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Keywords. Rehabilitation; Physiotherapy; Lower limb amputation; Contralateral leg amputation; Osteoarthritis

Objectives. The rising incidence of lower limb amputations (LLA), caused largely by diabetes mellitus and peripheral arterial disease, highlights the importance of post-surgical rehabilitation and preventative care for these individuals. Additionally, as these individuals already experience an impacted mobility and quality of life, adding such condition as osteoarthritis (OA) to their remaining, heathy leg can be devastating both physically and mentally. The aim was to evaluate the prevalence of this disease and to explore physiotherapeutic management strategies to lessen its impact on patient mobility and quality of life.

Materials and methods. This was a systemized literature review, looking at evidence from studies published since 2010. Inclusion criteria focused on adults with LLA and diagnosed OA in the sound limb, while exclusion criteria excluded studies in languages other than English, unrelated to OA treatment in amputees or OA in the bilateral limb. Key databases, including PubMed and ScienceDirect, were used for sourcing relevant and reliable articles.

Results. Evidence shows that lower limb amputees are significantly more in risk to develop OA in the sound limb due to altered biomechanics and asymmetric limb loading. Studies report OA prevalence rates from 41% to 63% in this population, with factors such as improper prosthetic alignment and muscle imbalances exacerbating joint stress. Effective rehabilitation strategies, and patient education, have demonstrated huge benefits in mobility and reduced OA progression and development.

Conclusions. The findings of this systemized literature show that there is a strong need of an individualized rehabilitation fallowing amputation to prevent learned incorrect gait and address the new biomechanical changes. Additionally, early gait training and patient education is vital to protect the sound limb joints. Further research should be done in preventive strategies to optimize long-term outcomes for this vulnerable population.

OPHTHALMOLOGY

FACTORS AFFECTING THE ANTERIOR CHAMBER DEPTH AFTER CATARACT SURGERY

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Keywords. Anterior chamber depth (ACD); Axial length (AL); Intraocular lens (IOL)

Objectives. Cataract is an extremely common eye disease, especially among the elderly. Intraocular lens implantation is a part of cataract surgery. Anterior chamber depth can indicate the position of the lens. The change in the expected position of the IOL-implanted eye can affect the therapeutic effect. This study aimed at studying the factors that can affect ACD after cataract surgery.

Materials and methods. This is a retrospective study conducted through the analysis of the medical records of 36 patients (50 eyes) who had femtosecond laser-assisted cataract surgery from 2023 to 2024 at the Pauls Stradins University Clinical Hospital and the Dr. Solomatin Eye Center. All analyses were performed using IBM SPSS Statistics (Spearman correlation, nonparametric test). $P<0.05$ was considered to indicate that data was statistically significant.

Results. The average age of patients was 66.361 years. The average preoperative AL was 24.075 mm and the mean ACD difference was 1.702 mm. There was a statistical correlation between preoperative AL and ACD difference ($r(50)=0.314$, $p=0.026$). The average postoperative AL was 23.989 mm. There was a statistical correlation between postoperative AL and ACD difference ($r(50)=0.291$, $p=0.040$). The average preoperative ACD was 3.095mm, and the postoperative ACD – 4.797 mm. There was a statistical correlation between preoperative ACD and postoperative ACD ($r(50)=0.492$, $p<0.001$). Previous IOL implantations ($p=0.004$), astigmatism ($p=0.020$), myopia ($p=0.009$), and retinopathy ($p=0.027$) can affect ACD difference. Patients' age, gender, IOL type, intraocular pressure value, and history of glaucoma cannot affect ACD difference in this study.

Conclusions. Preoperative and postoperative AL, previous IOL implantations, the histories of astigmatism, myopia and retinopathy can affect the difference in ACD between preoperative ACD and postoperative ACD. Preoperative ACD can affect postoperative ACD. More patient data are needed to confirm these conclusions.

COMPARISON OF 3-YEAR OUTCOMES FOLLOWING THE CONVENTIONAL CXL VERSUS THE ACCELERATED CXL PROCEDURES

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Keywords. Keratoconus; Corneal collagen crosslinking; Keratometry; Pachymetry

Introduction. Corneal collagen crosslinking (CXL) is a procedure that prevents the further progression of keratoconus. The gold standard is conventional CXL (CCXL) protocol, which is characterised by 3mW/cm2 irradiance for 30 minutes. Accelerated crosslinking (ACXL) protocols shorten procedure time by using higher irradiance.

Objectives. The aim of this study is to compare topographic 3-year outcomes between patient groups treated using the CCXL and the ACXL (9 mW/cm2 for 10 minutes).

Materials and methods. This retrospective analytical study included 24 eyes from 24 patients who underwent the conventional CXL procedure and 19 eyes from 19 patients who underwent the accelerated CXL procedure. Data on keratometry, pachymetry and visual acuity were obtained from the outpatient medical records. The study compared preoperative data with the 1st and 3rd years outcomes within each group, as well as the differences in data distribution between both patient groups.

Results. In the CCXL group, there was a statistically significant decrease in pachymetry median values, from 450 μm to 423 μm (p=0,009), a decrease in cylinder median values from 4,28 D to 2,9 D (p=0,004) and a decrease in mean keratometry values from 48,33 D to 46,63 D (p=0,002). There were not observed significant changes in uncorrected distance visual acuity outcomes (p=1,000), nor in the best- corrected visual acuity outcomes (p=0,182). In the ACXL group no statistically significant differences were found comparing preoperative and postoperative results of each parameter. No statistically significant differences in keratometry, pachymetry, or visual acuity were found comparing preoperative and postoperative results between CCXL and ACXL groups.

Conclusions. The study didn't show any significant difference in 3-year outcomes between the CCXL and ACXL groups. Therefore, both methods showed stabilizing of keratoconus progression. However, the study revealed more statistically significant corneal flattening over 3 years in the CCXL group.

THE IMPACT OF INTRAVITREAL BEVACIZUMAB THERAPY ON CENTRAL RETINAL THICKNESS IN THE TREATMENT OF DIABETIC MACULOPATHY

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Keywords. Diabetic maculopathy; Bevacizumab; Central retinal thickness; Visual acuity; Anti-VEGF therapy; Laser photocoagulation

Objectives. Diabetic retinopathy (DR), a significant diabetes mellitus (DM) complication, is a leading cause of blindness. Diabetic maculopathy (DM) can occur at any DR stage, severely affecting visual acuity (VA) and retinal health. Anti-VEGF therapies, such as bevacizumab, are widely used to manage DM due to their efficacy in reducing macular edema. However, response variability remains a challenge. This study aimed to evaluate bevacizumab's impact on central retinal thickness (CRT) and VA in DM patients.

Methods. A retrospective cohort study was conducted on 15 eyes from 13 DM patients treated at Paula Stradiņa Clinical University Hospital. Patients were included based on type 1 or 2 diabetes and diabetic retinopathy with maculopathy confirmed by optical coherence tomography (OCT). CRT and VA were measured before and after intravitreal bevacizumab therapy. Statistical analyses included paired t-tests for treatment effects, independent t-tests for group differences, and chi-square tests for LFK efficacy. Correlations between injection count and outcomes were also analyzed.

Results. Bevacizumab significantly reduced CRT ($p=0.016$), indicating moderate efficacy. However, VA improvements were minimal and statistically insignificant ($p=0.758$). LFK provided no significant benefit for CRT ($p=0.699$) or VA ($p=1.000$). Injection count positively correlated with VA improvement ($p=0.008$), but not with CRT changes ($p=0.883$). No significant outcome differences were observed between diabetes types or insulin dependency groups.

Conclusions. Bevacizumab effectively reduces CRT, reinforcing its value in managing macular edema in DM patients. However, the minimal impact on VA suggests that structural improvements alone may not restore visual function, underscoring the need for comprehensive, individualized approaches. While LFK showed limited additional benefit, its potential role as a supplementary therapy warrants further exploration. This research highlights the importance of a multifaceted approach to addressing the complex challenges of diabetic maculopathy management.

COMPARISON OF ICARE REBOUND AND NIDEK AIR-PUFF TONOMETRY, AND FACTORS INFLUENCING THEIR RESULTS

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Keywords. Rebound tonometry; Air-puff tonometry; Intraocular pressure (IOP); Central corneal thickness (CCT)

Objectives. Glaucoma is one of the leading causes of irreversible vision loss and blindness worldwide. Early diagnosis of glaucoma and intraocular hypertension are based on measuring IOP. Therefore, it is essential to choose the most suitable device for measuring IOP. Nowadays, several tonometry methods are available. The aim of this study was to compare IOP readings obtained using rebound (ICare ic100) and air-puff tonometry (NIDEK Tonoref III).

Materials and methods. Total of 40 patients (79 eyes) from Pauls Stradiņš Clinical University Hospital Ophthalmology department were included in the study. IOP was measured on each subject always in the same order – ICare then NIDEK tonometry. Additionally, age, CCT and a brief ophthalmological history were recorded. SPSS 30.0 was used for statistical analysis.

Results. The mean IOP values with NIDEK tonometry was higher than those measured with ICare tonometry in 65,82% of cases. IOP mean difference was higher in left eyes than in the right ones (OS: 0,95±1,90 mmHg; OD: 0,20±1,16 mmHg). There was a significant positive correlation between rebound ICare and air-puff NIDEK tonometry (OD: $r=0,954$, $p<0,001$; OS: $r=0,822$, $p<0,001$). A significant positive correlation was also found between CCT OD and ICare IOP OD ($r=0,550$, $p<0,001$); CCT OD and NIDEK IOP OD ($r=0,632$, $p<0,001$); CCT OS and NIDEK IOP OS ($r=0,455$, $p=0,007$). There was no significant data observed regarding the effect of topical IOP lowering medication on tonometry or pachymetry data ($p>0,05$). No statistically significant correlation was observed between age and IOP data ($p>0,05$).

Conclusions. This study shows a significant correlation between ICare and NIDEK IOP readings. Both methods are reliable and easy to use in routine practice without the need for anesthesia. However, when applying them, it is important to consider CCT and make necessary corrections to IOP readings.

CHANGES IN INTRAOCULAR PRESSURE IN GLAUCOMA PATIENTS AFTER CATARACT SURGERY

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Keywords. Cataract surgery; Glaucoma; Intraocular pressure (IOP), Anti-glaucoma surgery; Anti-glaucoma eye drops

Objectives. Data from The International Agency for the Prevention of Blindness states that glaucoma is the fourth largest cause of vision loss, affecting almost 8 million people globally. This study aimed to analyze the changes in intraocular pressure(IOP) in glaucoma patients before and after cataract surgery, comparing patients who have had glaucoma surgery and who are using glaucoma eyedrops.

Materials and methods. A case series of 18 patients with glaucoma undergoing cataract surgery from 2018 to 2024 at the Pauls Stradiņš Clinical University Hospital, Latvia was carried out. A total of 21 eyes undergoing cataract surgery were analyzed, dividing operated eyes into two groups – a prior glaucoma surgery (n=9) and the use of antiglaucoma eyedrops (n=12). The group using anti-glaucoma eye drops included patients treated with medications such as Cosopt (dorzolamide 20 mg/ml, timolol 5 mg/ml), Taflotan (tafluprost 15 micrograms/ml), Teptiqom (tafluprost 15 micrograms/ml, timolol 5 mg/ml), and Unitimolol (timolol 5 mg/ml). The main outcome studied was IOP and its dynamics. Descriptive statistical analysis using IBM SPSS 29.0.0.0 was done.

Results. The median IOP before the cataract surgery in the eyes that had a prior glaucoma surgery was 29 mmHg in comparison with the mean IOP of 21.5 mmHg in the group that used antiglaucoma eyedrops. After cataract surgery, the median IOP for the anti-glaucoma surgery group was 17 mmHg, and for the eye drop group, it was also. The median IOP reduction after cataract surgery was 14 mmHg in the anti-glaucoma surgery group and 4 mmHg in the eye drop group.

Conclusions. Based on these results, it can be concluded that a larger mean pressure difference is observed in the eyes of patients who previously underwent anti-glaucoma surgery compared to the group that used eye drops.

THE RESULTS OF PRESERFLO MICROSHUNT IMPLANTATION IN PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

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Keywords. PreserFlo MicroShunt; Glaucoma; Intraocular Pressure (IOP)

Objectives. Glaucoma is an optic neuropathy marked by the atrophy of the optic nerve head, visual field loss and increased IOP. PreserFlo MicroShunt implantation is a surgical treatment for primary open-angle glaucoma (POAG) that increases the outflow of aqueous humor and reduces IOP. This study aims to determine the effects of PreserFlo MicroShunt implantation on IOP in POAG patients at PSCUH.

Methods. In a retrospective study 7 POAG patients who had PreserFlo MicroShunts implanted in PSCUH from January 2023 until July 2024 were included. Data about gender, age, ophthalmological interventions and IOP were analyzed. IOP was measured by iCare method before and after surgery at different intervals (5-8x). Data analysis was done using Microsoft Excel and IBM SPSS Statistics.

Results. Out of 7 patients who were included in the study 28,6% (n=2) were male and 71,4% (n=5) were female. Mean age was 70,8 (SD=7,11) years. 8 eyes that had PreserFlo MicroShunt implanted were analyzed. Median IOP before the MicroShunt implantation was 27,5 mmHg (IQR=15) and a 36,44% (IQR 38,4) reduction in IOP was observed 1-day post-operation. Continuous IOP monitoring was done, after 1 year the IOP stabilized at median 12 mmHg (IQR=4). Complications were detected in 2 (25%) cases – MicroShunt occlusion and hyperfiltration. In 37,5% (n=3) of cases cataract surgery was done after the MicroShunt implantation. Median IOP before cataract surgery was 13 mmHg (IQR=3) and median 11 mmHg (IQR=2) after.

Conclusions. There was a decrease in the IOP value after the PreserFlo MicroShunt implantation, and IOP remained steadily within the normal range 1 year after the operation. Complications such as MicroShunt occlusion and hyperfiltration were observed. A slight increase in IOP before the cataract surgery and decrease after could be detected in patients who had cataract surgery after the MicroShunt implantation.

ANALYSIS OF RETINAL VEIN OCCLUSION AND CHANGES IN MACULAR OEDEMA IN PATIENTS WHO RECEIVE INTRAVITREAL ANTI-VEGF INJECTIONS

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Keywords. Retinal vein occlusion; Retinal thickness; Macular oedema; Anti-VEGF

Objectives. Retinal vein occlusion (RVO) is a thrombosis of a central retinal vein (CRVO) or its branches (BRVO). It is the second most common retinal vascular disease after diabetic retinopathy, resulting in possibly serious changes in visual acuity (VA). Anti-VEGF is used to decrease macular oedema (MO) after RVO, potentially improving VA. The aim of the study was to analyse patients with RVO and the changes in MO and VA after receiving anti-VEGF injections.

Materials and methods. A retrospective study from medical records was performed in 7 patients with RVO who received anti-VEGF injections (Bevacizumab 0.05ml). Retinal thickness (RT) was compared before and after anti-VEGF injections and with changes in VA. Data were analysed by IBM SPSS-29.

Results. 4 patients (57.14%) were male and 3 (42.86%) – female. Mean age was 77 years (SD=11.4). 4 patients (57.14%) had RVO in the right eye and 3 (42.86%) – in the left eye. 2 patients had CRVO, 3 patients had inferior BRVO, and 2 patients had superior BRVO. Using Wilcoxon test, median RT before anti-VEGF injections was 825µm (IQR=271) and after anti-VEGF injections – 282µm (IQR=216), results were statistically significant p=0.018. Linear regression revealed that RT statistically significantly predicted VA, $F(1,32)=15.449$, $p<0.001$, accounting for 32.6% of the variation in VA with adjusted $R2=30.5\%$. With every unit of increase of RT, VA decreases by 0.001 (95% CI (-0.001 to 0.000) units ($t=-3.931$, $p<0.001$). The prediction equation was: visual acuity=0.858+(-0.001*retinal thickness).

Mann-Whitney U test showed that median VA is better in the eye with BRVO – 30% (IQR=0.52) than in the eye with CRVO – 3%, although statistically insignificant (p=0.095).

Conclusions. After anti-VEGF injections MO decreased by ~66%. Linear regression was noticed between MO and VA. For more statistically significant results research with more patients is needed.

ASSOCIATION BETWEEN LASER PHOTOCOAGULATION AND DEVELOPMENT OF VITREOUS HEMORRHAGE IN DIABETIC RETINOPATHY PATIENTS UNDERGOING THERAPY WITH INTRAVITREAL INJECTIONS

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Keywords. Diabetic retinopathy; Laser photocoagulation; Vitreous hemorrhage; Peripheral retina

Objectives. Vitreous hemorrhage (VH) is a common cause of acute vision loss, with diabetic retinopathy (DR) being one of the most common risk factors. In diabetes mellitus patients, the prognosis for VH is less certain than in the general population. Retinal laser photocoagulation is a key treatment for DR and can be used as prophylaxis for VH. The aim of this study was to determine whether insufficient retinal laser photocoagulation or larger untreated zone is associated with a higher incidence of VH.

Materials and methods. This retrospective study analyzed medical records and retinal images from 24 eyes of patients with DR undergoing therapy with intravitreal anti-VEGF injections. Images were taken using Clarus Ultra-Widefield fundus camera (200° field of view). The retinal area untreated by laser was quantified using each individual patient's optic disc diameter as a reference. For data analysis Microsoft Excel and IBM SPSS were used.

Results. VH was observed in 11 out of 24 eyes. The maximum untreated retinal zone was 7,5 optic disc diameters. The mean untreated zone was 2,72±2,0 disc diameters in eyes without VH, compared to 3,39±2,5 in eyes with hemorrhage. A Mann-Whitney U test was performed to compare the size of the untreated retinal zone between the two groups and no statistically significant difference was found (U=60 000; p=0,503). The point-biserial correlation revealed a weak, non-significant association between the presence of VH and untreated retinal zone size (r=0,155, p=0,47, n=24), suggesting no strong linear relationship.

Conclusions. In patients with VH, the mean size of the untreated retinal zone was larger compared to patients without hemorrhage, suggesting that hemorrhages may be more common when the untreated zone is larger. However, the observed association was not statistically significant, highlighting the need for further research including more patients.

CLINICAL PROFILE AND RISK FACTORS FOR VITREOUS HEMORRHAGE IN DIABETIC RETINOPATHY PATIENTS RECEIVING ANTI-VEGF INTRAVITREAL INJECTIONS

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Keywords. Diabetic retinopathy; Vitreous hemorrhage; Diabetes mellitus

Objectives. Diabetes mellitus is a prevalent condition with a growing global impact, often leading to retinal complications like diabetic retinopathy (DR). DR is one of the most common risk factors for the development of vitreous hemorrhage (VH), which can lead to acute vision loss. The aim of this study was to determine risk factors and the profile of DR patients who develop VH.

Materials and methods. A retrospective study was conducted on 37 eyes from 19 patients with DR who received anti-VEGF intravitreal injections. Data on gender, age, duration of diabetes, insulin use, intraocular pressure, and other factors were analysed using Microsoft Office and IBM SPSS.

Results. VH was observed in 15 of 37 eyes. The mean age of patients without VH was 67,29±10,7 years, compared to 54,60±18,7 years in those with hemorrhage. An independent samples t-test revealed a statistically significant difference in age between the two groups ($t=2.4$, $p=0.026$, Cohen's $d=0.89$), with patients with VH being younger than those without. However, no statistically significant differences were found between VH and either the duration of diabetes ($p=0,665$; $p>0,05$) or the number of intravitreal injections ($p=0.39$; $p>0.05$). A Chi-Square test revealed no statistically significant associations between VH and glaucoma ($p=0.153$; $p>0.05$), laser photocoagulation ($p=0.368$; $p>0.05$) or arterial hypertension ($p=0.225$; $p>0.05$), however there was a statistically significant association between VH and insulin use ($p=0.011$; $p<0.05$). Mann-Whitney U test showed no statistically significant difference between VH and intraocular pressure ($p=0.063$; $p>0.05$).

Conclusions. Of the eyes studied, 68,5% were from patients with diabetes for over 20 years and 94,6% had undergone retinal laser photocoagulation. Patients with VH tend to be younger than those without. Additionally, a significant association was observed between VH and insulin use, indicating that patients using insulin were more likely to develop VH.

ANALYSIS OF BRACHYTHERAPY TREATMENT PARAMETERS FOR UVEAL MELANOMA AND PATIENT CHARACTERISTICS AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL IN 2023

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Keywords. Uveal melanoma; Bracytherapy

Objectives. Eye melanoma is a rare intraocular cancer requiring precise treatment to preserve vision and minimize complications. Brachytherapy delivers high radiation doses directly to the tumor while sparing healthy tissues. This study analyzes applicator types, dwell times, patient and tumor characteristics in uveal melanoma patients treated at Pauls Stradiņš Clinical University Hospital in 2023.

Materials and Methods. Data from 23 uveal melanoma patients treated with brachytherapy in 2023 were analyzed. Variables included patient and tumor characteristics, applicator type, dwell time, delivered radiation dose, and ophthalmological status. Statistics were analyzed using SPSS.

Results. Study included 23 patients (74% female, 26% male), mean age was 67 years (range 40–85). Secondary retinal detachment affected 52% (n=12) of cases. Senile cataracts were present in 48% (n=11), vitreous destruction in 78% (n=19), glaucoma in 26% (n=6). Peripheral and central retinal dystrophies were found in 26% (n=6) and 22% (n=5) patients. Phacosclerosis (9%) (n=2), presbyopia (4%), papilloma (4%), epiretinal membrane (4%), and vitreochorioretinal dystrophy (4%) (n=1) were observed. Artephakia was noted in 22% (n=5) of cases, and tumor recurrence in 21% (n=5). COB applicators were used in 13% (n=3), CAA in 39% (n=9), and CCB in 48% (n=11). Right eye was affected in 44% (n=10) and left eye in 56% (n=13). Tumor dimensions averaged 5.63 mm in height (SD = 2.97) and 10.78 mm in width (SD = 3.19). The mean hospital stay was 6.62 days (SD = 2.39), and applicator retention time averaged 5863 minutes (min=1140, max=12978). For 52% (n=12) patients, a dose of 140 Gy was used; for others, doses ranged from 60 to 120 Gy.

Conclusions. The most frequently used applicator was CCB, and the most common radiation dose was 140 Gy. Vitreous destruction was the most frequent ocular comorbidity. Further research is required to assess long-term effectiveness.

CHANGES IN CORNEAL KERATOMETRY, PACHYMETRY AND VISUAL ACUITY AFTER THE CONVENTIONAL CLX PROCEDURE: 10-YEAR OUTCOME

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Keywords. Keratoconus; Corneal collagen crosslinking keratometry

Introduction. The standard or conventional corneal collagen crosslinking (CCXL) helps to stabilize progressive keratoconus, using ultraviolet (UV) light at power 3mW/cm2 for 30min. This treatment method`s main concept is a creation of corneal collagen bonds, due to a photochemical reaction, based on UV light absorption by riboflavin.

Objective. The objective of this study is to analyze changes in keratometry, pachymetry and visual acuity over a10- year period after a conventional CXL procedure.

Materials and methods. This retrospective analytical study included 32 eyes of 32 patients who underwent CCXL 10 or more years ago. Data on keratometry, pachymetry and visual acuity were obtained from the outpatient medical records, Oculus Pentacam® and ATLAS®. The study compared preoperative data with outcomes at the 1st, 5th, 10th years after the procedure.

Results. Over 10 years, the median of K mean decreased from 46,38 D to 44, 52 D ($p<0,001$) compared to preoperative data; the median pachymetry value decreased from 452 μm to 431 μm ($p<0,001$); the median cylinder value decreased from 4,23D to 3,10D ($p<0.040$). The median of uncorrected distance visual acuity didn’t change significantly ($p=0,156$), nor did the median of best-corrected visual acuity ($p=0,283$). The study didn`t reveal any significant changes in any of the studied parameters between the fifth and tenth years.

Conclusions. The study showed statistically significant corneal flattening over the years, as evidenced by the decrease in K mean and cylinder median values. These results show the effectiveness of the conventional cross-linking procedure in stabilizing of progressive keratoconus. However, the study revealed statistically significant corneal thinning after the procedure. As for visual acuity, no significant improvements were observed when comparing outcomes to preoperative data.

CENTRAL RETINAL THICKNESS AFTER BEVACIZUMAB INJECTIONS WITH CORRELATION TO FLUID LOCALIZATION

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Keywords. Intravitreal Injections; Anti-VEGF; Central Retinal Thickness; OCT

Objectives. Intravitreal Bevacizumab, an anti-VEGF therapy, is widely used to treat retinal diseases such as neovascular age-related macular degeneration (AMD). Central retinal thickness CRT), a key biomarker of disease activity, reflects fluid accumulation in distinct retinal compartments. This study evaluates CRT changes after bevacizumab injections and their correlation with fluid localization within the retina.

Materials and Methods. This retrospective study included 20 patients treated with intravitreal bevacizumab for retinal diseases, including neovascular AMD. All patients underwent at least two injections, with the majority receiving multiple treatments. Optical coherence tomography (OCT) scans were performed between two consecutive injections to evaluate changes in CRT and the localization of fluid (subretinal, intraretinal, or pigment epithelial detachment (PED)). Statistical analysis was conducted using SPSS.

Results. Patients received an average of 9 Bevacizumab injections (range: 3–25), with OCT scans performed between two consecutive injections. Patients receiving more injections tended to exhibit greater CRT reductions regardless of fluid localization. The mean central retinal thickness (CRT) decreased from 412.05 μm to 359.5 μm, with an average reduction of 52.55 μm. Fluid localization significantly influenced CRT changes. Patients were divided into two groups based on fluid localization: Group A (Intraretinal Fluid, n=14) and Group B (PED, n=6). Group A showed a mean CRT reduction of 49.14 μm (from 440.36 μm to 391.21 μm) with patients receiving an average of 9.29 injections (range: 3–25). Group B demonstrated a greater mean CRT reduction of 60.50 μm (from 346.00 μm to 285.50 μm) with an average of 8.33 injections (range: 3–22).

Conclusions. Bevacizumab significantly reduces CRT in patients with intraretinal fluid and PED, with larger reductions observed in the PED group. A higher number of injections is associated with greater CRT decreases, emphasizing the importance of consistent treatment.

SPHERICAL ABERRATION CHANGES IN PATIENTS UNDERGOING REFRACTIVE SURGERY BY FEMTO LASIK AND SMILE PRO TECHNIQUES

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Keywords. Spherical aberration; Myopia; Refractive surgery

Objectives. Spherical aberration (SA) is an optical phenomenon in which light rays entering the eye through the peripheral and central regions of the cornea fail to converge at the same focal point, causing a blurred image in low-light conditions. This study aims to compare SA changes after refractive surgery using Femto LASIK and SMILE Pro techniques.

Materials and methods. A retrospective study included 52 patients (n=103 eyes) with myopia. The data were divided into two groups based on surgical methods: Femto LASIK (n=66 eyes) and SMILE Pro (n=37 eyes). The spherical component from autorefractometry was analyzed to evaluate the effect on visual acuity improvement. Corneal Z40 from OCULUS Pentacam® Zernike analysis (pupil diameter of 6 mm) was used to assess changes in SA. The impact of surgical method and myopia level on postoperative SA was also evaluated. Data were collected from medical records preoperatively and one month postoperatively using Microsoft Excel and analyzed by IBM SPSS 29.

Results. Wilcoxon signed-rank test revealed a significant improvement in refractive error in all eyes (positive differences for all 103 eyes postoperatively; $Z=8.813$, $p<0.001$). Paired samples t-test showed a significant difference in SA postoperatively, $t(102)=7.028$, $p<0.001$. The mean increase in SA was higher for Femto LASIK (0.175 μm, SD=0.170) than for SMILE Pro (0.012 μm, SD=0.101). Kruskal-Wallis test revealed a significant difference in SA among different myopia levels ($p<0.001$). Femto LASIK group showed a larger mean SA rank difference between low and high myopia levels than SMILE Pro group (39.28 vs.15.53).

Conclusions. Femto LASIK method has a greater effect on SA than SMILE Pro. Furthermore, postoperative SA increases more in patients with a higher myopia level. This indicates that SA is less affected by SMILE Pro technique and lower degrees of myopia, which may predict better image quality.

CHANGES IN ULTRASONOGRAPHIC IMAGE OF THE VITREOUS BODY BEFORE AND AFTER INTRAVITREAL INJECTIONS COMPARED TO UNTREATED EYES

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Keywords. Floaters; Opacities; Intravitreal injection; Vitreous body.

Objectives. Intravitreal injections are used to administer medication to treat several eye conditions, including an exudative form of age-related macular degeneration (ARMD) and other eye conditions.

Materials and methods. In a retrospective study, 17 patients (n=28 eyes) were included. 18 eyes with exudative form of ARMD who underwent intravitreal anti-VEGF injections with Bevacizumab between March of 2017 and November of 2024 and 10 non-injected eyes were compared. 15 minutes before and after the last intravitreal injection, USG scans were performed. A 15 MHz probe using B-scan and constant parameters (G=110dB, Dyn=37 dB, TGC=10dB) was used, and application technique – through the lids. USG scans before and after intravitreal injection were evaluated, and the number of floaters in the vitreous body was counted by the ImageJ program. Data analysis was done by IBM SPSS 29 and Microsoft Excel.

Results. The median age of the patients was 78.5, IQR=8. Wilcoxon Signed rank test showed a statistically significant increase in the number of floaters before and after intravitreal injection ($Z=3.75$, $p<0.001$) in all injected eyes (n=18). The median difference in floaters before and after intravitreal injection was 4.50, IQR=8.75. There was no statistically significant difference in floaters in eyes without injection (median=0.00, IQR=2.25, $p=0.104$) in control USG. The injected eyes were divided into two groups based on the number of injections: those with fewer than 10 injections and those with more than 10 injections. Mann-Whitney U Test revealed a significant mean difference in "floaters before" in eyes with more injections previously (6.19 vs 12.15; $p=0.016$).

Conclusions. An objective increase in the number of vitreous opacities in USG images following intravitreal injection may explain the patients' subjective complaints about floaters in front of their eyes. Patients who underwent more intravitreal injections had more floaters prior to injection.

DENTISTRY, MAXILLOFACIAL SURGERY, OTORHINOLARYNGOLOGY

QUANTITATIVE ASSESSMENT OF TRABECULAR BONE DENSITY IN MANDIBULAR CONDYLE VIA CONE-BEAM COMPUTED TOMOGRAPHY AS A PROGNOSTIC INDICATOR OF OSTEOPOROSIS

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Keywords. Mandibular condyle; Bone mineral density; Osteoporosis

Objectives. Studies suggest osteoporosis may compromise the temporomandibular joint components. Cone-beam computed tomography is increasingly utilized in dental practice, offering the potential for assessing osteoporosis risk. This study aims to investigate changes in the trabecular bone density of the mandibular condyle (BDMC) in patients with reduced bone mineral density (BMD) and assess the prognostic effectiveness of BDMC in determining osteoporosis risk.

Materials and methods. A retrospective case-control study design included 186 postmenopausal women (mean age 68,58±7.82 years). BMD was evaluated using dual-energy X-ray absorptiometry (DXA) scans of the lumbar spine and femoral necks. Patients were classified into three groups based on their lowest T-score: normal BMD (T-score≥-1.0), osteopenia (T-score<-1.0to-2.5), and osteoporosis (T-score≤-2.5). CBCT imaging was performed using the i-CAT Next Generation (KaVo Dental GmbH), to obtain a condylar head reconstruction of the mandible in the coronal plane. BDMC was measured by defining a region of interest (20x20 square) within a trabecular bone and recording mean grayscale density values. BDMC performance for osteoporosis prediction was assessed by AUC, with sensitivity, specificity, PPV, NPV from a dichotomous 2×2 table.

Results. Among participants, 35.5% had normal BMD, 46.2% had osteopenia, and 18.3% had osteoporosis. Average BDMC values were -7.33±101.63 pseudo-HU values for normal BMD, -22.99±107.97 pseudo-HU values for osteopenia, and -85.54±96.30 pseudo-HU values for osteoporosis. A significant difference was observed between the normal BMD and osteoporosis (p=0.001), and osteopenia and osteoporosis groups (p=0.010). BDMC showed moderate diagnostic accuracy (AUC=0.7) with a sensitivity of 76.46%, specificity-60.53%, and a cutoff point -37,45 pseudo-HU values.

Conclusions. The trabecular bone density in mandibular condyle (BDMC) in patients with osteoporosis is significantly reduced compared to those with normal BMD, suggesting its moderate

CRITERIA AND PROGNOSTIC FACTORS FOR SUCCESS OF IMMATURE THIRD MOLAR AUTOTRANSPLANTATION: SYSTEMATIC REVIEW AND META-ANALYSIS

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Keywords. Autotransplantation; Immature third molars; Survival rate; Success rate; Prognostic factors

Objectives. Autotransplantation of immature third molars is a viable treatment for replacing missing teeth, offering potential benefits such as pulp revascularization and periodontal healing. This study aims to evaluate survival and success rates while identifying prognostic factors that influence outcomes.

Materials and methods. A systematic review and meta-analysis were conducted following PRISMA 2020 guidelines. Literature searches were performed in PubMed, ScienceDirect, and EBSCOhost databases up to May 2024. Nine studies met the inclusion criteria, providing data on the survival and success rates of autotransplanted immature third molars. Statistical analysis was conducted using MedCalc, applying a random-effects model to compute pooled survival and success rates.

Results. The pooled survival rate of autotransplanted immature third molars was 91.9% (95% CI: 85.1%–96.7%), while the success rate was 90.2% (95% CI: 79.8%–97.1%). Key prognostic factors included the developmental stage of the donor tooth, with better outcomes in teeth classified between Moorrees stages R ¼ to R 3/4. Innovative techniques such as platelet-rich plasma (PRP) and computer-aided rapid prototyping (CARP) were identified as beneficial for healing and integration. Fixation strategies also played a critical role, as excessive stabilization was associated with increased risks of ankylosis and inflammatory root resorption.

Conclusions. Autotransplantation of immature third molars demonstrates high survival and success rates, making it a promising alternative to dental implants. However, variability in success criteria and follow-up protocols limits standardization. Future research should focus on refining success definitions, extending follow-up periods, and further investigating the impact of root development stages and fixation techniques to improve clinical outcomes.

ANALYSIS OF TOOTH MORPHOMETRY IN SELECTED SAMPLE: COMPARISON TO EXISTING DATA AND GOLDEN RATIO ALIGNMENT

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Keywords. Tooth Morphometry; Dental Morphology; Golden Ratio; Anthropological Dental Studies

Objectives. This study aims to analyze human tooth morphometric parameters in a selected sample and compare them with different populations to explore variations in dental morphology.

Materials and methods. The sample consisted of eighty permanent teeth obtained from the material of the Laboratory of Anatomy of the Institute of Anatomy and Anthropology at Rīga Stradiņš University. Measurements were conducted using a digital caliper to record the mesiodistal and labiolingual widths; crown, root and total tooth lengths. Ratios of root-to-crown and total tooth-to-root length were calculated and compared to the "Golden Ratio" (1.618). Data published from various populations were utilized for comparative analysis, employing statistical tools such as weighted averages, standard deviations, standard errors, T-values, and 95% confidence intervals (CIs) to analyze the results.

Results. The current sample exhibited larger mesiodistal and labiolingual dimensions, particularly in lower central incisors and upper second molars, and smaller mesiodistal dimensions in lower lateral incisors, both upper and lower canines, upper first molars. All other teeth groups showed mixed trends. Overall, selected sample teeth displayed intermediate sizes, in most cases larger than Indiand, Polonies, and Nepalese but smaller than American Negroes, Malaysian Chinese, and Southern Chinese populations. The upper canine group from the current sample most closely aligned with the golden ratio, while incisors and premolars deviated significantly. Sex-based analysis revealed that the selected sample tends to have smaller upper jaw canines and first molars than both sexes. Lower jaw lateral incisors, first and second premolars tend to be smaller, while central incisors and second molars exceed averages.

Conclusions. This study highlights the unique dental traits of the sample and emphasizes the need to update clinical and anthropological standards for different populations. The findings show the importance of utilizing this data to address gaps in existing literature.

ASSOCIATION BETWEEN SPHENO-OCCIPITAL SYNCHONDROSIS AND MANDIBULAR CONDYLE PERIPHERY MATURATION IN RELATION TO CHRONOLOGICAL AGE

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Keywords. Mandibular Condyle Cortication (MCC); Spheno-occipital Synchondrosis (SOS); Cone-Beam Computed Tomography (CBCT); Age estimation; Forensic medicine

Objectives. Observation of the maturation of spheno-occipital synchondrosis (SOS) and mandibular condyle periphery or cortication (MCC) could be essential in age estimation, for example, for legal and forensic medicine purposes. The aim of this study was to retrospectively determine and evaluate the possible association and correlation between the maturation of SOS and MCC in relation to chronologic age in 14-22 years old individuals' cone-beam computed tomography (CBCT) images, which were taken for orthognathic surgery treatment purposes or other clinical indications at the Institute of Stomatology of RSU.

Materials and methods. The study was conducted for a group of 230 individuals (135 females, 95 males) aged 14-22 years. Data was acquired from investigating the mid-sagittal and the sagittal section of CBCT images presenting respectively the SOS and the condyles. MCC was assessed bilaterally using a three-type system (Type I–III), and SOS fusion was evaluated using a four-stage system (Stage 0–3).

Results. Kruskal-Wallis test showed, that there are statistically significant differences in the age distribution of the right and left MCC types, as well as the SOS fusion stages ($p<0,001$). Statistically significant differences were found in the age distribution between all four SOS fusion stages in the MCC Type II and III groups of both condyles ($p<0,001$), but they weren't observed in the MCC Type I group of the right and left condyle ($p=0,743$ and $p=0,207$ respectively). Spearman's correlation analysis showed, that the correlation between the SOS fusion stages and MCC types was positive and statistically significant both between the parameters and with chronological age between genders ($rs=0,461–0,534$, $p<0,001$).

Conclusions. SOS fusion and MCC are reliable skeletal parameters for age estimation, thus they could be used as an adjunct method.

EVALUATION OF EARLY-STAGE LARYNGEAL CANCER IN MEN: TREATMENT OUTCOMES AND TOLMS RADICALITY – A 6-YEAR RETROSPECTIVE ANALYSIS

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Keywords. Laryngeal cancer; Transoral Laser Microsurgery; TOLMS; Radicality; Recurrence

Objectives. Laryngeal cancer is one of the most common oncological diseases in the head and neck region, particularly prevalent among male smokers and often diagnosed at early stages (T1 and T2). Transoral laser microsurgery (TOLMS) is a widely used minimally invasive technique for treating early-stage laryngeal cancer. This study evaluates the effectiveness of TOLMS, the achieved radicality, and the relationship between radicality and recurrence over six years in patients treated with this method.

Materials and methods. A retrospective analysis from Kaunas Clinics included 88 male patients with early-stage laryngeal cancer who underwent surgery between January 1, 2019, and December 31, 2024. Statistical analysis using SPSS summarized demographic and clinical data with descriptive statistics, and compared tumor stage, surgical radicality, and recurrence rates using chi-square tests, with $p<0.05$ considered significant.

Results. The study included 88 male patients, average age 68.6 years. Of these, 88.5% had risk factors like smoking, alcohol use, or toxic work exposure. The most common tumor type was infiltrative keratinizing moderately differentiated squamous cell carcinoma (95.4%), with four cases of sarcomatoid carcinoma (4.6%). R0 resection was achieved in 67 cases (76.1%), and histopathology showed no neoplastic changes in 63 cases (71.6%). Over six years, 10 recurrences occurred—7 within the first year and 3 between one and two years post-treatment. Recurrence was significantly associated with tumor stage (N) (Chi-square, $p=0.02$) and surgical radicality (Chi-square, $p<0.001$). Radicality was influenced by tumor stage (T) (Chi-square, $p=0.032$), with T1a being most frequent.

Conclusions. TOLMS is an effective, safe treatment for early-stage laryngeal cancer, achieving high surgical radicality (R0 resection in 76.1%). Recurrence rates were influenced by tumor stage (N) and surgical radicality, with most recurrences occurring within the first year. These findings support TOLMS as a valuable treatment for early-stage laryngeal cancer.

CRANIOFACIAL GROWTH DYNAMIC DIFFERENCES IN OVERWEIGHT AND OBESE CHILDREN AND ADOLESCENT PATIENTS

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Keywords. Stereophotogrammetry; Facial growth; BMI

Objectives. Obesity is a global epidemic affecting craniofacial growth. This study aims to identify and analyze differences in craniofacial growth dynamics among overweight, obese, and normal-weight children and adolescents aged 12 to 18 in Latvia, using stereophotogrammetric analysis of three-dimensional facial surface images acquired between 2012 and 2020.

Materials and methods. This prospective cohort study included 126 participants who were monitored prospectively between 2012 and 2020. Three-dimensional facial surface images were obtained using the stereophotogrammetric method every 6 months. The participants were weighted and measured throughout the investigation and divided into 3 groups based on their BMI. Thirteen facial landmarks were identified and recorded. Radar charts were constructed at the University at Buffalo. Radar charts were analyzed based on subjective interpretation of shape and symmetry.

Results. Facial growth patterns varied among BMI groups. Overweight and obese individuals demonstrated earlier onset of accelerated growth and distinctive acceleration patterns compared to normal-weight individuals. Earlier onset and accelerated growth, followed by a convergence of growth patterns, were observed in overweight males and females for exocanthion width, mid-endocanthion-subnasale(men-sn), and mid-endocanthion-labiale superius (men-ls). The radar charts revealed that the growth dynamics of these parameters in overweight males align between the ages of 13.5 and 16 years, and in overweight females between the ages of 13.7 and 15. In obese individuals, accelerated growth, followed by a convergence of growth patterns, was observed for the main vertical parameters mid-endocanthion-pronasale, men-sn, men-ls, midendocanthion-labiale inferius, mid-endocanthion-pogonium.

Conclusions. BMI influences facial growth dynamics during adolescence, with implications for orthodontic treatment planning and craniofacial development research. Across all regions, the general trend represents that overweight and obese individuals tend to experience accelerated growth during early adolescence compared to their normal-weight counterparts. However, by the late teenage years, growth patterns tend to converge across all weight categories.

THE USE OF AUTOLOGOUS PLATELET CONCENTRATES IN THE TREATMENT OF GINGIVAL RECESSIONS

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Keywords. Gingival recessions; Autologous platelet concentrates; Platelet-rich-fibrin; Root coverage

Objectives. The study aimed to evaluate the effectiveness of autologous platelet concentrates (APC) in improving clinical attachment level (CAL), probing depth (PD), root coverage (RC), keratinized mucosa width(KMW), gingival thickness (GT), and patient-reported outcome measures(PROMs) in the treatment of gingival recessions (GR).

Materials and Methods. This study was designed as a literature review. Systematic reviews and meta-analyses focusing on APC application in GR treatment were selected and analyzed. Inclusion and exclusion criteria included publication years (2019–2024), peer-reviewed publications, English-language studies, full-text availability, and research conducted on humans. Databases searched were PubMed, Wiley, and EBSCO, using the keywords: “platelet-rich-fibrin”, “PRF”, “autologous platelet concentrates”, “platelet-rich-plasma”, “PRP”, “gingival recession”, “root coverage”, A total of 299 articles were identified, with eight studies included in the final review. The risk of bias was assessed using AMSTAR-2.

Results. Among the reviewed studies, six compared coronally advanced flap (CAF) combined with platelet-rich-fibrin (PRF) to CAF combined with connective tissue grafts (CTG). No statistically significant differences were observed between groups for CAL, PD, or RC outcomes. However, CTG groups demonstrated superior results for KMW and GT. PRF application at the CTG donor site reduced postoperative pain and complications. CAF combined with PRF and CAF monotherapy were analyzed in five studies, showing statistically significant CAL improvement in PRF groups across all studies. However, PRF addition to CAF procedures did not improve PD or KMW outcomes.

Conclusions. CTG remains the gold standard for GR treatment, providing superior outcomes in KMW, GT, and RC. PRF application at CTG donor sites reduces postoperative pain and complication risks. PRF membranes used with CAF improve CAL, potentially increase GT, and support periodontal regeneration. To explore how PRF preparation methods and materials affect its properties further randomized clinical trials with standardized PRF preparation protocols are required.

CONVENTIONAL VS. 3D-PRINTED TEMPORARY DENTAL CROWNS: A MICRO-CBCT POROSITY ANALYSIS

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Keywords. Porosity; Temporary Dental Crowns; 3D Printing; Micro-CBCT

Objectives. Temporary dental crowns are essential in clinical dentistry but remain prone to complications. While both 3D printing and conventional methods have advantages, 3D-printed crowns often exhibit superior fracture strength. This study compares the porosity of crowns fabricated from bisacrylic resin (Protemp™4), cold-polymerizing paste-paste composite (Success CD), and 3D-printed crowns made from light-curing resin (V-Print c&b temp). Since porosity can compromise structural integrity and increase bacterial infiltration, understanding these differences is crucial for guiding clinical decisions and enhancing patient outcomes.

Materials and methods. Thirty-six temporary dental crowns, 12 for each of three material groups were fabricated and analyzed using micro-cone beam computed tomography (micro-CBCT). The groups included: (1) Success CD, (2) Protemp™4, and (3) V-Print c&b. Porosity was calculated as the percentage of pore volume relative to the total crown volume, and mean porosity as well as 95% confidence intervals were computed.

Results. Analysis of 36 temporary crowns (12 per group) revealed significant differences in porosity among the three fabrication methods. The V-Print c&b crowns demonstrated an average pore volume of 0.0029% (95% CI: 0.0013–0.0045%) of the total crown volume, compared with 0.072% (0.057–0.088%) for Protemp™4 (bisacrylic resin) and 0.09% (0.05–0.13%) for Success CD. This represents approximately a 30-fold reduction in pore volume for 3D-printed crowns compared to crowns made with conventional manufacturing methods.

Conclusion. This study highlights the substantially reduced porosity of 3D-printed light-curing resin crowns, showing a 30-fold decrease in pore volume relative to both cold-polymerizing (Success CD) and bisacrylic (Protemp™4) resin materials. As porosity can compromise mechanical integrity and promote bacterial colonization, the reduced pore volume observed in 3D-printed crowns suggests a potentially lower incidence of complications. These findings highlight the clinical advantages of 3D printing technology for temporary crown fabrication and support its growing use in optimizing patient outcomes.

INSIGHTS OF PARENTS' ATTITUDE TOWARDS MINIMALLY INVASIVE CARIES TREATMENT IN PRIMARY DENTITION

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Keywords. Pediatric dentistry; Minimally invasive dentistry; Parents' attitude; Qualitative research; Focused coding

Objectives. With an increasing understanding of caries aetiology, WHO has recommended prioritising minimally invasive methods (MID) for caries control. Studies have identified several barriers to implementing MID, including challenges related to dental professionals, the state healthcare system, and the attitudes of children and their parents toward treatment methods. This study aims to analyse parental attitudes toward non-invasive and minimally invasive caries treatment strategies for children in Latvia.

Materials and methods. After the Ethics Committee's permission (Nr.22-2/500/2021) a qualitative research methodology was used to explore parents' attitudes towards MID. This involved 19 semi-structured interviews with parents whose children had received MID treatment in a previous clinical study (Maldupa, Innes, et al., 2024) and parents whose children had undergone traditional dental treatment at the RSU Institute of Dentistry and had no previous MID experience. The interviews were recorded, transcribed verbatim, coded, and analysed using a focused approach.

Results. Parents perceive the availability of MID methods positively, as they offer effective alternatives that can reduce the child's discomfort and help avoid treatment under general anaesthesia. When evaluating the proposed methods, three categories influencing parental choice emerged: 1) effectiveness, 2) convenience and execution, 3) visual appearance and aesthetics. Internal contradictions were observed both between different methods and within the same method. These contradictions were linked to the child's and parents' previous dental experiences, information access, treatment outcomes perceptions, attitudes toward traditional approaches and general anaesthesia.

Conclusions. Parents in Latvia show a positive attitude towards using MID methods in primary dentition; however, the existing lack of information and availability is the main barrier to their implementation in clinical practice.

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OTOLARYNGOLOGY MANIFESTATIONS IN CYSTIC FIBROSIS AND IMPACT OF CFTR MODULATOR THERAPIES

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Keywords. Cystic fibrosis; CFTR mutations; ENT manifestations; CFTR modulator therapy

Objectives. Cystic fibrosis (CF) is an autosomal recessive genetic disorder caused by mutations in the CFTR gene, resulting in impaired chloride ion transport and the accumulation of viscous mucus. This contributes to multisystem complications, particularly in the respiratory, digestive, and also Ear, Nose and Throat (ENT) systems. Common ENT manifestations include chronic rhinosinusitis, nasal polyps, otitis media and many others. CFTR modulator therapies target the underlying protein defect, but their impact on ENT symptoms is underexplored. This study aimed to evaluate the prevalence and patterns of ENT symptoms in CF patients with different CFTR mutations and assess the impact of CFTR modulator therapies.

Materials and methods. A retrospective analysis of 62 CF patients in Latvia was conducted, categorizing them into four groups based on mutation type: (1) homozygous F508del (n=30), (2) heterozygous F508del (n=18), (3) no F508del allele (n=4), and (4) unknown mutation (n=8). ENT manifestations were analyzed before and after CFTR modulator therapy implementation. Statistical analysis was performed using SPSS.

Results. This study consisted of 62 patients (mean age: 14.8 years). ENT manifestations were analyzed across different anatomical regions. Overall therapy recipients (n=37) in the homozygous F508del group, chronic rhinosinusitis decreased from 0.233 to 0.036 episodes per patient post-therapy, while nasal polyposis reduced from 0.200 to 0.071 episodes. The heterozygous group showed similar improvements, with rhinosinusitis decreasing from 0.353 to 0.100 episodes and polyposis from 0.176 to 0.100 episodes. Post-therapy, both groups experienced significant reductions ($p<0.05$). Patients not receiving CFTR therapy (n = 25) exhibited static or worsening symptoms.

Conclusions. CFTR modulator therapy significantly reduces both ENT manifestations and the need for interventions in CF patients, with greater efficacy observed in homozygous F508del mutations. These findings support mutation-specific therapeutic approaches and further research is needed to assess long-term and mutation-specific effects.

PAEDIATRICS

COMPARISON OF FACTORS ASSOCIATED WITH AMBULANCE USE IN PAEDIATRIC PATIS

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Keywords. Ambulance use; Paediatrics

Objectives. Growing number of people use emergency ambulance for non-emergency reasons. This usage is leading to increased pressure on resources. Thus, it is important to understand what factors are associated with this usage.

Materials and methods. We performed a retrospective study of paediatric patients, ages 4 to 17, who were treated at the PED, from 1st – 30th of September 2020. In data collection, we included age, sex, method of arrival, triage category, symptoms, time from the first appearance of symptoms, clinical examination data and outcomes of the visit. We grouped triage into two categories, green – nonemergency, and yellow/red – emergency. Statistical calculations were performed using IBM SPSS Statistics 28.0 software. Statistically significant results were assumed with $p < 0.06$.

Results. We analyzed retrospective data from 1,496 children's records, 57.4% of whom were male. The most common reasons for ambulance arrival to the PED were trauma (32.6%), seizures (14.5%), and pain (11.7%). Similarly, for non-ambulance arrivals, the top complaints were trauma (48.5%), pain (13.5%), and fever with pain (6.1%). Most arrivals (587, 39.2%) occurred without an ambulance more than 24 hours after symptom onset. Among ambulance users, 115 (37.9%) also arrived after 24 hours. There was no significant difference in ambulance use based on symptoms, gender, or time since symptom onset. However, children with a temperature >38°C were more likely to arrive by ambulance (45% vs. 55%, $p=0.054$), as were those aged 13-17 (30.6% vs. 69.4%, $p<0.001$). No other factors, such as time of arrival or vital signs, were associated with ambulance use.

Conclusions. Assessing the data of patients who arrived at the PED with an ambulance it is apparent that age and high temperature were more likely to be associated with arrival by an ambulance. No other factors were significant in predicting arrival with an ambulance.

FEVER IN CHILDREN: A COMPREHENSIVE REVIEW OF ETIOLOGY, ASSESSMENT, AND MANAGEMENT

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Objectives. Fever, defined as a temporary elevation of body temperature above the normal range, is one of the most common symptoms prompting medical consultation in children. Despite being most often a natural immune response to infection, it remains a significant source of anxiety for parents. The theme is particularly relevant today due to ongoing advancements in diagnostic tools and evolving guidelines for fever management, aimed at distinguishing benign cases from serious underlying conditions. The aim of this review is to examine the causes, clinical evaluation, and evidence-based management strategies for fever in children to improve diagnostic accuracy and treatment outcomes.

Materials and methods. The research was conducted using PubMed, guideline websites, and Google Academic, focusing on studies published between 2011 and 2024. Keywords included 'fever in children', and 'pediatric fever management'. Overall there were reviewed 15 sources.

Results. Fever, defined as a body temperature of 100.4°F (38°C) or higher, is a common pediatric symptom often resulting from infectious diseases. Accurate assessment and appropriate management are essential to distinguish between self-limiting illnesses and serious conditions requiring intervention. Management primarily involves ensuring adequate hydration and comfort, with antipyretic medications recommended for children experiencing discomfort or pain. Recent studies suggest that routine use of antipyretics solely to reduce body temperature may not be necessary and that parental education on fever's role in illness is crucial.

Conclusions. Fever in children is typically a benign symptom indicative of the body's immune response to infection. Ongoing research, and updated clinical guidelines are vital to optimize care and alleviate concerns associated with pediatric fever. By refining treatment strategies and educating parents on when medications are appropriate, healthcare providers can ensure more effective and reassuring care for children and their families.

ADVANTAGES OF MODIFIED NUSS PROCEDURE FOR TREATING PECTUS EXCAVATUM

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Keywords. Thoracic surgery; Pediatric surgery; Pediatrics

Objectives. Dr. Donald Nuss developed a minimally invasive procedure in 1997 to treat Pectus Excavatum. Original techniques have been modified to enhance effectiveness and safety, including using right-sided thoracoscopy. Our study presents a further modification: left-sided thoracoscopy, ensuring direct visibility of the heart throughout the process.

Materials and methods. A retrospective study of 67 children who underwent a modified Nuss procedure at the University Children's Hospital of Cracow from 2016 to 2023 was conducted. Data on patient characteristics, surgery duration, hospitalization length, and surgical outcomes were collected. The procedure involved three incisions: two for the introducer, placed anteriorly to the heart and lungs and posterior to the ribs and sternum, and one for the thoracoscope. Our modification places the thoracoscope on the left side of the thorax for better heart visibility. The bar remains for 2 to 4 years before removal.

Results. Of the 67 patients, 62 were males. All patients had left-sided thoracoscopy. The average hospitalization lenght was 9 days (5-21). Pectus excavatum recurred in one patient (1.5%). Surgical complications occurred in 4 patients (6%), and early post-operative complications in 9 patients (13.4%). There were no significant gender differences in complications ($p=0.6$), early complications ($p=0.5$), recurrences ($p=0.9$), or surgical approach ($p=0.2$). Higher weight correlated with fewer complications (Spearman's rank index = 0.46).

Conclusions. The Nuss procedure is highly effective for treating pectus excavatum with a low risk of complications. Left thoracoscopy may reduce cardiac complications due to better visibility. Higher patient weight may indicate a lower risk of surgical complications.

EVALUATION OF INFLAMMATORY MARKERS CRP AND IL-6 IN THE EARLY DIAGNOSIS OF SEPSIS IN PEDIATRIC PATIENTS

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Keywords. Phoenix sepsis score; CRP; IL-6; Sepsis; Children

Objectives. In 2024 was published new Phoenix sepsis criteria for identifying sepsis in children. Consequently, it is necessary to determine an inflammatory marker which can suspect infection as early as possible. The aim of this study is to determine which inflammatory marker, CRP or IL-6, is a better early indicator of infection in pediatric patients with sepsis or septic shock and analyze the association between inflammatory biomarkers, hyperthermia and leukocytosis.

Materials and methods. Of 117 patients hospitalized in Children's Clinical University Hospital from 2017 to 2023, aged from 1 month to 18 years, 102 were included in retrospective study. Inclusion criteria – 1) CRP and IL-6 determined in blood sample, 2) sepsis or septic shock diagnosis established upon admission to the hospital. Spearman's correlation was applied to evaluate the relationships between leukocytosis, CRP, IL-6 levels, hyperthermia and Phoenix Sepsis Score. Mann-Whitney U test assessed differences across categorical variables.

Results. Spearman's rho test showed statistically significant positive correlation between CRP and IL-6 (Rho=0,228, p=0,021) as well as IL-6 and hyperthermia (Rho=0,257, p=0,009). Although 15,5% and 3,4% of patients had normal CRP and IL-6 levels, Mann-Whitney U Test showed no significant difference in the distribution of leukocytosis, CRP and IL-6 levels as well as hyperthermia between patients who had sepsis according to Phoenix Sepsis Score and who had not (p>0,05).

Conclusions. Inflammatory markers CRP and IL-6 are equally valuable indicators of infection. According to Phoenix Sepsis Criteria 23,1% of patients had sepsis or septic shock. That means 71,8% were over diagnosed using the International Pediatric Sepsis Consensus Conference criteria. Moreover, while analyzing data I discovered the need to pay more attention to blood pressure and coagulation panel because they represent an important part in diagnosis according to Phoenix Sepsis criteria and are rarely taken in pediatric population.

TRANSITION OF PEDIATRIC PATIENTS WITH INFLAMMATORY BOWEL DISEASE TO ADULT CARE – ARE YOUNG PATIENTS READY?

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Keywords. Inflammatory bowel disease; Transition to adult care

Objectives. Inflammatory bowel diseases (IBDs) are chronic gastrointestinal inflammatory disorders that often begin in adolescence. Transitioning adolescents with IBD to adult care is challenging, with insufficient disease knowledge impacting treatment adherence. This study evaluated patients' self-assessed independence, readiness for transition, and disease knowledge to identify gaps and develop targeted educational materials.

Materials and methods. This cross-sectional observational study included 14- to 18-year-old IBD patients hospitalized or attending outpatient visits at the Children's Clinical University Hospital (January–December 2024). Participants independently completed the "Rotterdam Transition Test" (RTT) questionnaire, developed by Martha A.C. van Gaalen et al., available in Latvian, English, and Russian. Eligible non-hospitalized patients were invited via phone and email. Self-assessed independence averaged 75.71%, and readiness for transition was 52.68%. A significant correlation was found between independence and age (p=0.013). Most patients reported no issues with disease acceptance or dependence on parents. The mean total RTT score was 54.57% (56.21% for girls, 52.36% for boys). Male sex was associated with lower scores, though not significantly (p=0.174). No significant correlations were observed between RTT scores and age (p=0.057) or disease duration (p=0.156). Patients demonstrated strong knowledge in basic disease aspects (name, symptoms, diagnostics, and medications) but struggled with topics such as fertility, childbirth, heredity, non-medication treatments, long-term consequences, and differences between pediatric and adult care.

Results. A total of 33 patients (mean age 15.89 years) were evaluated: 22 with ulcerative colitis, 10 with Crohn's disease, and 1 with indeterminate colitis. RTT reliability was moderate (Cronbach's alpha = 0.62).

Conclusions. Adolescents with IBD show limited readiness for transition to adult care, with significant knowledge gaps in fertility, heredity, and adult care differences. Targeted education is essential to improve transition outcomes.

INCIDENCE OF CASES OF PRECOCIOUS PUBERTY IN CHILDREN AT THE CHILDREN'S CLINICAL UNIVERSITY HOSPITAL OF LATVIA IN 2018 AND 2023

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Keywords. Precocious puberty; Overweight; Children; Tanner stages; Bone age

Objectives. The pandemic had a great impact on children and adolescents' daily life, these conspicuous changes acted as disruptors of children's normal development. Since the beginning of the pandemic, many studies reported an increase in the number of precocious puberty (PP) cases as well as a faster progression rate of puberty itself compared to the pre-pandemic years. Our study aim was to evaluate the incidence of new cases of early and precocious puberty before and after the COVID-19 pandemic in Latvia.

Materials and methods. Cases with ICD code E30.1 were retrospectively selected from the total number of cases 6383 in 2018 and 9383 2023. Data on children's age, gender, weight, height, sexual maturation, etc., were collected and analysed. Descriptive statistics was applied (IBM SPSS Statistics).

Results. During the evaluated periods, 13 (0,2%) new cases of precocious puberty were identified in 2018 and 19 (0,2%) in 2023, all female. The mean age of presentation was 7.33 ± 1,55 in 2018 and 7.74 ± 1,36 in 2023 (p=0.004). Obesity was observed in 4 cases in both years, overweight cases increased from 1 in 2018 to 6 in 2023 (p=0,385). Most cases (32,5%) presented with breast Tanner stage 2. The mean BMI percentile was 80.87 in 2018 and 68.84 in 2023 (p=0.290). Therapy was initiated in 5 cases in 2018 and 4 in 2023 (p=0.253). Most common clinical signs were increased breast size (64,51%; p=0,371), axillary hair growth (51,51%; p =0,249) and pubic hair growth (35,48%; p=0,687). Mean bone age advancement was 2,12 in 2018 and 2,02 in 2023 (p=0,826).

Conclusions. Our study did not find an increase in the incidence of precocious puberty after the pandemic. All PP cases were females. BMI percentiles showed no statistically significant differences, however overweight cases increased in 2023, suggesting a possible association with weight-related factors.

OPTIMIZATION OF INTRAVENOUS CONTRAST MEDIA DOSING FOR CT IMAGING IN PEDIATRIC CARDIAC PATHOLOGIES

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Keywords. CT scan; Intravenous contrast; Pediatrics; Cardiology

Objectives. CT imaging is a more and more used diagnostic method in pediatrics for cardiac pathologies. There are significant risks associated with high radiation doses and contrast side effects. Pediatric patients are particularly sensitive to the effects of radiation, and suboptimal doses of contrast can cause various complications or insufficient diagnostic quality. The aim of this research is to optimize the intravenous contrast dose for pediatric cardiac CT examinations to improve diagnostic accuracy.

Materials and methods. In this retrospective and prospective research were selected pediatric patients with suspected and diagnosed cardiac pathologies in Children's Clinical University Hospital from 2023 December to 2025 March. The research included 120 pediatric patients aged from 3 days to 18 years. Contrast agent dosages were calculated based on body weight (mg/kg) and adjusted for clinical indications. Post-imaging analysis indicated consistent enhancement levels in the heart chambers and major thoracic blood vessels, correlating with adjusted contrast agent volumes. Hounsfield units (HU) were measured in the heart chambers and major blood vessels of the chest. Data was analysed by IBM SPSS statistics.

Results. For most pediatric patients, the optimal contrast agent dosage ranged from 1.2 to 2.5 ml/kg of body weight. Enhancement of over 180 Hounsfield Units in each of these anatomical structures ensured high-quality diagnostic imaging. The relationship between increased contrast agent volume and improved image quality was significant in overweight patients and those with specific vascular and cardiac anomalies.

Conclusions. Patients with congenital heart defects and increased body weight require approximately 10-15% more contrast agent on average to obtain optimal diagnostic imaging.

PRIMARY PERCUTANEOUS TREATMENT FOR NATIVE AORTIC COARCTATIONS IN PEDIATRIC PATIENTS AT CHILDREN'S CLINICAL UNIVERSITY HOSPITAL: A 15-YEAR REVIEW (2008-2022)

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Keywords. Coarctation of the aorta; Primary percutaneous treatment; Balloon dilatation; Stenting

Objectives. Coarctation of the aorta (CoA) represents 5% to 8% of all congenital heart disease (CHD) and can lead to significant morbidity and mortality. Percutaneous treatment of CoA, including balloon dilation and/or stenting, is well established for children weighing over 20-25 kg and is often employed in infants with severe left ventricular dysfunction to avoid high-risk surgeries. In Latvia, all patients with CHD receive treatment, examinations, and follow-up care at the Children's Clinical University Hospital (CCUH) in Riga. This study aimed to analyze the mid-term outcomes of primary percutaneously treated patients with native CoA at CCUH, particularly focusing on the prevalence of arterial hypertension (AH), the need for antihypertensive treatment, re-interventions, and complications.

Materials and methods. Data on patient interventions were obtained from the CCUH database for diagnoses and percutaneous interventions that occurred before the age of 18 years between 2008 and 2022.

Results. 33 patients with CoA were treated percutaneously only. At the first intervention, the mean age was 9 years (5-11.5), and weight was 30 kg (21.6-33.5). Patients were follow-up the median of 6 years (min.0.5, max.14), the median age at the end of the study was 14 years. During follow-up, 51.5% (n=17) of patients required re-intervention (redilatation or restenting), while 9.1% (n=3) experienced significant re-coarctation due to somatic growth. At the end of the study, echocardiography revealed a higher LV mass index (p=0.032) and 48.5% (n=16) of patients had AH, all receiving antihypertensive pharmacological treatment: 21.2% (n=7) monotherapy and 18.2% (n=6) combined therapy.

Conclusions. Most patients required one or more re-interventions by adulthood after percutaneous treatment of primary CoA. We also found a very high prevalence of arterial hypertension (AH), requiring close monitoring and adjustment or intensification of antihypertensive therapy to prevent possible acute cardiac events.

RESULTS OF PAEDIATRIC HEART TRANSPLANTATION IN LITHUANIA

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Keywords. Congenital heart disease; Cardiothoracic surgery; Pediatric heart transplantation

Objectives. The aim of this study is to review the outcomes of pediatric heart transplantations performed in Lithuania from 2001 to 2024.

Materials and methods. A retrospective analysis was conducted which included all pediatric patients who underwent heart transplantation in Lithuania from 2001 to 2024. Data analyzed included patient age, sex, indications for heart transplant, organ waiting time, need for mechanical circulatory support prior to transplantation, and mortality.

Results. The study cohort consisted of 22 patients: 16 (72.7%) boys and 6 (27.3%) girls. Patients were categorized into three age groups: infants (n=5), children aged 1–12 years (n=11), and adolescents aged 13–18 years (n=6). The median age at transplantation was 2.25 years (1 month – 17 years). The median organ waiting time was 8.1 months (2 days – 3.64 years). Most common indications for heart transplantation were dilated cardiomyopathy (45.45%), congenital heart disease (31.82%), restrictive cardiomyopathy (13.64%), and hypertrophic obstructive cardiomyopathy (9.09%). Four patients (18.18%) required mechanical circulatory support before transplantation. Five patients (22.73%) died in the early postoperative period and two died (9.09%) in the late postoperative period. Median survival in this group was 18 days (7 – 62 days). The cumulative survival rate was 68.18%, with a median survival of 8.39 years (1 year – 19.5 years). Actuarial survival rates were 77.27% at 1 year, 63.64% at 3 years, 59.09% at 5 years, and 22.73% at 10 years.

Conclusions. Overall results of pediatric heart transplantations performed in Lithuania during the study period are good despite complex clinical situations and young age of the patients. More than two thirds of the patients survived the early postoperative period, with most of them living 5 or more years after the heart transplantation.

SLEEP DISORDERS IN CHILDREN WITH EPILEPSY IN LATVIA

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Keywords. Sleep; Sleep disorders; Epilepsy; Paediatric

Objectives. Sleep is essential for mental and physical health. Bad-quality sleep can affect the frequency of seizures, seizures can affect sleep patterns, or both. The objective was to compare sleep disorders in children with epilepsy and general population.

Materials and methods. A cross-sectional study was performed. Online questionnaires about various sleep problems were sent to all educational institutions of Latvia. Parents of children aged 2-18 years were asked to complete a questionnaire. The children were then divided in three groups according to their age: Group1 (2-5 years), Group2 (6-12 years) and Group3 (13-18 years). Data was analyzed using IBM SPSS Statistics software.

Results. Overall, 7618 parents participated in the study; 1.3% (n=102) kids had epilepsy. In Group2 and Group3, most of the sleep complaints were statistically significantly more frequent in children with epilepsy: difficulties in falling asleep (28.1% vs 18.1% and 60.0% vs 31.9%), fatigue (19.3% vs 10.3% and 84.0% and 51.1%), restless sleep (38.6% vs 17.7% and 60.0% vs 16.9%), nightmares (28.1% vs 16.5% and 24.0% and 10.8%), sleep terrors (12.3% vs 4.8% and 12.0% vs 1.7%), snoring (29.8% vs 17.3% and 40.0% vs 18.8%), overall bad sleep quality (15.8% vs 4.4% and 36.0% vs 9.2%), night wakings (21.1% vs 9.0% and 40.0% vs 10.6%). In Group1, only three sleep complaints were statistically more frequent in children with epilepsy: snoring (45.0% vs 19.0%), strange behaviour during sleep (50.0% vs 19.9%), and sleeping in parents' bed (85.0% vs 58.1%).

Conclusions. According to parents, children with epilepsy have more frequent sleep problems, especially after the age of six. Knowing this, specific questions about sleep problems should be asked for such children. Potentially, parents observe their children more closely if they have epilepsy.

CEREBRAL VENOUS THROMBOSIS IN PEDIATRIC PATIENTS: A CLINICAL REVIEW FROM LATVIA

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Keywords. Cerebral venous thrombosis; CVT; Pediatric thrombosis; Neuroimaging; Anticoagulation; Venous thromboembolism; Pediatric neurology; Thrombosis etiology

Objectives. Cerebral venous thrombosis (CVT), though rare in children, is the second most common type of venous thromboembolism in this age group, with an incidence of 0.3–0.6 per 100,000 annually. This study aimed to evaluate the prevalence, diagnostic methods, clinical features, etiologies, and treatment of CVT in Latvian children aged 28 days to 18 years.

Materials and methods. A retrospective study analyzed medical records of CVT cases treated at Latvia's Children's Clinical University Hospital (CCUH) from January 2015 to December 2024. Data were processed using IBM SPSS.

Results. Among 21 patients diagnosed with CVT, one case occurred in 2015–2016, while 20 were documented between 2017–2024, averaging 2.3 cases annually. The mean age was 8.5 years (11 months–17 years), with a near-equal gender distribution (52% male). Symptoms began in-hospital for 45% and externally for 57% of patients. Most patients (76%) were admitted directly to CCUH, with 24% transferred from regional hospitals. Headache (48%), drowsiness (33%), and focal neurological deficits (33%) were common symptoms. Neuroimaging, primarily MRI with venography, was used in 95% of cases. Elevated D-dimer levels were noted in 85% (median 1.21 mg/L). Thrombosis affected multiple sinuses in 70% of cases, commonly the sigmoid (35.9%) and transverse (28.2%) sinuses. Venous infarction occurred in 2 patients, and optical disc edema was observed in 25% of cases. Anticoagulation with low molecular weight heparin was administered in 95% of cases, with intensive care required in 35%. Otomastoiditis (43%) and oncology (25%) were leading etiologies. The average hospital stay was 27 days; one patient died.

PSYCHOLOGY

REVISION AND ADAPTATION OF THE FOURTH VERSION OF THE SPIRITUAL INTELLIGENCE SELF-REPORT INVENTORY (SISRI-24) INTO LATVIAN

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Keywords. Spiritual intelligence; Scale adaptation

Objectives. Research interest in spirituality and religiosity within psychology is growing globally. However, there is a lack of validated assessment tools to measure constructs related to spirituality, including spiritual intelligence, particularly in Latvia. The aim of the study was to adapt the revised Latvian version (Regzdiņa & Mārtinsone, 2019) of the Spiritual Intelligence Self-Report Inventory (SISRI-24, King & DeCicco, 2009) that is designed to measure spiritual intelligence.

Materials and methods. Based on prior findings indicating inconsistencies (Regzdiņa & Mārtinsone, 2019), four items (6, 8, 9, and 24) were revised and translated in Latvian. A total of 416 participants aged 19–87 (M = 41.54, SD = 13.28; 17% male) completed the updated Latvian SISRI-24 and sociodemographic questions. The entire SISRI-24 was adapted for use in Latvia (24 items, each rated on a 5-point Likert scale (0–4).

Results. The internal consistency of the scale is very high ($\alpha = .95$) and test-retest reliability is high ($r_{re} = .89$, $p < .001$). Mainly all item reaction and discrimination indices fell within the optimal range. Confirmatory factor analysis resulted in the same four factors as in the original scale, except that the weights of factors 14, 8, 16, 24 of the items were slightly above the limit and the model fit indices were found to be slightly sub-optimal.

Conclusions. The instrument has very high internal consistency, adequate psychometric properties and high test-retest reliability. This Latvian adaptation of the SISRI-24 shows the closest alignment to the original version among all previous adaptations. Given that the test effectively measures a multifaceted concept and its items align with the intended factor structure, 4th version of SISRI-24 can be considered generally suitable for use in Latvia for measuring spiritual intelligence. Further in-depth studies of the test factor structure are desirable.

EXPLORING DISCONNECTION FROM NATURE IN HIGHER EDUCATION: STUDENT-CENTERED SOLUTIONS

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Keywords. Disconnection from nature; Interaction with nature; Higher education; Students; Nature-based solutions

Objectives. This research was conducted within the RSU Erasmus project *GreenTouch: EcoMind Development for Higher Education Future* (2023-1-LV01-KA220-HED-000154847). The study aimed to explore students' disconnection from nature, identify key contributing factors, and examine potential solutions for strengthening their interaction with nature. The research addressed the following questions: 1.What are students' experiences of connection with and disconnection from nature? 2.What are the key factors contributing to students' disconnection from nature? 3.What solutions could help students overcome disconnection from nature?

Methods. The study employed an inductive qualitative approach with thematic analysis allowing themes to emerge from the data. Data was gathered via structured interviews with three focus groups: international students (n=5), international academic staff (n=6) from Latvia, Slovenia, Portugal and Cyprus, and Latvian students (n=9). Analysis was conducted using Quirkos software and Microsoft Word.

Results. A total of 92 initial codes were developed, refined into 36 codes, and grouped into 8 themes: students' experience in interacting with nature and forming a connection with it; the influence of social environment and culture on students' connection with nature; factors contributing to students' disconnection from nature; disconnection from nature: physical, emotional, and psychological signs; the academic environment as a contributing factor to students' disconnection from nature; the potential of digital technology in strengthening the connection with nature; support strategies for students to strengthen their connection with nature; solutions for reducing students' disconnection from nature.

Conclusions. This study identifies factors contributing to students' disconnection from nature and strategies to address it. Findings highlight that frequent interaction with nature strengthens connection, while its absence—due to academic workload, overuse of technology, and lack of green spaces—can lead to disconnection. Participants emphasized that university-led hikes, nature-integrated courses, and outdoor activities can foster students' connection with nature in higher education.

PSYCHOSOCIAL RISK FACTORS FOR DEPRESSION AND ANXIETY IN EUROPEAN POSTPARTUM WOMEN: A SCOPING REVIEW

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Keywords. Anxiety; Depression; Europe; Postpartum; Psychosocial risk factors

Objectives. Depression and anxiety are the most common mental health disorders influenced by a variety of psychosocial risk factors during the postpartum period. Despite the increasing prevalence of these disorders, there is a lack of a comprehensive overview of these psychosocial risk factors in Europe. This review aims to address this knowledge gap by mapping the existing literature and providing a comprehensive overview of depression and anxiety psychosocial risk factors in European postpartum women.

Methods. A scoping review methodology was applied following PRISMA guidelines (Tricco et al., 2018) and a six-step methodological framework by Arksey and O'Malley (2005). Using a search strategy that includes keywords and search strings, the following five databases - *ProQuest, Web of Science, Scopus, Medline*, and *Sage Journals* were systematically searched. Data screening and selection, based on predefined inclusion criteria, was conducted using the Rayyan platform with the triangulation carried out by two independent reviewers. Thematic analysis was used to synthesize the identified psychosocial factors.

Results. After screening 1219 articles, 30 studies published from 2019 to 2024 were included in further analysis. Of these, 21 studies examined postpartum depression or its symptoms, three focused on postpartum anxiety, and six studies addressed both. Studies encompassed a variety of psychosocial risk factors, the most frequent ones being problematic relationship with a partner (n=13), a lack of social support (n=9), stressful life events (n=6), financial difficulties or worries (n=6), single-parent status (n = 4), low maternal self-efficacy and lack of confidence (n= 3), unrealistic expectations of birth and motherhood (n= 3).

Conclusions. This study reviews diverse psychosocial risk factors for postpartum depression and anxiety, emphasizing the importance of early identification and targeted intervention to mitigate their impact on maternal mental health and improve outcomes for both mothers and their families.

SHOULD PORN BE BANNED BECAUSE IT PROMOTES HARMFUL SEXUAL BEHAVIOR IN ADOLESCENTS? A RAPID REVIEW

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Keywords. Harmful Sexual Behavior; Abuse; Factors; Pornography; Gender stereotypes

Objectives. With the COVID-19 pandemic, various countries introduced several epidemiological safety measures. With the pandemic, there had also been an increase in cases of online child sexual abuse. It was concluded that there had been a 106% increase in child sexual abuse, including direct contact abuse. Experiencing abuse can have negative consequences on individual behavior. Harmful Sexual Behavior is defined as the sexual behavior of minors that is inappropriate for their age results in negative consequences to others and the perpetrator. Research has identified various factors that may promote the development of harmful sexual behavior, but it has not been determined which are dominant. The aim of this study is to investigate the factors promoting Harmful Sexual Behavior in Adolescents.

Methods. A Rapid Systematic Review is being developed according to the PRISMA four-step scheme. The Review will have studies selected from the Rīga Stradiņš University electronic databases *ProQuest* and *ScienceDirect*. Studies will be included according to inclusion criteria: Studies of the last five years on harmful sexual behavior and its relationship with abuse, intellectual disabilities, social norms and pornography. The search terms that were used: *Harmful Sexual Behavior AND Adolescents*.

Results. 684 publications from *ProQuest* and 381 publications from *ScienceDirect* were selected. The total number of selected publications was 1065, of which 12 were duplicates and six were deleted. 1059 publications were evaluated by title and abstract according to the inclusion criteria. 145 publications were included in the rapid systematic review.

Conclusions. Initial results show a tendency that abuse, pornography and gender stereotypes predominate as promoting factors for Harmful Sexual Behavior. A more in-depth analysis is needed to better understand which factors dominate and how they connect.

DISCRIMINATION AND ITS TOLL ON PSYCHOLOGICAL WELL-BEING: HOMOSEXUAL EXPERIENCES IN LATVIA

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Keywords. Psychological well-being; Discrimination; Homosexuality

Objectives. Same-sex relationships were legally prohibited in Latvia until 1992. Although public attitude towards homosexual people have improved, data from survey conducted in 2024 shows that approximately 67% of homosexuals in Latvia avoid being open about their sexual orientation, because of discrimination they had experienced. The aim of this study is to determine whether there is a relationship between having experienced discrimination and reduced psychological well-being in the homosexual community.

Materials and methods. Data collection began on November 1, 2024 and will continue until February 2025, using the form on Visidati.lv website. The survey included test ‘’The Scale of Psychological Well-Being’’ and demographic questions about gender, age, sexual orientation and experience with discrimination. By the time of this study presentation, data had been collected from 99 people, aged 18 to 54 years (*M=28,24; SD=8,56*).

Results. Results showed that there is a statistically significant, moderately strong, positive correlation between the experience of discrimination and reduced psychological well-being indicators for homosexual people r_s=0.53 (p<0.01). A regression analysis was also conducted to identify which dimension of psychological well-being is most significantly impacted by discrimination. The results showed that discrimination has statistically significant, positive, strong impact on individual’s personal growth F(1.78)=132.588 (p<0.01) and R^2=0.630 indicates that experienced discrimination accounts for 63% of the changes in this dimension for homosexual people.

Conclusions. It is important to note that this study not only confirms the findings of previous research regarding the impact of discrimination on the psychological well-being of homosexual individual’s, but also introduces a new aspect: the relationship between personal growth and discrimination. This study contributes to the understanding that discrimination negatively impacts an individual’s ability to develop and fulfill their potential, which are key processes underlying human self-realization.

THE ROLE OF LEISURE-TIME PHYSICAL ACTIVITY ON STRESS SYMPTOMS AMONG MASTERS BASKETBALL PLAYERS

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Keywords. Leisure-Time Physical Activity; Masters Basketball Players; Stress Symptoms; Stress

Objectives. Stress is a common problem amongst Latvian population. The proportion of men with higher stress levels aged 55 to 64 in Latvia is rising every year. Regular physical activity throughout life is an effective means of reducing stress and improving emotional well-being. Moreover, physical activity encompasses not only sports but also energy expenditure through active leisure activities, which serves as an accessible and significant approach to stress management. The objective in this study is to assess the relationship between leisure-time physical activity and stress symptoms in masters basketball athletes.

Materials and methods. 57 male masters basketball players aged 51-81 (M age =64, SD=7.5 years) participated in the study. Stress symptoms were evaluated using scale from the abbreviated Latvian Clinical Personality Test (LCPT, Perepjolkina et al., 2021). Leisure-time physical activity was assessed using the Motor Reserve Questionnaire (MRQ, Ulmane et al., 2023), which allows for retrospective measurement of physical activity over a lifetime from 18 years of age.

Results. Pearson's rank correlation analysis showed a statistically significant moderate negative correlation between Leisure-time physical activity and symptoms of stress ($r = -0.326$, $p < 0.05$).

Conclusions. Elevated leisure time energy expenditure is significantly associated with a decreased probability of experiencing stress-related symptoms. The results of this study suggest a negative correlation between leisure-time physical activity and stress symptoms amongst masters basketball players, however further research is required to investigate specific types of leisure-time physical activity that reduce stress symptoms.

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THE PSYCHOSOCIAL LEARNING ENVIRONMENT OF HEALTH SCIENCE STUDENTS AND ITS ASSOCIATIONS WITH HEALTH AND STRESS

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Keywords. Learning environment; Stress; Health

Objectives. A number of studies show that the learning environment impacts student's well-being and health. A better understanding of the prevalence of different psychosocial factors in the learning environment can help create a safer environment. The study is aimed to determine the prevalence of psychosocial risk factors in medical students' learning environments and their associations with stress and health.

Methods. An in-depth 47-question survey was conducted in 2023/2024 in Vilnius University and Lithuanian University of Health Sciences. The questionnaire included previously validated tools enabling the assessment of the psychosocial learning environment: workload, the interaction of the students, teachers, and classmates, schedules, etc., questions on stress and subjective health evaluation, and a set of sociodemographic items. 206 students took part in the study. Chi-Square was used for statistical data analysis.

Results. The survey results showed that about 73% of students often /quite often feel stressed, and it related to uneven workload distribution ($p<0.001$), lack of time ($p<0.05$), poorly manageable schedule ($p<0.05$), difficulties with managing personal life and studies ($p<0.01$), unknowingness about where to appeal for violations of academic ethics ($p<0.05$). Only 38.5% of respondents evaluated their health state as good/very good. Worse health evaluation was related to stress-related factors mentioned above and lack of administration support ($p<0.05$), relationship with teachers ($p<0.05$), and violence among the students ($p<0.05$).

Conclusion. 73% of health science students often feel stressed, and only 38.5% of respondents evaluated their health state as good. The study shows that high workload, uneven distribution during the session, poorly manageable schedules, study-life imbalance, and academic ethics issues can be related to stress levels and health. Lack of administrative support, relationship with teachers, and violence among students related to health evaluation.

FAMILY RESILIENCE SCALE ADAPTATION IN LATVIAN

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Keywords. Resilience; Family resilience; Adaptation; Scale

Objectives. This study aim is to to adapt and validate the Family Resilience Assessment Scale (FRAS) in Latvian. Family resilience is defined as the ability of families to cope with challenges, adapt to difficulties, and recover from them. Recent studies highlight that families can serve as a resource to protect and support individuals during psychological struggles. The original scale, developed by Megan Sixbey Tucker, consists of 54 items and six subscales: communication and problem-solving, utilizing social and economic resources, maintaining positivity, family cohesion, spirituality, and viewing difficulties as part of growth.

Methods. The translation-back translation method was applied, and the scale was tested on 151 Latvian participants, who are atleast 18 years old, have one family member.

Results. Results showed high internal consistency for the overall scale (Cronbach's alpha = 0.94), although some items appeared redundant. Psychometric analysis revealed that 12 item response indexes and 8 discrimination indexes were outside acceptable limits. Three subscales (communication and problem-solving, utilizing social and economic resources, and maintaining positivity) demonstrated good reliability ($\alpha > 0.7$), while other subscales showed lower reliability. The subscale ''*viewing difficulties'' as part of growth had an* $\alpha = 0.51$, indicating unreliability. Two subscales- *family cohesion* and *spirituality*, were excluded due to low internal consistency. Subscale correlations were positive, supporting construct coherence. Convergent validity analysis revealed significant positive correlations between the Family Resilience Scale and resilience constructs. Divergent validity testing indicated a weak negative correlation between family resilience and genaralized anxiety.

Conclusions. In conclusion, the Family Resilience Scale is a reliable tool with potential, but improvements are needed. Future steps include exploratory factor analysis, refining item translations, and conducting test-retest studies. To reduce response fatigue, a shortened version of the scale should also be developed.

MEASUREMENT OF LOVE IN LATVIA: ADAPTATION PROCESS AND RESULTS OF THE CSI32 QUESTIONNAIRE

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Keywords. CSI-32; Relationship satisfaction; Test adaptation; Psychometric validation; Reliability; Latvian romantic relationships

Objectives. The study aimed to adapt and validate the Couples Satisfaction Index (CSI-32) for the Latvian context to providing a reliable and valid tool for measuring relationship satisfaction among couples. Originally developed by Funk and Rogge (2007), the CSI-32 is a widely recognized instrument for assessing relationship satisfaction. Given Latvia's high divorce rate, the need for a culturally and linguistically appropriate measure is critical for both research and clinical applications.

Methods. The CSI-32 was translated into Latvian by three independent translators, and an expert panel evaluated the semantic and cultural equivalence of the translation. The final version was tested in a pilot study involving 92 participants. Psychometric evaluations included assessments of internal consistency (Cronbach's alpha), factor analysis, and item-total correlations.

Results. The Latvian version demonstrated high internal reliability (Cronbach's alpha = 0.91). Factor analysis (Kaiser-Meyer-Olkin index = 0.88) confirmed the appropriateness of a single-factor model, with item discrimination indices ranging from 0.42 to 0.78. Convergent validity showed strong correlations with related scales. A few items with lower discrimination coefficients were identified for potential revision.

Conclusions. The Latvian adaptation of the CSI-32 is a psychometrically valid and reliable tool for measuring relationship satisfaction in Latvia. It is suitable for both research and clinical applications, providing valuable insights into relationship dynamics. Further validation across diverse social groups is recommended to ensure broader applicability. This instrument holds significant potential for supporting therapeutic interventions in the Latvian cultural context.

INTERNAL CONSISTENCY AND ITEM ANALYSIS OF THE PROTECTIVE FACTOR SCALE OF THE INSTRUMENT "RIGA COGNITIVE SCREENING TEST" (RITA): PILOT STUDY

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Keywords. Dementia; Protective factors; Psychometric properties

Objectives. Dementia is present among over 55 million people worldwide and the number of these patients keeps rising annually (WHO,2023). In Latvia, there are roughly 4500 dementia patients, and this number has been steady for the last 5 years (*Officiālās statistikas portāls,* 2023). The aim of this study is to check the validity of this instrument for further adjustments.

Materials and methods. 38 Latvian residents, aging from 52-83 (M = 66.89, SD = 7.49), 65.8 % of whom were women participated in the study. Sociodemographic questionnaire (gender, age, marital status, education, work, health, chronic diseases, weight, height, smoking, drinking) and newly developed "Riga Cognitive Screening Test" was administered. "Riga Cognitive Screening Test" protective factor scale consists of 6 subscales with 22 questions in nominal scale and continuous scales, thus Min-Max value normalization was conducted for data analysis.

Results. The internal scale consistency was 0.30 (Cronbach's alfa α between scales ranging from 0.16 to 0.69). Item discrimination indexes ranged between -0.24 and 0.48. Acceptable value for them is between 0.2 and 0.8, which some items do not meet. Upon removing education and occupation scales, the internal scale consistency was 0.75, which indicates that education and occupation could be separate factors from the rest of the scale.

Conclusions. RiTa shows low internal consistency and further work of the two subscales – education and occupation should be done. This pilot study shows that repeated analysis in a larger sample is needed.

THE IMPACT OF SCREEN-TIME ON ADOLESCENT MENTAL HEALTH IN LATVIA: AN EVALUATION OF EMOTIONAL DISTRESS AND PSYCHOLOGICAL WELL-BEING

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Keywords. Adolescents; Screen-time; Mental Health; Psychological Well-being

Objective. The increasing prevalence of device usage poses significant risks to adolescents' mental health. Data from the "Health Behavior in School-aged Children" study in Latvia in 2022 links prolonged screen time to sleep disturbances, stress, anxiety, depression, lower well-being, and reduced life satisfaction. This study explores the relationship between screen time and psychological health in Latvian adolescents, examining gender and age differences.

Methods. This cross-sectional study used data from the "Health Behavior in School-aged Children" 2022 survey (n=5920) among adolescents aged 11, 13, and 15. Daily screen time was analyzed separately for three types of activities on weekdays: TV/video viewing, computer use, and gaming. Crosstabs and Chi-square tests analyzed the relationship between daily screen time and mental health indicators (nervousness, irritability, sadness, and loneliness) as the outcome.

Results. Excessive daily screen time (6+ hours) for each activity separately was reported by 4.9-17.2% of girls and 9.4-18.8% of boys. In this group, compared to daily screen time up to 2 hours, nervousness, sadness, irritability, and loneliness are more pronounced in girls (64.3-69.9%, 51.0-55.3%, 69.2-73.6%, and 40.0-42.8% respectively, for all $p<0.001$), compared with boys (31.4-32.2%, 21.1-25.9%, 39.8-42.2%, and 20.8-23.4% respectively, for all $p<0.001$) for all activity types. Comparing excessive daily use to less than 2 hours of use, the difference was especially noticeable among adolescents aged 15: 55.4-59.9% vs 37.3-41.8% for nervousness ($p<0.001$), 57.9-65.8% vs 37.7-43.0% for irritability ($p<0.001$), 44.8-54.0% vs 29.4-34.2% for sadness ($p<0.001$), and 40.4-41.0% vs 21.3-25.9% for loneliness ($p<0.001$).

Conclusions. Among adolescents, especially girls, with excessive daily screen time, the prevalence of emotional distress and loneliness is significantly higher than among adolescents with daily screen time of up to 2 hours. Findings emphasize the need for preventive programs in Latvia to promote healthier digital habits and mitigate mental health risks.

ADAPTATION OF THE ANXIETY ABOUT AGEING SCALE (AAS) IN LATVIAN

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Keywords. Ageing anxiety; Adaptation; Psychometric properties

Objectives. Between 2000 and 2019, global life expectancy rose from 66.8 to 73.1 years, with projections suggesting it will reach 77.3 years by 2050. In the EU and in Latvia it is increasing every year. As life expectancy continues to rise, most people will live to old age, giving rise to a growing concern known as ageing anxiety. It is a specific type of worry characterized by negative feelings related to ageing. There is no validated measure to assess ageing anxiety in Latvia, hence the aim of the research is to adapt the Anxiety about Ageing Scale (AAS) in the Latvian context**.**

Methods. AAS has four subscales: fear of old people; psychological concerns; physical appearance; fear of losses; and consists of 20 items. The scale was translated, using forward and back translation, by four independent experts. The study is currently ongoing. According to requirements for adaptation studies, a sample of at least 200 Latvian-speaking adults is required. A pilot study was conducted with 114 participants, aged from 18 to 73 years (M = 37.3; SD = 16.1), 81 % women and 19% men. Participants are being asked to complete an online survey, consisting of a demographic questionnaire and the translated version of the Anxiety about Ageing Scale, using a 5-item Likert scale, where 1=completely agree, 5=completely disagree, lower score on the questionnaire indicating higher level of anxiety.

Results. Preliminary results of the exploratory factor analysis revealed a four-subscale structure, similar to the original scale. It is expected that Cronbach's alpha for all items will vary from .70 to .80 which would prove a satisfactory internal consistency. The item-difficulty index and the item-discrimination index would reach the criteria.

Conclusion. The measure would be psychometrically sound and reliable to measure ageing anxiety in the Latvian context.

RELATIONSHIP BETWEEN URBAN AGE-FRIENDLINESS AND MENTAL WELL-BEING IN MIDDLE-AGED AND OLDER ADULTS

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Keywords. Age-friendliness; Ageing; Mental well-being; Urban environment

Objectives. The relevance of the study stems from global ageing trends and the necessity to adapt the urban environment to enhance the quality of life for older adults. Age-friendliness describes environmental adaptation to the needs of older adults by ensuring accessibility, safety, and community involvement. Meanwhile, mental well-being encompasses emotional balance, a sense of purpose, and the quality of social relationships. The study aims to investigate the assessment of age-friendliness of place of residence, and mental well-being in middle-aged and older adults, as well as the relationship between the two factors.

Materials and methods. The study involved two standardized scales: the Age-Friendly Cities and Communities Questionnaire, and the Warwick–Edinburgh Mental Well-Being Scale. The participants were independently functioning individuals aged 50 and older, with a mean age of 66.23 years, residing in Latvia, fluent in Latvian. 31.8% of respondents were male, and 68.2% were female. Descriptive statistics and correlation analysis are employed to analyze the data using IBM SPSS software.

Results. Preliminary results of the study showed 50% of respondents reporting ease in accessing housing and 45.5% feeling integrated socially. Despite this, challenges such as mobility accessibility (45.5%) and transport difficulties (36.4%) were identified, highlighting barriers to full participation. Access to healthcare, including telemedicine (40.9%), was generally sufficient but showed significant variation. It is expected that most subscales of age-friendliness will demonstrate statistically significant positive correlations with mental well-being. The study is still ongoing.

Conclusions. The study highlights the importance of age-friendly environments in enhancing mental well-being among older adults. Secure housing and community support positively impact mental health, while mobility and transport challenges remain barriers. These findings emphasize the need for inclusive, supportive environments to address ageing population needs, with expected positive correlations reinforcing the value of age-friendly adaptations.

THE MEDIATING ROLE OF REPERTOIRE AND FEEDBACK MONITORING IN THE ASSOCIATION BETWEEN CONTEXT SENSITIVITY AND ANXIETY SYMPTOMS IN WOMEN WITH HISTORY OF INTIMATE PARTNER VIOLENCE

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Keywords. Context Sensitivity; Feedback Monitoring; Flexibility Sequence theory; Generalized Anxiety Disorder; Intimate partner violence; Regulatory Flexibility; Repertoire; Sequential mediation

Objectives. This study aimed to empirically test the Flexibility Sequence Theory (Bonanno, 2021) and find out whether context sensitivity, using repertoire and feedback monitoring as sequential mediators, predicts anxiety in women with history of intimate partner violence.

Materials and methods. Out of 745 women, who have completed the online questionnaire, a total of 437 women aged 18 to 67 years (M = 35.45, SD = 10.32) with experience of psychological, physical, economic, or sexual abuse were included in the study. Latvian versions of the following instruments were used to measure each variable: Context Sensitivity Index (CSI, Bonanno et al., 2020); Flexible Regulation of Emotional Expression Scale (FREE, Burton & Bonanno, 2016); Coping Flexibility Scale (CFS, Kato, 2012); Generalized Anxiety Disorder Scale (GAD-7, Spitzer et al., 2006), two attention-check questions and demographical questions.

Results. The results showed that context sensitivity was associated ($r_s = -0{,}12$, $p = 0{,}014$) and predicted (ß = –0,12; p = 0,014) lower anxiety symptoms. Similarly, feedback monitoring was associated ($r_s = -0{,}24$, $p < 0{,}001$) and predicted (ß = –0,24; p < 0,001) lower anxiety symptoms. Out of all three theory components, only repertoire did not statistically significantly associate ($r_s = -0{,}05$, $p = 0{,}26$) nor predict ($F(2) = 1{,}11$; $p = 0{,}29$) anxiety symptoms. Moreover, none of the mediation paths, neither through one mediator nor through two sequential mediators, were statistically significant.

Conclusions. The limitations of the adapted instruments and the lack of internal coherence of the theoretical model may explain the results. These findings indicate the role of context sensitivity and feedback monitoring in the development of anxiety symptoms and can serve as a basis for further development of the theory in the Latvian population.

CORRELATION BETWEEN NATURE RELATEDNESS AND PSYCHOLOGICAL WELL-BEING: A COMPARISON BETWEEN STUDENTS IN LATVIA, SLOVENIA AND CYPRUS

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Keywords. Nature relatedness; Psychological well-being; Connection to nature; Students; Latvia; Slovenia; Cyprus

Objectives. The relationship between nature relatedness and psychological well-being has gained attention in recent years, yet cross-country differences remain underexplored. The aim of this study is to investigate the correlation between nature relatedness and psychological well-being among university students in Latvia, Slovenia, and Cyprus. The primary objectives are to examine whether students' nature relatedness correlates with their psychological well-being and to compare the strength of this relationship across three European countries.

Materials and methods. As part of the "GreenTouch: EcoMind Development for Higher Education Future" project, a survey was conducted among university students in Latvia (n = 372), Slovenia (n = 386), and Cyprus (n = 399), of which 70,7% were women. Participants completed the Nature Relatedness Scale short version (NR - 6) and The Warwick-Edinburgh Mental Well-being Scale (WEMWBS). Spearman's correlation was performed to examine the relationship between nature relatedness and psychological well-being in each country. Additionally, Kruskal-Wallis H test was used to examine cross-country differences.

Results. Initial results indicated a weak positive correlation between nature relatedness and psychological well-being across all samples. Spearman's correlation results showed the strongest correlation in Latvia ($\rho = 0.363$, $p < 0.001$), followed by Cyprus ($\rho = 0.237$, $p < 0.001$) and Slovenia ($\rho = 0.210$, $p < 0.001$). The Kruskal-Wallis H test showed significant differences in nature relatedness ($p < 0.001$) and psychological well-being ($p = 0.020$) between countries. Further post-hoc testing is needed to determine which specific groups differ.

Conclusions. A weak correlation between nature relatedness and psychological well-being suggests that while nature relatedness may contribute to well-being, other factors likely play a more significant role in students' psychological health. Differences between countries may indicate the potential impact of geographical location and cultural attitudes on nature relatedness as a trait.

FROM REST TO TASK: EEG CORRELATIONS WITH WORKING MEMORY PERFORMANCE IN AGEING

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Keywords. Resting-state EEG; Aperiodic slope; Working memory; Ageing

Objectives. Resting-state EEG reflects spontaneous neural activity and is linked to cognitive functions. One variable of resting-state EEG, the aperiodic slope, reflects better cognitive functioning with a steeper slope. Ageing is associated with a decline in working memory performance and a flatter aperiodic slope, though no studies have explored the connection between these factors. While some research suggests a link between resting-state activity and executive functions, the evidence is contradictory. Since working memory is an executive function, this study investigates association between aperiodic slope steepness and visuo-spatial working memory in elderly adults.

Methods. The sample consisted of 14 older adults (mean age = 69.8 years, SD = 6.81), 86% of whom were female. Resting-state EEG was recorded with a 32-channel g.tec g.Nautilus wearable headset and gel electrodes, positioned according to the 10-20 system. Electrode impedance was kept below 50 kΩ. Data were preprocessed using EEGLAB v2024.1 in MATLAB R2024a, downsampled to 256 Hz, and recorded for 6 minutes (3 minutes with eyes open, 3 minutes with eyes closed). The median aperiodic slope steepness was calculated with the FOOOF algorithm in Python. Visuospatial working memory was assessed using the Corsi Block-Tapping Test and its reversed version.

Results. Spearman`s correlation was used for analysis because the normality assumption was not met for the Corsi test results. The analysis found no significant associations between the aperiodic slope steepness and the Corsi test (ρ=.092, p=.754), or the Backward Corsi test (ρ=-.278, p=.336).

Conclusions. Our results indicate that the aperiodic slope does not show a significant relationship with working memory performance in ageing. Further investigation is needed to explore potential relationships with the aperiodic slope, first in a larger sample, and second, using cognitive tests that assess other components of working memory, not just visuospatial aspects.

THE EFFECTIVENESS OF MEDITATION AND FITNESS YOGA IN IMPROVING VARIOUS SLEEP QUALITY FACTORS AND REDUCING ANXIETY LEVELS

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Objectives. To determine which method—meditation or fitness yoga—is more effective in improving sleep quality, sleepiness, time to fall asleep, sleeping pill use, and reducing anxiety in women.

Materials and Methods. 99 women participated in the study, with 50 in the fitness yoga group and 49 in the meditation group. Both groups completed their respective 8-week program via an online platform, including meditation audio/video lessons or fitness yoga video lessons. A self-assessment questionnaire measured sleep quality, daytime sleepiness, time to fall asleep, sleeping pill use, and anxiety, including the Epworth Sleepiness Scale and GAD-7 scale. Data were analyzed using IBM SPSS Statistics with descriptive statistics and non-parametric tests, comparing group results with the Mann–Whitney U test and pre-/post-intervention changes with the Wilcoxon signed-rank test.

Results. Sleep quality improved significantly in both groups. In the meditation group, 89.8% reported improvement in sleep quality, while 78% in the fitness yoga group. Daytime sleepiness, time to fall asleep, and anxiety levels decreased in both groups ($p<0.001$). Anxiety decreased in 77.6% of the meditation group and 76% of the fitness yoga group. The use of sleeping pills decreased in the fitness yoga group ($p<0.001$), but not significantly in the meditation group ($p=0.687$).

Conclusions. Both fitness yoga and meditation are equally effective in improving sleep quality, reducing daytime sleepiness, time to fall asleep, and anxiety. However, fitness yoga is more effective in reducing sleeping pill use.

ADAPTATION OF THE NEED TO BELONG SCALE INTO LATVIAN: VALIDATION AND PSYCHOMETRIC ASSESSMENT

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Keywords. Need to belong; Psychology; Loneliness; FOMO; Scale adaptation

Objectives. Belonging is a fundamental human need that significantly impacts mental health, cognition, and social functioning. While globally validated tools like the Need to Belong Scale (NTBS) are widely used, Latvia lacks a reliable instrument to measure the sense of belonging. This research aims to adapt and validate NTBS for the Latvian population by ensuring its linguistic accuracy, comprehensibility, and psychometric reliability.

Materials and methods. The NTBS, originally developed by Leary et al. (2005), was translated into Latvian through a rigorous process involving three independent translations and expert feedback. Based on expert opinions, responses from 12 participants were additionally collected to assess the comprehensibility of the translated statements. The final version is currently being tested among 200–300 Latvian-speaking participants of legal age. The study incorporates quantitative analysis, including descriptive statistics, reliability testing (Cronbach's alpha), and validity assessment (convergent and divergent) using established constructs like loneliness (UCLA Loneliness Scale) and fear of missing out (FOMO Scale). Data analysis is performed using SPSS, ensuring robust psychometric evaluation.

Results. Preliminary findings indicate high participant engagement and positive feedback on the comprehensibility of the Latvian NTBS version. Psychometric testing and data analysis are ongoing, with results expected to validate the scale's reliability and relevance in the Latvian context.

Conclusions. Adapting NTBS into Latvian has significant implications for psychological research and practice, enabling more precise measurement of the sense of belonging in Latvia. This tool will address a critical gap, supporting studies on interpersonal relationships, mental health, and social integration. While final validation is underway, this research represents a pivotal step in expanding psychological assessment tools for the Latvian population.

THE PET ATTACHMENT AND LIFE IMPACT QUESTIONNAIRE ADAPTATION TO LATVIAN

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[1] *Rīga Stradiņš University, Latvia*

Keywords. Pet; Attachment; Life impact; Adaptation; Questionnaire

Objectives. Interest is growing in the potential of animals to promote mental health, such as through attachment between people and their pets. A survey by the Riga Psychiatry and Narcology Center found that 84% of pet owners feel a positive impact of their pets on mental health. However, Latvia lacks tools to measure pet attachment and its link to well-being. Existing studies in Latvia on animals and human mental health, although limited, highlight the importance of further research in the field. This study aimed to conduct the first phase of the adaptation of the Pet Attachment and Life Impact Questionnaire. Pet attachment is based on John Bowlby's theory, which posits that children have an innate need for closeness to a person that is taking care of them. In the questionnaire, attachment to a pet is defined through security, love, and comfort, while life impact encompasses love, regulation, self-growth, and negative impact.

Methods. The study involved 30 participants aged 19 to 72 (M = 34.77, SD = 16.03 years; 76.7% women). The Pet Attachment and Life Impact Questionnaire, translated into Latvian, and a socio-demographic survey were used. Data collection was electronic.

Results. Item response and discrimination indices revealed six items outside acceptable boundaries, with item 12 having a discrimination index of 0.15. Internal consistency was high for three scales but low for the "Negative Impact" scale (Cronbach's alpha = 0.48). Pearson's correlation coefficient showed significant correlations between all scales except "Negative Impact."

Conclusions. Three of four subscales showed mostly good psychometric properties. Results indicate the need to revise or exclude certain items. Findings provide a basis for the next phase of the questionnaire's adaptation, which will include rephrased necessary statements and more participants.

PREVALENCE OF BINGE EATING AND ASSOCIATION WITH ADVERSE CHILDHOOD EXPERIENCES AMONG RĪGA STRADIŅŠ UNIVERSITY AND UNIVERSITY OF LATVIA MEDICAL STUDENTS

Author: ***Amanda Gailāne*** [1]
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Keywords. Binge eating disorder; Adverse childhood experiences; Self-esteem; Medical students; Mental health

Objectives. This study investigates the prevalence of binge eating among medical students and its relationship with adverse childhood experiences (ACE), self-esteem, and personal factors. The primary objectives of the research were to: assess the prevalence of binge eating among medical students at the Faculty of Medicine of Rīga Stradiņš University, and University of Latvia, explore the association between binge eating and ACE, examine the relationship between binge eating and self-esteem, and understand how daily rhythm and personal factors contribute to the development of binge eating.

Methods. An electronic questionnaire was administered to a sample of medical students, incorporating established scales such as the ACE Scale, the Rosenberg Self-Esteem Scale, and the Binge Eating Scale. Data were analyzed using SPSS to identify patterns and correlations.

Results. 153 students completed the questionnarie, 74,5% were female and 25,5% were male. 90,7% were in the age group 19-24 years. 52,3% were Rīga Stradiņš University medical students and 46,4% were University of Latvia medical students. Study show that there is an association between higher ACE scores and increased binge eating behaviors ($p<0.001$). Furthermore, lower self-esteem was found to show no significant correlation with higher levels of binge eating ($p=0.085$) and higher ACE scores ($p=0.003$). Other factors, including mental disorders such as depression, anxiety and obsessive compulsive disorder ($p<0.001$), were also found to influence the likelihood of engaging in binge eating behavior.

Conclusions. These findings suggest that medical students might be particularly vulnerable to binge eating, influenced by both early-life experiences, current lifestyle factors and mental disorder. Future research should explore intervention strategies aimed at reducing the impact of ACE on mental health and managing stress related to medical studies to reduce the prevalence of binge eating disorder in this population.

ADAPTATION OF AN IMPOSTOR PHENOMENON SURVEY IN LATVIAN

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Keywords. Adaptation; Impostor phenomenon; Psychometric properties

Objectives: The impostor phenomenon describes feelings of distrust towards one's own knowledge and abilities, despite academic and professional achievements indicating competence and capability. Reported prevalence rates of the impostor phenomenon vary widely, ranging from 9% to 82% in different studies. Although this phenomenon is not considered clinical in itself, it is closely related to anxiety, depression, and burnout. However, the possibilities of studying the impostor phenomenon in Latvia are limited, due to the absence of a validated assessment tool. Therefore, the aim of this pilot study was to adapt an Impostor phenomenon survey into Latvian.

Methods: The survey (Impostorism scale, Leary et al., 2000) was open-access, however permission from the author had still been received. The survey was sent out through social media. The survey consisted of 7 statements for which the participant had to answer in a scale of 1-5 (1- "Not at all characteristic of me" and 5- "Extremely characteristic of me"). The sample consisted of 109 participants (28 male, 81 female), 18-63 years old. The inclusion criteria were respondents who were fluent in Latvian, as well as at least 18 years old.

Results: The results showed acceptable internal consistency ($\alpha > 0,91$). Most items fell within the difficulty index range (1,8 to 4,2), with two exceptions. Discrimination indices were generally strong, with most values exceeding 0,7 (ranged from 0,68 to 0,78). The re-test data is still being collected. Additionally, the analysis of gender differences indicate that no statistically significant differences between genders were found ($p > 0,05$).

Conclusions: Based on the current pilot study results, the adaptation of the Impostor survey has been successful, however further reliability and validity analyses need to be done. Further research should include a larger, more diverse sample and focus more on differences between groups.

FERULIC ACID EXHIBITS MODULATORY EFFECTS IN A NEUROTOXICITY MODEL INDUCED BY GAMMA-HEXACHLOROCYCLOHEXANE

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Keywords. Ferulic acid; Gamma-hexachlorocyclohexane; Neurotoxicity; Behavioral changes; Antidepressant effects

Objective. Ferulic acid (FA) is a phytophenol that exhibits numerous neuroprotective effects, including anti-inflammatory, antioxidant and neuromodulatory properties. These effects form the basis for its testing in animal models of depression. One of these models is a model of neurotoxicity induced by gamma-hexachlorocyclohexane (HCH), a pesticide and scabicide with neurotoxic effects that can lead to the emergence of depressive behavior. Thus, the aim of this study was to investigate the modulatory effects of FA on behavioral changes present in neurotoxicity model induced by HCH, using forced swimming test (FST).

Methods. Male Wistar albino rats were divided into three groups: H in which we administered HCH at a dose of 0.5mg/kg i.p, F+H in which we administered FA at a dose of 40 mg/kg i.p, after which HCH was administered in a dose of 0.5 mg/kg i.p, and C in which we administered saline in a dose of 0.5 ml/kg i.p. The administration of substances was carried out over a period of one month. After the end of substance administration, the rats were tested in the FST where we monitored time of struggling, swimming and immobility.

Results. The administration of HCH resulted in a statistically significant reduction in struggling time and an increase in immobility time compared to the control group ($p<0.05$). However, no significant difference in swimming time was found between the HCH and control groups ($p>0.05$). Conversely, administering FA prior to HCH significantly prolonged struggling time and reduced immobility time in the F+H group compared to the H group ($p<0.05$). No significant difference in swimming time was noted between the F+H and H groups ($p>0.05$).

Conclusion. Ferulic acid exhibits modulatory effects on depression-related behavior and shows therapeutic potential in an experimental model of neurotoxicity induced by gamma-hexachlorocyclohexane.

LINKING BODY AWARENESS AND FUNCTIONAL PERFORMANCE IN FITNESS ATHLETES

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Keywords. Body awareness; Functional performance; Fitness athletes

Introduction. Body awareness is a critical component in achieving optimal physical performance, particularly for fitness athletes, where precise movement, coordination, and control are essential (Cook,2003). Body awareness can be defined as an individual's ability to perceive, interpret, and respond to internal physical sensations (De Vignemont, 2011). It plays a pivotal role in functional performance, influencing motor skills, movement quality, and injury prevention (Cech, Martin, 2011).

Methods of study.

1. Multidimensional body awareness Survey;
2. Testing of functional capabilities.

The aim of this study was to explore the correlation between body awareness indicators and functional abilities in fitness athletes.

Results. The Pearson correlation analysis revealed significant relationships between body awareness indicators and functional abilities. Functional abilities were strongly and positively correlated with Noticing ($r = 0.703$, $p < 0.05$), Body Listening ($r = 0.806$, $p < 0.01$), Self-Regulation ($r=0.685$, $p<0.05$and Attention Regulation ($r = 0.729$, $p < 0.05$). These results suggest that athletes with higher levels of awareness and regulation of bodily sensations tend to exhibit better functional performance. Additionally, Functional abilities showed significant positive correlations with Emotional Awareness ($r = 0.761$, $p <0.05$), emphasizing the importance of emotional processing in athletic function.

Using a functional capability test and a multidimensional body awareness survey, it can be concluded that those customers with higher awareness also have higher performance of functional abilities. It can be inferred from the results that those who have been training for an extended period of time.

Conclusion. The findings underscore the significant association between body awareness and functional abilities in fitness athletes. This suggests that cultivating a heightened awareness of bodily sensations and emotions may contribute to improved athletic capabilities. These insights highlight the potential benefits of integrating body awareness training into fitness programs to enhance functional outcomes in athletes.

ASSESSMENT OF CONSTRUCT VALIDITY OF RIGA COGNITIVE SCREENING TEST: PILOT DATA

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Keywords. Cognitive assessment; Dementia screening; Neurocognitive assessment; Dementia; Alzheimer's disease

Objectives. One in two people worldwide experience dementia caring for a relative with the disease, their own illness or both (Besley et al., 2023). Early diagnosis, downside, allows early detection of early memory impairment to delay irreversible cognitive decline and skills loss, and has been shown to be 20-30% more effective in preventing the development of dementia than when the disease is already in its early stages (Hendriks et al., 2021). Existing diagnostic tests for dementia in Latvia do not sufficiently consider protective factors and cognitive capacities that influence disease progression and diagnostic accuracy (RAKUS, 2023).

Materials and methods. The aim of this study is to test the construct validity of Riga Cognitive Screening Test Cognitive Assessment scale. A total of 42 participants aged 52 – 83 years (Mage = 66.46; SD = 8.16) were included in the study, comprising of 27 females and 14 males. The participants were presented with varying levels of cognitive function. Data was obtained using the newly developed Riga Cognitive Screening Test (RiTA, Šneidere, in preparation). For convergent validity measures, Montreal Cognitive Assessment task (Nassredine et al., 2005) was used. All data was collected from October 18th.

Results. The RiTA test showed encouraging internal consistency (α=0,72), Pearson's coefficient showed high correlations ($r > 0.53$) with the MoCA test.

Conclusions. RiTa shows good convergent validity in a Latvian pilot sample; however it is important to widen the survey sample and conduct a retest to prove that the RiTa was successful.

FIRST STEPS IN DEVELOPING A FLUID INTELLIGENCE TEST FOR ADOLESCENTS (AGES 14-19)

Author: ***Diana Kraveca*** [1]
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Keywords. Fluid intelligence; Validity; Reliability; Adolescence

Objectives. Fluid intelligence (Gf), defined as the capacity to address novel problems without prior knowledge, is associated with academic success (as working memory, processing speed, problem-solving, logical reasoning capabilities) and psychosocial functioning (as indicated by diminished participation in bullying, lower substance abuse, and elevated self-esteem) (Huepe et al., 2011). Understanding its development throughout adolescence can yield insights into cognitive capabilities and possible interventions. Culture-fair assessments are constructed to evaluate Gf independent of linguistic proficiency, cultural background, making them appropriate for divorce populations (Fagan, 2008). This approach is important within educational contexts characterized by students from diverse cultural and linguistic heritages, as in Latvia. Currently, there is one culturally fair intelligence test in Latvia, the Raven Matrices (Raven, 2008), which has not been standardized in the Latvian sample. The aim of this paper is to develop a culturally fair Gf test for adolescents aged 14-19 and pilot test it in the Latvian sample.

Materials and methods. Sample - 180 adolescents 14-19 years; Inclusion criteria - randomised selection from all available Latvian regions. Data extraction method - digitised administration of the 49 task test; The result depends on the accuracy and speed of solved tasks. Data analysis methods: calculation of item response and discrimination indices, item information curve, internal validity.

Results. A compilation of preliminary tasks has been formulated. In aggregate, 49 tasks are categorized into 11 distinct blocks according to the methodology of their resolution. Each block encompasses a range of 4 to 6 tasks.

Conclusions. A set of preliminary test items has now been created. A pilot study with the goal of validating the prepared items in a small sample is required in order to utilise this test to evaluate respondents' intellectual capacities. The completion of this stage is scheduled for February 2025.

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ALCOHOL CONSUMPTION AMONG RESIDENT PHYSICIANS IN LATVIA: A CROSS - SECTIONAL STUDY

Authors: ***Anna Aizpuriete*** [1], ***Kārlis Žīgurs*** [1]
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Keywords. Alcohol; AUDIT; Residency

Objectives. Given Latvia's consistently high alcohol consumption rates, there is a growing interest in understanding its effects within high-stress professions, such as medical professionals. Data regarding resident physicians in Latvia alcohol behaviors is scarce. The study aimed to assess the prevalence of alcohol disorder risk among resident physicians in Latvia and investigate its potential associations with sociodemographic factors and residency profiles.

Materials and methods. An anonymous online survey was conducted as part of a quantitative, cross-sectional study among resident doctors from two medical universities in Latvia. The survey contained 18 questions, 8 of which addressed socio-demographic and occupational factors, and 10 that were a part of the Alcohol Use Disorders Identification Test (AUDIT). The data was processed using IBM SPSS software.

Results. The survey was completed by 188 respondents, comprising 46 males (24.5%) and 142 females (75.5%). Low-risk alcohol consumption was reported by 82.4% of medical residents, while 17.6% exhibited hazardous or harmful consumption patterns, with a likelihood of dependence. Hazardous consumption was more frequently observed for men – 31.4%, than for women – 14.4%, ($p=0.025$), also for respondents who are not in a relationship - 29.3% compared to in a relationship – 18.4% and married - 10% ($p=0.037$). There is a statistically significant difference in alcohol consumption patterns among universities ($p=0.042$), but no significant difference regarding study year ($p=0.518$) and the specialty profile (surgical vs non-surgical) ($p=1$). Increased age correlates negatively with the risk of alcohol consumption (Spearman's coefficient=-0.102), although not statistically significantly ($p=0.163$).

Conclusions. The risk of alcohol disorder among resident physicians varies according to gender, relationship status and university. There is a negative correlation between the increase of age and risk of alcohol consumption, although the correlation is not statistically significant. Further research is necessary to cover a larger study population.

DIFFERENCES IN RESILIENCE INDICATORS BETWEEN ADULT LATVIAN PROFESSIONAL AND AMATEUR ATHLETES

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Keywords. Resilience; Sport; Gender; Athlete; Professional; Elite

Objectives. Resilience has become a significant research topic in recent decades, particularly considering its importance in individuals' ability to adapt to and overcome various challenges (Blanco-García et al., 2021). Athletes often face elevated physical, emotional, intellectual and psychological stress compared to non-athletes, making resilience a key factor in maintaining their mental health (Kuchar et al., 2023). Approximately 20% of people experience mental health issues each year, particularly among young people, as most psychological disorders begin before the age of 24, which often coincides with the peak of athletic performance (Haugen, 2022; Åkesdotter et al., 2020). The aim of this study is to investigate the differences in resilience indicators between adult Latvian professional and amateur athletes.

Materials and methods. Data collection will occur in January and February 2025 through an online survey. The study will include Latvian-speaking athletes, both male and female, aged 18 and above, engaged in either professional or amateur sports. Resilience levels will be measured using the Latvian version of Connor-Davidson Resilience Scale (CD-RISC-25), which assesses the seven key components of resilience. The survey will be distributed via sports communities and social media platforms.

Results. The study will determine whether there are differences in the levels of resilience between professionals and amateurs. As well as it is planned to determine whether there are differences in the levels of resilience between men and women.

Conclusions. The study will highlight the importance of resilience factors in athletes' ability to cope with adversity and maintain performance. By addressing these factors, the research will offer practical intervention for supporting mental health and build resilience.

SURGERY

IMPACT OF VIRTUAL REALITY ON ANXIETY AND PAIN MANAGEMENT IN CARDIAC SURGERY PATIENTS

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Keywords. Virtual Reality; Cardiac Surgery; Anxiety

Objectives. Anxiety and pain significantly challenge cardiac surgery patients, affecting mental health and recovery. This study evaluates Virtual Reality (VR) for reducing preoperative anxiety and improving postoperative pain and recovery. Data from two randomized controlled trials (RCTs) with 200 patients in Amsterdam, published in the National Library of Medicine were analyzed to compare preoperative VR (reducing anxiety) and postoperative VR (pain management and recovery enhancement).

Materials and methods. Patients were recruited via convenience sampling during pre/ postoperative evaluations at a tertiary care hospital at different time frames. Inclusion criteria involved adults scheduled for elective cardiac surgery; exclusion criteria involved severe psychiatric disorders or cognitive limitations. Preoperative VR provided a 360-degree immersive experience guiding patients through their hospital journey, while the control group received standard education materials. Postoperative VR involved 20-minute distraction sessions daily during recovery. Anxiety was assessed using the State-Trait Anxiety Inventory (STAI) and Amsterdam Preoperative Anxiety and Information Scale (APAIS). Pain was measured using the Numeric Rating Scale (NRS) and recovery using the Quality of Recovery-15 (QoR-15). Statistical analysis included ANOVA for between-group comparisons, with significance set at $p < 0.05$.

Results. Preoperative VR reduced anxiety by 15-20% compared to standard education materials ($p < 0.05$). Postoperative VR reduced pain by 30% and improved recovery scores ($p < 0.01$). Patients using both interventions experienced the greatest benefits, including reduced anxiety, lesser pain, and faster recovery ($p < 0.05$). Validated tools ensured reliability and accuracy.

Conclusions. This study highlights VR's potential to improve surgical outcomes by addressing psychological and physical care. Limitations such as single-center design and accessibility may affect results. Integrating VR into pre- and postoperative protocols could revolutionize patient care. More clinical trials should be done at hospitals across the globe to explore long-term effects, strength-

INTERVENTIONAL RADIOLOGY ROLE IN MANAGING GASTROINTESTINAL BLEEDING: A RETROSPECTIVE ANALYSIS

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Keywords. Digital subtraction angiography; Gastrointestinal tract; Transarterial embolization

Objectives. The aim of this study is to assess the efficacy of embolization in controlling bleeding and the recurrence rate of bleeding after treatment. Determine the causes of radiologic diagnoses for gastrointestinal bleeding, identify clinical factors that predict the length of hospitalization and to explore associated factors impacting patient recovery.

Materials and methods. Retrospective analysis of patients with gastrointestinal bleeding who were treated with endovascular embolization at Pauls Stradins Clinical University Hospital from 2016 to 2022. Data were collected from the hospital's medical records, including patient demographics, clinical presentations, computed tomographic angiography (CTA) and digital subtraction angiography (DSA) findings, used embolization materials, hospitalization stay length and outcomes.

Results. A cohort of 58 patients with gastrointestinal bleeding symptoms were confirmed to have active extravasation in CTA. A total of 47 patients were treated with endovascular embolization, with 3 experiencing recurrent bleeding that required repeated embolization. Upper GI endoscopy was performed on 26 patients, of which 1 was clipped. The cause of the bleeding for 61% of patients was local inflammation, 21% tumor, 9% had coagulation disorder and 9% had trauma. The most frequently embolized artery was the a. mesenterica inferior at 44%, while the longest median hospitalization time was 15 days for access through the tr. coeliacus. The most common embolization material used was Histoacryl.

Conclusions. This retrospective analysis highlights the efficacy of endovascular embolization in managing gastrointestinal bleeding, demonstrating a significant rate of successful intervention with a low recurrence rate among the cohort. The predominant causes of bleeding were local inflammation and tumors, emphasizing the need for targeted approaches in treatment. Access through the inferior mesenteric artery was most common, with varying hospitalization lengths, suggesting that the choice of access point may influence recovery times.

ACUTE COMPLICATIONS OF COLORECTAL CANCER, DIAGNOSIS AND TREATMENT

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Keywords. Colorectal cancer; Acute complication of CRC

Objectives. Colorectal cancer (CRC) remains one of the most common malignant neoplasms in the world. There are more than 1 200 000 new cases of colorectal cancer and around 700 000 deaths from colorectal cancer every year worldwide. The study aims to determine the diagnostic and treatment characteristics of patients with acute complications of colon cancer.

Materials and methods. A prospective and retrospective study of a group of 30 patients with a clinical picture suggestive of acute complications of colorectal cancer (bowel obstruction/ perforation, lower gastrointestinal bleeding) was performed. Clinical features of CRC patients and principles of diagnosis and treatment were established.

Results. CRC was determined in both sexes, with male predominance (60%). The most common age of onset of clinical manifestations was 60-70 years (60%). Of the basic manifestations of acute complications of CRC was bowel obstruction, with localization of choice in 43.33% of cases in the sigmoid colon and in the transverse colon (20%). For diagnosis, all patients underwent general radiography as well as the gold standard for CRC, i.e. lower gastrointestinal videoendoscopy (irigonoscopy, fibrocolonoscopy). In 66.66% of cases underwent contrast-enhanced computed tomography, which detected the location of the tumor formation and the involvement of regional, hepatic and distant lymph nodes (lungs, peritoneum, ureter, etc.). The basic treatment of patients with acute complications of CRC was surgical, performing radical surgery with anastomosis (46.66%), segmental resection with stoma application (43.33%), including Hartamann operation with descendostomy. Most patients had a favorable outcome. Among the most common complications were fixed eventration (6.66%) and colostomy necrosis (6.66%).

Conclusions. Research results have shown that acute complications of colorectal cancer remain a major surgical emergency and the treatment of choice is radical resection with primary anastomosis.

LAPAROSCOPIC HEMICOLECTOMY FOR CHRONIC COPROSTASIS IN PATIENTS WITH DECOMPENSATED DOLICHOSIGMA

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Keywords. Dolichosigma; Chronic constipation; Laparoscopic surgery; Minimally invasive surgery; Hemicolectomy; Bowel function recovery; Surgical outcomes

Objectives. Chronic constipation due to dolichosigma significantly affects patients' quality of life and work productivity. Minimally invasive surgery offers advantages like faster recovery and shorter hospital stays. However, determining the optimal surgical technique and resection volume remains a challenge. This study aims to develop and evaluate a laparoscopic left-sided hemicolectomy method to improve treatment outcomes, reduce hospital stays, and enhance recovery for patients with decompensated dolichosigma.

Materials and methods. From 2016 to 2024, 70 patients with decompensated dolichosigma underwent surgery at Multidisciplinary City Hospital No. 2, Astana. The cohort included 32 men (46%) and 38 women (54%) aged 18–51 years, with an average age of 45 ± 1.3 years ($p<0.05$). Clinical and laboratory tests, imaging (CT, MRI, irrigoscopy), and advanced laparoscopic techniques using ZORING and Karl Storz equipment were employed. Hospital stay, recovery milestones, and long-term outcomes were analyzed.

Results. The patented laparoscopic left-sided hemicolectomy method (Patent No. 34968) demonstrated superior outcomes. The average hospital stay was 7–8 ± 0.7 days, six days shorter than traditional methods. Early mobilization occurred on day 2 post-surgery, and bowel passage was restored by day 3 ± 0.4. Follow-ups at 6 and 12 months confirmed full recovery of bowel function and work capacity with minimal complications.

Conclusions. The laparoscopic left-sided hemicolectomy method is effective, minimally invasive, and economically advantageous. It reduces hospital stays, facilitates early recovery, and ensures better postoperative outcomes, making it the preferred treatment for chronic constipation in dolichosigma patients.

THE MCKISSOCK‘S METHOD

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Keywords. McKissock‘s technique; Reduction mammaplasty; Mastopexy

Objectives. The McKissock’s vertical bipedicle flaps technique is one of the methods applied in breast reduction as well as for breast lift surgeries. Nonetheless, a considerable lack of large-scale investigations suggests discrepancies in the literature, undermining the technique’s effectiveness and its low complication rate. This study aimed to evaluate the prevalence of intraoperative and post-surgical complications encountered with this approach.

Materials and methods. A retrospective study was conducted by evaluating the results of patients who underwent reduction mammaplasty or mastopexy at Tautrimas Aštrauskas Clinic between the years 2012 and 2022. McKissock’s technique was consistently utilized in all of the cases that were part of the research.

Results. A total of 1943 surgeries were performed, with the average age of the patients being 43 years. The mean of removed tissue was 460g, with the highest nipple lift reaching 20cm. The study showed that 90% of patients maintained undisturbed nipple sensation while there were no reported cases of nipple and glandular necrosis. The most common complication observed was wound dehiscence, affecting 1,8% of patients. Less frequently occurring issues were hematomas (0,1%), uprising inframammary scar (0,36%), and unpredictable scarring (0,56%). Fat grafting was applied in most of the cases to achieve a superior aesthetic effect at the breast gap.

Conclusions. McKissock‘s technique is a highly effective approach for breast reduction and mastopexy of various size breasts. Through a combination of expertise, experience and precision, this method prevents nipple necrosis by ensuring optimal circulation of the nipple-areola complex and has a favourable probability of nipple sensation preservation, providing breastfeeding ability. Moreover, fat grafting ensures a pleasing projection of the breasts with minimal occurrence of postoperative complications. However, further and more extensive research is needed in this domain.

CLINICAL CHARACTERISTICS, SURGICAL OUTCOMES, AND DIAGNOSTIC STRATEGIES IN THE PRIMARY HYPERPARATHYROIDISM (PHPT): THREE-YEAR RETROSPECTIVE STUDY (LATVPHPT) AT REUH

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Keywords. Primary hyperparathyroidism; Parathyroidectomy; Osteoporosis.

Objectives. To evaluate characteristics, management, diagnostic assessment and surgical outcomes in PHPT.

Materials and methods. Data from patients between January 2021 and January 2024 were reviewed, including medical records, laboratory results, imaging, surgical, and histopathology reports, and analyzed retrospectively using IBM SPSS 29.0.

Results. 177 patients (mean age 63.8±11.9 years), 89 % were females. 66.6% (n=118) underwent parathyroidectomy, with a mean surgical time of 52.4±27.6 minutes. Histopathology and imaging revealed a single adenoma in 94.0% (n=108), double adenomas – 1.7% (n=2), hyperplasia – 2.6% (n=3), carcinoma – 1.7% (n=2). 3 patients needed reoperation due to negative histopathology. Adenoma sizes ranged from 0.2x0.4cm to 5.3x3.7cm. Contrast-enhanced ultrasonography (CEUS) exhibited the highest sensitivity at 94% (17/18) for detecting typical localized adenomas, compared to ultrasonography at 75% (81/108), scintigraphy at 73% (45/62), SPECT/CT at 78% (42/54), and 3D-CT at 82% (18/22). Adenomas were located on the right inferior site 45.5% (n=51), left inferior – 30.4% (n=34), right superior – 9.8% (n=11), left superior – 8.0% (n=9). Ectopic adenomas were identified – 6.3% (n=7), with locations including intrathyroidal (n=3), anterior mediastinum (n=2), para jugular (n=1), superior posterior mediastinum (n=1). Parathyroidectomy was postponed in 14.7% (n=26) due to unknown adenoma location, 1.1% (n=2) declined surgery, 19.2% (n=34) were awaiting surgery. The mean preoperative calcium was 2.9±0.3mmol/L, intact parathyroid hormone (iPTH) – 251.2±242.1pg/mL, and postoperative calcium 2.4±0.1mmol/L, iPTH 59.9±36.5pg/mL. 35% had osteoporosis, 54% – osteopenia, 15% – osteoporotic fractures, 25% – kidney stones, 23% – gallstones, 9% had a history of cholecystectomy. Thyroid nodules were identified at 81%, nontoxic goitre – 53%, autoimmune thyroiditis – 29%. Malignancy was present – 20%, with breast and thyroid cancers as the most common types.

Conclusions. Parathyroidectomy remains the only definitive treatment for PHPT. CEUS demonstrated the highest sensitivity among imaging methods for identifying typical localized adenomas.

HEALING THE HANDS: COMPREHENSIVE ANALYSIS OF ADULT HAND BURN INJURIES AND TREATMENT OUTCOMES

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Keywords. Hand burns; Adult; Epidemiology; Treatment outcomes

Objectives. Hand burns are challenging due to their important role in daily life. Preventing contractures and stiffness is crucial to preserving their function. Despite this, comprehensive data are limited. This study aimed to analyze the epidemiology and patterns of adult hand burn injuries treated at a specialized burn center.

Materials and methods. A retrospective analysis was conducted on adult patients hospitalized at the Department of Burns and Plastic Surgery, University Hospital Brno, between January 2016 and December 2022, who had at least one hand burned. Demographic data, burn etiology, and treatment outcomes were evaluated.

Results. Our cohort study consisted of 507 individuals - 277 patients (54.64%) suffered damage to one hand, the remaining 230 (45.36%) had bilateral hand burn injury. Isolated hand trauma was observed in 55 patients (10.85%).

Males outnumbered females (72.78% vs 27.22%,$p<0.001$). The average age was 45.64 years (IQR 31-59). Surgery was required in 271 cases (53.45%), with reoperations for scars and contractures in 8 of them (1.58%). The average length of stay was 18.82 days (IQR 7-26), with a difference between surgical and conservative treatment ($p<0.001$). 185 patients (36.49%) underwent necrotic tissue removal. Debridement using benzoic acid (87.03%) was preferred over surgical debridement (12.97%). A total of 181 patients (35.7%) were admitted to the ICU, with a strong correlation with total body surface area (TBSA) burned ($r=0.572$,$p<0.001$).

The most common etiology was flame burns (61.34%, $p<0.001$), followed by scalding from hot liquids (12.82%,$p<0.001$) and contact burns (8.68%, $p<0.001$). In 158 cases (31.16%), first aid was provided immediately after injury, most frequently by running cold water (80.38%,$p<0.001$). Mortality rate was 0.39%.

Conclusion. The identification of significant differences in gender and burn etiology can lead to improved targeted prevention and more effective hospital management. Better patient outcomes by optimized treatment can be achieved.

ONE-YEAR SURGICAL OUTCOMES AND EARLY RECURRENCE PREDICTIONS FOR COLORECTAL CANCER LIVER METASTASIS

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Keywords. Colorectal cancer liver metastasis; Recurrence-free survival; Surgical complications

Objectives. Colorectal cancer is one of the leading causes of cancer-related death, frequently complicated by liver metastases (CRLM) and post-resection recurrence. This single-centre retrospective study aimed to determine the one-year recurrence-free survival rate after curative CRLM resection and its association with established risk factors.

Materials and methods. Data from 62 patients who underwent CRLM resection at our institution from September 2018 to November 2024 were analysed. Clinicopathological characteristics, including tumour location, surgical approach, and imaging findings, were assessed. Univariate and multivariate Cox regression analyses were performed to identify predictors of recurrence-free survival.

Results. Left-sided colorectal cancer was the predominant primary tumour, observed in 95.2% of cases (n=59). Open laparotomy was the primary surgical approach for liver metastasis resection in 87.1% (n=54) of patients. Liver metastasis resection predominantly involved the left lobe (67.7%, n=42), followed by the right lobe with 53.2% (n=33). A strong association was observed between left-sided colorectal cancer and metastasis to liver segments 3 and 7 ($p<0.001$; $p=0.003$ respectively). Postoperative complications occurred in 14.5% (n=9) of all patients. According to the Clavien-Dindo classification, more severe (Grade 3a and 3b) complications were seen in 6.5% (n=4) of all patients, from whom all were diagnosed with pG2 primary tumour ($p=0.015$). Each 1 millimetre increase in resected metastasis size was associated with a 1.7% increase (HR=1.017, 95% CI 1,001-1,033) in one-year recurrent CRLM risk ($p=0.036$). Right-lobe metastases conferred a 9.3-fold increased risk (HR=9.308, 95% CI 1.230-70.461) of one-year intrapulmonary metastases ($p=0.031$).

Conclusions. This study identifies resected metastasis size and right-lobe metastasis location as significant predictors of post-resection outcomes and early recurrence in CRLM. The postsurgical complication rate observed in this study is comparable to that reported by other authors. These findings have implications for risk stratification and postoperative surveillance strategies.

COMPARISON OF OUTCOMES OF VALVE-SPARING AND VALVE-REPLACING AORTIC ROOT REPLACEMENT PROCEDURES

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Keywords. Aortic root replacement; Valve-sparing; Valve-replacing

Objectives. Aortic dilatation and aneurysm involving the aortic root ("root phenotype dilatation") is being increasingly recognized as more malignant. Treatment of aortic root dilatation and aneurysm depending on the state of the aortic valve is either valve-sparing or valve-replacing. The aim of this reasearch was to collect data of the surgical treatment options and compare the outcomes, post-operative complications, short-term and long-term survival of patients who underwent aortic root replacement surgery at Pauls Stradiņš Clinical University Hospital from 2012 to 2024.

Materials and methods. We retrospectively analyzed medical records of 176 patients who underwent valve-sparing aortic root replacement (VSARR) or valve-replacing aortic root replacement (VRARR) surgery (Bentall, David, Yacoub, Cabrol procedures) at Pauls Stradiņš Clinical University Hospital from 2012 to 2024. Microsoft Excel 16.92 and IBM SPSS Statistics 29.0 were used for data analysis. Kaplan-Meier method with 95 % percent confidence intervals (CIs) was used to determine early and long-term mortality. Mann-Whitney U test was used for non-parametric statistical analysis to evaluate distribution of factors between both groups.

Results. Out of 176 patients 15.9 % (n=28) were female and 84.1 % (n=148) male. There was no significant difference between groups. Median age in VSARR group was 39 (IQR 18 to 72) years and median age in VRARR group was 60 (IQR 20 to 82) years. Survival rate in the VRARR group was 89.6 % (95% CI 84.7 to 94.5 %) one year post-surgery, 80.9 % (95% CI 73.5 to 88.3 %) 5 years post-surgery and 77.4 % (95% CI 68.8 to 86.0 %) 10 years post-surgery. Survival rate in VSARR group was 100 % after 8 years.

Conclusions. VSARR was performed among younger patients. Both VSARR and VRARR showed comparable early and long-term results for correcting aortic root disease.

PROFILE OF PROSTATE CANCER PATIENTS AND USED RADICAL TREATMENT AT RIGA EAST UNIVERSITY HOSPITAL

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Keywords. Prostate cancer; Patient profile; Radical treatment

Objectives. Prostate cancer is the most frequently diagnosed cancer among men in Europe. This study aims to analyze the profiles of prostate cancer patients, examining demographic and clinical characteristics.

Materials and methods. Retrospective research analyzes 355 prostate cancer patients who were first hospitalized at Riga East University Hospital in 2023. Data was collected from patient records, focusing on age distribution, cancer stages at diagnosis, comorbidities, diagnostic methods, and radical treatment approaches. Statistical analysis was performed to identify differences, relationships and correlations. P-values<0.05 were considered statistically significant. IBM SPSS Statistics version 29 was used for analysis.

Results. Findings revealed that most patients were diagnosed at an advanced age (mean age 66,9±8,0 years), with a significant proportion presenting with localized disease. Common comorbidities included genitourinary diseases, cancer, and cardiovascular disease. The median Prostate-Specific Antigen (PSA) level was 8,26 (5,97-14,30) ng/mL. The distribution of PSA levels differs statistically significantly between different stages. The most common type of biopsy was fusion (68,4%). The most commonly used imaging modalities were magnetic resonance imaging (92.7%), computed tomography (81.0%), and scintigraphy (65.5%). The mean age of patients in the non-radical treatment group was 2.4 (95% CI 0.6 to 4.2) years significantly higher than in the radical treatment group. The association between cancer stage and radical surgical treatment was statistically significant. Prostatectomy was used more often for the first three stages, while radiotherapy and high-intensity focused ultrasound (AIFU) were used more often for the second stage.

Conclusions. The results of this study make it possible to characterize a typical patient with prostate cancer. Prostate cancer was more likely to be found at a localized stage. This makes radical therapy possible. More precise analysis would require larger population and detailed examination of medical history.

NEGATIVE PRESSURE WOUND THERAPY IN CHILDREN - LITERATURE REVIEW AND EXPERIENCE OF THE DEPARTMENT OF PAEDIATRIC SURGERY IN ZABRZE

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Keywords. Negative pressure wound therapy; VAC; wound

Objectives. Negative Pressure Wound Therapy (NPWT) is a treatment method that utilizes controlled subatmospheric pressure to reduce inflammatory exudate and promote wound healing. The aim of this study was to evaluate the effectiveness of NPWT in managing complex wounds in children.

Materials and methods. A retrospective analysis was conducted on 14 patients (6 females, 8 males) <18 years of age who underwent NPWT at the Department of Paediatric Surgery in Zabrze between 2018 and 2023. Additionally, a literature review was performed, including articles on NPWT published between 2005 and 2023. The following parameters were assessed: length of hospital stay, duration of NPWT use, indications for VAC dressing application, applied pressure [mmHg], anatomical site of VAC dressing application, pathogens identified in wound secretion cultures, treatment complications, and additional local treatment.

Results. The length of hospital stay ranged from 3 days to 5.6 months, while the duration of NPWT use varied from 2 days to 1.9 months. The primary indications for VAC dressing application included pressure ulcers, injuries, enterocutaneous fistulas, infections, pilonidal disease and gastrostomy orifice enlargement. The applied pressure ranged from 60 to 120 mmHg. VAC dressings were applied to various anatomical sites, including the trunk, extremities, head and neck. The most commonly identified pathogens in wound secretion cultures were Proteus, Enterococcus, Staphylococcus and Pseudomonas. According to the literature, NPWT has been used to treat conditions such as pilonidal disease, sacral and extremity ulcers, traumatic soft tissue wounds, extensive tissue loss of the trunk and extremities, lymphangiomas of the trunk, extremities, head and neck as well as open abdomen cases in neonates.

Conclusions. NPWT is widely utilized for wound management in paediatric patients. The treatment outcomes are satisfactory. The findings from the Paediatric Surgery Department in Zabrze align with those reported in the literature.

MINIMALLY INVASIVE SURGERY FOR MEDIASTINAL TUMORS: A SINGLE-CENTRE EXPERIENCE

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Keywords. Thymoma; Video-assisted thoracic surgery (VATS); Thymectomy; Open thymectomy

Objectives. Video-assisted-thoracoscopic surgery (VATS) is the most commonly employed minimally invasive approach to thymectomy. However, compared to open thymectomy, the potential superiorities and defects of VATS thymectomy remain controversial. We aimed to describe a single-centre experience of mediastinal surgery using minimally invasive methods.

Materials and methods. A retrospective analysis was performed on 270 patients with mediastinal tumors who underwent thoracoscopic and open thoracic surgery at the Department of Cardiac, Thoracic and Vascular surgery of the Hospital of Lithuanian University of Health Sciences Kaunas Clinics from 2010 to 2024. Of these, 127 patients with thymus gland pathology, underwent VATS thymectomy or open thymectomy. The operation time, blood loss, duration of drainage and hospital stay were analysed.

Results. n total, 127 patients (74 women and 53 men, mean age 52 years) with thymic gland pathology underwent thoracic surgery. The histopathological diagnoses included thymoma in 67 cases, thymic carcinoma in 18 cases, thymic hyperplasia in 30 cases, thymic cyst in 12 cases. There were 67 patients with thymoma, among whom 41 (61.2%) patients underwent VATS thymectomy and 26 (38.8%) patients - open thymectomy. The blood loss of VATS thymectomy was less than open thymectomy (0.15 L versus 0.5 L, $P<0.05$), the duration of drainage in the VATS group was shorter than that in the open thymectomy group (3.2 versus 5.4 days, $P<0.05$), the postoperative hospital stay of VATS thymectomy was shorter than that of open thymectomy (4.1 versus 8.3 days, $P<0.05$). The operation time was not significantly different between these groups.

Conclusions. VATS thymectomy is a more advanced and suitable surgical method for thymectomy. Thymectomy performed through VATS has less blood loss, a shorter drainage duration, shorter hospital stay, faster recovering.

RISK FACTORS FOR DELAYED GRAFT FUNCTION AND ACUTE REJECTION IN KIDNEY TRANSPLANT PATIENTS: A RETROSPECTIVE STUDY AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL, LATVIA, 2020–2023

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Keywords: Kidney transplantation; Delayed graft function (DGF); Acute rejection (AR); Risk factors; Graft survival

Objectives: Kidney transplantation is a cornerstone therapy for end-stage renal disease, but complications such as delayed graft function (DGF) and acute rejection (AR) significantly impact outcomes. DGF, defined as the need for dialysis within the first post-transplant week, results from ischemia-reperfusion injury, whereas AR stems from alloimmune-mediated graft damage. This study investigates the incidence, risk factors, and impact of DGF and AR on one-year graft survival.

Materials and methods: This retrospective cohort study analyzed 121 kidney transplant recipients treated at Pauls Stradiņš Clinical University Hospital between January 2020 and December 2023. Clinical and demographic data were extracted from medical records, including donor and recipient age, comorbidities, cold ischemia time, LifePort usage, DGF and AR rates, and immunosuppressive regimens. Statistical analyses were conducted using IBM SPSS.

Results: The mean recipient age was 45.44 years, while the mean donor age was 46.54 years. Kidneys from 68 donors were transplanted. DGF occurred in 16.53% of recipients, and AR in 13.22%. DGF was associated with extended cold ischemia time, donor age, acute kidney injury in the donor, and prolonged surgery duration. AR was linked to donor and recipient age and the presence of DGF. LifePort kidney preservation, used in 25 transplants, significantly reduced the incidence of DGF.

Conclusions: DGF and AR are critical determinants of transplant outcomes, with Latvia's DGF rates slightly lower than the European average and AR rates within the typical range (DGF: 20–40%; AR: 5–20%). These findings underscore the need to minimize complications and improve graft survival. Addressing modifiable factors, such as optimizing cold ischemia time and increasing LifePort perfusion system usage, remains essential. Future research should explore precision medicine and biomarker-based strategies to further reduce complications, enhance graft survival, and personalize treatment approaches tailored to individual patient profiles.

EARLY POSTOPERATIVE COMPLICATIONS AFTER STOMA CREATION IN EMERGENCY AND ELECTIVE COLORECTAL SURGERIES

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Keywords. ACE-27 score; Colorectal surgery; Early postoperative complications; Stoma

Objectives. Stoma creation is a common surgical treatment outcome for patients with benign or malignant colon obstruction, inflammatory bowel diseases, or abdominal trauma. Early postoperative complications can prolong hospital stays, increase reoperation risk, or delay cancer treatment.

Materials and methods. A retrospective study was conducted on patients treated at the Surgery Clinic of Pauls Stradiņš Clinical University Hospital (PSCUH) from January 1 to December 31, 2023, who underwent colorectal surgery resulting in stoma creation. The study included 92 patients, divided into acute surgery (AS), elective surgery (ES) groups. Local and systemic postoperative complications, their frequency were assessed in both groups. Comorbidities were assessed the ACE-27 tool, data analysis performed using IBM SPSS 29.0.

Results. In 2023, 92 surgeries at PSCUH resulted in stoma creation: 61 (66.30%) in AS and 31 (33.70%) in ES. Early postoperative local complications occurred in 18 (19.57%) patients, including infections (9.84% vs. 9.68%), necrosis (6.56% vs. 0%), bleeding (4.92% vs. 0%), retraction (3.28% vs. 3.22%), obstruction (1.64% vs. 6.45%), peristomal abscess (0% vs. 3.22%) in AS vs. ES. General complications occurred in 6 cases (6.52%), including acute kidney failure (3.28% vs. 0%), sepsis (1.64% vs. 3.23%), PATE (0% vs. 3.23%), UTI (0% vs. 3.23%). Early complications developed in patients with comorbidity GRADE 0 (0% vs. 16.70%), GRADE 1 (8.30% vs. 0%), GRADE 2 (41.70% vs. 16.70%), GRADE 3 (50.00% vs. 66.70%) in AS vs. ES group ($p=0.02$ vs. $p=0.05$). Overall, 13.04% of patients underwent reoperation due to early local complications. The number of hospital days significantly varied with comorbidity severity ($p<0.001$). The overall mortality rate was 14.13%.

Conclusions. There is a significant association between comorbidities, length of hospital stay and early postoperative local complications in AS. No significant association was found between comorbidities and general complications in either group.

IMPACT OF PACEMAKER ON EARLY OUTCOMES AMONG INFECTIVE ENDOCARDITIS PATIENTS REQUIRING CARDIAC SURGERY

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Keywords. Endocarditis; Pacemaker; Cardiac Surgery

Objectives. Patients undergoing surgical treatment for infective endocarditis might have a pre-existing pacemaker, and the surgery itself carries a significant risk of requiring the implantation of a new pacemaker. However, the specific impact of the pacemaker on patient prognosis remains unclear. Some studies indicate that patients requiring pacemaker implantation after valvular surgery, even in the absence of infective endocarditis, tend to have worse short- and long-term outcomes. This study aims to evaluate the impact of pacemaker on early patient outcomes, including in-hospital mortality, in individuals with infective endocarditis undergoing surgical intervention.

Materials and methods. This is an ongoing study at Pauls Stradiņš Clinical University Hospital. Patients requiring cardiac surgery due to infective endocarditis between 2014 and 2024 were retrospectively analyzed and included in the study. Patients were divided into two groups: one group included patients who underwent surgical treatment for infective endocarditis without the need for pacemaker implantation, while the other group comprised patients who had a pacemaker implanted both prior to and following cardiac surgery.

Results. Of 383 patients, 30 (7.8%) received new pacemakers within 30 days after the surgery and 13 (3.4%) had previously implanted devices. Thirty of them were male, with the mean age of 59.0 years (SD ± 12.1; 37-81), and 13 were female, with the mean age of 64.9 years (SD ± 16.3; 23-80). On average pacemakers were implanted 4.9 days after the surgery (SD ± 4.1; 0-14). Out of 43 patients in the selected group, 8 (18.6%) died during the same admission, 6 of whom had previously implanted pacemakers. In comparison, 34 out of 340 patients in the control group (10.0%) died during the same admission ($p<0.05$).

Conclusions. The in-hospital mortality was higher in the study group, with the majority of deaths occurring in patients with previously implanted pacemakers.

TRAUMATOLOGY, ORTHOPEDICS, TRAUMA & ORTHOPEDIC SURGERY, RADIOLOGY

SHOULDER PERIPROSTHETIC JOINT INFECTIONS: ASSOCIATION WITH COMORBIDITIES AND TREATMENT OUTCOMES

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Keywords. Shoulder; Endoprosthesis; Infections; Surgery

Objectives. Shoulder endoprosthesis is a one of the treatment opportunities for severe degenerative diseases and posttraumatic osteoarthritis of the glenohumeral joint. Periprosthetic joint infection (PJI) is a severe complication of shoulder endoprosthesis, which requires immediate management. Comorbidities can increase the probability of PJI. The aim of this study is evaluation of clinical, radiological and treatment results in patients with periprosthetic shoulder infection.

Methods. This is a retrospective research, where patients were selected by PJI and surgical treatment between 2009 and 2024. The results were rated by risk factors, diagnostic findings and treatment methods. Outcomes were evaluated by quickDASH. Data analysed by using IBM SPSS Statistics.

Results. In this study were selected 19 patients, where 42.1% (n = 8) were men, 57.9 % (n =11) were women. Patient mean age was 67 years. Comorbidities among patients were: arterial hypertension 84.2% (n=16), osteoarthritis 68.4 % (n =13), diabetes mellitus 2 type 26.3% (n = 5), coronary heart disease 15.8% (n =3), chronic kidney disease 10.5% (n = 2), bronchial asthma 5% (n =1), rheumatological arthritis 5%(n =1). Surgical treatment using two- stage method was performed in 18 cases. Mostly preoperative antibacterial treatment included cefazolin 78.9 % (n = 15), but postoperative – ciprofloxacin 26.3% (n = 5). The mean quickDASH score was 32.7.

Conclusions. Comorbidities increase the probability of shoulder periprosthetic infection. The most common comorbidities among patients were arterial hypertension, osteoarthritis and diabetes mellitus 2 type. The most preferred surgical treatment is a two-stage method. Summarizing the quickDASH score, the treatment outcomes are satisfactory.

DELAYED INTERNAL FIXATION AFTER ACUTE FASCIOTOMY IN PROXIMAL TIBIAL PLATEAU FRACTURES WITH COMPARTMENT SYNDROME: A RETROSPECTIVE ANALYSIS OF 8 CASES

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Keywords. Intra-hospital complications; Infection; Open fracture reduction; Perioperative care; Gustilo-Anderson classification

Objectives. Acute compartment syndrome, an acute complication in proximal tibial plateau fractures, underscores the importance of timely diagnosis and urgent surgical intervention—specifically, acute fasciotomy. Prompt treatment can improve recovery outcomes and reduce in-hospital complications.
This study primarily analyzed clinical data of patients and compared complication rates following delayed internal fixation with existing literature on early internal fixation for proximal tibial plateau fractures complicated by compartment syndrome.

Materials and Methods. This retrospective study analyzed eight patients aged 18 to 65 with proximal tibial plateau fractures and compartment syndrome treated between January 2020 and December 2023 at Riga East Clinical University Hospital.
Exclusion criteria: Patients for whom surgical treatment with internal fixation is not planned;
Mental health problems. Patients underwent standardized treatment, including acute fasciotomy and external fixation, fasciotomy wound closure, and delayed internal fixation. Postoperative rehabilitation was assessed using the Short Musculoskeletal Function Assessment (SMFA) scale to evaluate dysfunction and discomfort of the injured extremity.

Results. The average time from injury to acute fasciotomy was 200 minutes, with fasciotomy closure occurring after 3 days. Internal fixation was performed 16 days post-soft tissue healing. The literature review revealed 63 infections in 292 cases (21.6%) during early internal fixation, whereas no infections (0/8) were observed with delayed internal fixation in this study. SMFA analysis showed minimal dysfunction in three cases, mild dysfunction in four cases, and moderate dysfunction in one case.

Conclusions. Delayed internal fixation following fasciotomy closure offers favorable outcomes, potentially reducing rehabilitation time, infection rates, and treatment costs.

COMPARISON OF RADIATION EXPOSURE IN PEDIATRIC SCOLIOSIS SURGERY USING DIFFERENT FLUOROSCOPY SYSTEMS AND MECHANICAL VENTILATION MODES

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Keywords. Scoliosis surgery; Pediatrics; Dosimetry; X-rays

Objectives. The study aimed to compare the ionizing radiation doses received by pediatric patients during scoliosis surgery under different mechanical ventilation modes. Additionally, the research sought to analyze the differences in radiation exposure between two fluoroscopy systems: the Philips BV Pulsera Mobile C-Arm and the Philips Azurion 7 M20.

Materials and Methods. This prospective, randomized trial was conducted at BKUS, including 13 patients aged 9–17 years. Radiation doses were measured using a dose-area product (DAP) meter. Fluoroscopic images in anterior-posterior (AP) and latero-lateral (LL) projections were acquired using the Philips Azurion 7 M20 during surgeries with mechanical ventilation (MV) activated and paused for ≤ 2 seconds during exposure. Randomization was ensured using a random number generator. The radiological images were processed using SECTRA PACS software, and statistical analysis was performed using IBM SPSS Statistics.

Results. The ionizing radiation dose was not significantly different between the groups with activated MV and paused MV in the AP projection for Air-Kerma (Mann-Whitney: $U = 3470.5$, $p = 0.720$) and dose-area product (DAP) ($U = 3390.0$, $p = 0.922$), nor in the LL projection for Air-Kerma ($U = 87.0$, $p = 0.528$) and DAP ($U = 75.5$, $p = 0.284$). Compared to the Philips BV Pulsera Mobile C-Arm, this fluoroscopy machine demonstrated significantly reduced DAP values. For the AP projection, the median DAP dose was 8.5 times smaller in MV activated mode and 5.6 times smaller in paused mode. For the LL projection, the dose was reduced by 3.75 times in activated mode and 11 times in paused mode.

Conclusions. The off-label use of the Philips Azurion 7 M20 does not require synchronization with mechanical ventilation, as no significant differences were observed. These results confirm its enhanced efficiency in pediatric scoliosis surgery in both AP and LL projections.

INTRAHOSPITAL OUTCOMES OF CEMENTLESS VERSUS CEMENTED FEMORAL STEM IN PRIMARY TOTAL HIP ARTHROPLASTY: DATA FROM THE HOSPITAL OF TRAUMATOLOGY AND ORTHOPAEDICS ARTHROPLASTY REGISTER

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Keywords. Osteoarthritis; Implantation syndrome; Complications; Age

Objectives. Total hip arthroplasty with cementless stems in elderly patients is debated due to the increased risk of early femoral periprosthetic fractures; however, cemented stems carry the risk of bone cement implantation syndrome. This study compares in-hospital complications between hybrid and cementless total hip arthroplasty in elderly patients with osteoarthritis.

Materials and methods. This retrospective study included 911 patients. Patients from the State Hospital of Traumatology and Orthopaedics aged ≥65 years who underwent unilateral total hip arthroplasty with either cementless or hybrid fixation for osteoarthritis with standard hip components from February 2012 (when mandatory registration of arthroplasty data was introduced) to the end of June 2023 were included. Exclusion criteria: Other reasons for total hip arthroplasty; Use of revision components; Use the Birmingham Hip Resurfacing (BHR) system or short femoral stems (e.g., Nanos).

Results. 773 patients (84.85%) underwent cemented femoral fixation, while 138 (15.15%) underwent cementless fixation. The cemented group was significantly older (median age 72.38 vs. 68.18, $p<0.001$). Patients in the cemented group also had a higher preoperative ASA physical status range (1-4 vs. 1-3, $p=0.022$) and more often used walking aids preoperatively (46.44% vs. 21.74%, $p<0.001$). Additionally, preoperative thromboprophylaxis was more frequently applied in the cemented group (54.72% vs. 44.93%, $p=0.034$). The operation duration was longer in the cemented group (80 vs. 74 minutes, $p=0.001$).
The cemented femoral fixation group experienced more complications per patient (1 vs. 0, $p=0.003$) and a higher overall complication rate (56.92% vs. 47.10%, $p=0.033$). Furthermore, hemodynamic reactions during surgery were more frequently observed in the cemented group (1 vs. 0, $p=0.011$), particularly during acetabular component implantation (29.11% vs. 15.22%, $p=0.001$).

Conclusions. Elderly patients with osteoarthritis who undergo hybrid total hip arthroplasty experience more complications than those who undergo cementless total hip arthroplasty.

THE PREVALENCE AND ANATOMICAL CHARACTERISTICS OF LUMBAR RIBS - A META-ANALYSIS WITH CLINICAL CONSIDERATIONS

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Keywords. Lumbar ribs; Anatomical variation; Lumbar spine malformations; Supernumerary ribs

Objectives. An uncommon and little-known anatomical deformity of the lumbar spine are lumbar ribs (LR). Other relatively well-known spinal congenital variations, such as cervical ribs or lumbosacral transitional vertebrae, are better understood in light of the literature. Thus, this meta-analysis aimed to provide data on prevalence and key characteristics of LR.

Materials and Methods. A thorough search of pertinent databases was conducted to find studies that reported on the geographic distribution, imaging modality, laterality, and relative frequency of LR. There were no language or publication date-based exclusion criteria used. A random-effects meta-analysis was performed to calculate the pooled prevalence estimates (PPE), and the I2 statistics were employed to evaluate the between-study heterogeneity. The PRISMA guidelines were rigorously followed during the entire investigation. The reliability of the included studies was assessed using the AQUA tool.

Results. This meta-analysis included nine studies that met the eligibility criteria. The pooled prevalence estimate (PPE) of LR was 2.1% (95%CI: 1.0-4.6). In studies based on CT imaging, LR were found in 1.6% (95%CI: 0.6-4.3) and in Xray based studies 2.1% (95%CI: 0.4-11.1). Lumbar ribs were bilateral in predominant number of individuals (65.4%, 95%CI: 39.4-84.6) and could be most frequently encountered in Europe 2.8% (95%CI: 3.0-20.0), then in East Asia 1.5% (95%CI: 1.0-19.2) and Middle East 1.1% (95%CI: 0.6-20.0).

Conclusions. Our study's conclusions indicate that, in contrast to what was previously believed, LR are a common lumbar spine anatomical variation. After determining other potential causes of a patient's nonspecific low back pain, an imaging study should be performed to rule out the possibility of LR.

MID-TERM FUNCTIONAL RESULTS IN ANKLE FRACTURES WITH TIBIOFIBULAR SYNDESMOSIS INJURY

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Keywords. Ankle fractures; Tibiofibular syndesmosis injuries; Position screw fixation

Objectives. Ankle fractures with tibiofibular syndesmosis (TFS) injury require effective fixation methods to ensure optimal functional results. The aim of the study was to evaluate mid-term functional results of patients with ankle fractures and TFS injury, operated using TFS position screw.

Materials and methods. A retrospective study was conducted of 34 patients with ankle fractures and TFS injury, admitted to the Hospital of Traumatology and Orthopaedics during year 2021. Patients were divided in two groups: one group with fracture of distal fibula and fracture of posterior rim of tibia (group A); second group with trimalleolar fractures (group B) according to AO classification. We analyzed pre-operative and post-operative radiological and functional results, using the Foot and Ankle Disability Index (FADI). Functional results were compared between the groups.

Results. Mid-term outcome was evaluated in 34 patients (21 female, 13 male), mean age 49.6 ±12.8 years, 36-47 (mean 42.2) months after the surgery. In the group A nine patients (26.4%), 3 females, 6 males, mean age 47.8 years had mean FADI score 101.3 (range 91-104); in the group B twenty-five patients (73.6%), 18 females, 7 males, mean age 50.3 years had mean FADI score 93.8 (range 58-104). A Mann-Whitney U test indicated a statistically significant difference in FADI scores between group A and group B, $p = 0.009$.

Conclusions. Our findings suggest that patients who underwent TFS position screw fixation had high FADI scores in both groups, but those with fractures of the distal fibula combined with posterior tibial rim fractures appear to have better functional results than patients with trimalleolar fractures. Further studies are conducted.

RECONSTRUCTION OF THE MENISCUS POSTERIOR MEDIAL ROOT

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Keywords. Meniscus; Dissection; Reconstruction

Objectives. Posterior medial meniscal root tears, caused by trauma, disrupt the meniscus attachment to the tibia. These tears can destabilise the meniscus and result in early osteoarthritis. The study aimed to 1) perform knee joint dissection using a posteromedial approach and 2) create a meniscus implant for posterior fixation. The topic is relevant due to complex posterior medial meniscal root tears growing. The standard arthroscopic refixation may be insufficient for complex tears. The posteromedial approach provides better access to the posterior structures, allowing more precise repair. Indications for this surgery include complex meniscal root tears.

Materials and Methods. The cadaver of Laboratory of Anatomy at the Department of Morphology, Rīga Stradiņš University, and was dissected using surgical instruments. The meniscus of the pig's hind leg was used for meniscal reconstruction. The cadaver knee joint was dissected using the posteromedial approach, which involves a medial longitudinal incision to expose the posterior capsule, with careful dissection and retraction of muscles and tendons for optimal access. The damaged meniscus was extracted from the cadaver's knee joint, and the manufactured meniscus was fixed at the defect site.

Results. To ensure the creation of an accurate replica of the damaged meniscus, precise measurements were meticulously obtained using a caliper. Then, the meniscal implant was created. The resulting meniscal implant was then sutured and placed at the defect site. Post-operative care involves imaging to monitor implant stability and physical therapy for function restoration, with regular follow-ups to ensure proper healing and prevent complications. Immunosuppressants should be taken to lower the risk of implant rejection.

Conclusions. The posteromedial approach is more challenging than other techniques. Future studies should explore 3D printing for meniscal reconstruction. Creating a standardized model for implanting the posterior medial horn of the meniscus is not feasible.

THE ROLE OF THE CENTRAL VEIN SIGN IN DIAGNOSING MULTIPLE SCLEROSIS: A FOCUS ON LESION LOCALIZATION

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Keywords. Central Vein Sign; Multiple Sclerosis; White Matter Lesions; Susceptibility-weighted angiography; T2-FLAIR

Objectives. The 2024 revisions of the McDonald criteria proposed a new diagnostic marker that has shown to be accurate at identifying multiple sclerosis - the central vein sign (CVS). The aim of this study was to assess the prevalence of CVS and to evaluate the spatial distribution of CVS-positive lesions.

Materials and methods. This cross-sectional study included 91 patients with multiple sclerosis diagnosed according to the 2017 McDonald criteria. MRI scans were obtained using a 3T scanner. T2-FLAIR and SWAN were used to identify lesions with and without the central vein sign. Lesion count was categorized in three groups. CVS-positive lesions were identified and categorized as supratentorial, infratentorial, periventricular, subcortical or juxtacortical. Descriptive statistics were used to calculate the prevalence of CVS overall and by location.

Results. Ninety-one MRIs of subjects were analyzed. CVS was present in 69.23% of patients (63/91), with a higher prevalence observed in patients with higher lesion counts. CVS-positive lesions were found in 80.95% of patients with lesion count >10, compared to only 4.67% in those with <5 lesions. Statistically significant differences were observed in CVS prevalence between lesion count groups <5 vs >10 ($p<0.001$), indicating that patients with higher lesion counts were significantly more likely to exhibit CVS-positive lesions. Among CVS-positive lesions, 97.74% were located supratentorially, with a much smaller proportion infratentorial (2.26%). Periventricular lesions accounted for the majority of CVS-positive lesions (65.32%), followed by juxtacortical (27.17%) and subcortical (7.51%). A slightly higher proportion of CVS-positive lesions were in the left hemisphere (57.63%) compared to the right hemisphere (42.37%).

Conclusions. The findings highlight that CVS is a rather stable feature in MS lesions. The results indicate that CVS is associated with higher lesion counts and specific lesion locations, distinctly in the supratentorial and periventricular regions.

EARLY FUNCTIONAL RESULTS IN PATIENTS WITH UNICONDYLAR KNEE REPLACEMENT

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Keywords. Osteoarthritis; Unicondylar knee replacement (UKR); Functional results; Oxford knee score (OKS); Forgotten joint score – 12 (FJS-12)

Objectives. Osteoarthritis is the most common arthritis type. Usually, osteoarthritis affects only one knee condyle that could be an indication to UKR. A retrospective study was carried out to analyse functional results in patients who underwent UKR.

Materials and methods. There were 25 patients included in the study who underwent UKR in Hospital of traumatology and orthopaedics in Riga. Patients were surveyed by OKS and FJS-12. Obtained result was compared to another studies data about OKS and FJS-12 results in patients before and after UKR. Revision case analysis was done.

Results. The average result in OKS was 42 points, ranged from 28 to 48 points. The average result in FJS-12 was 87 points, ranged from 45 to 100 points. Both score results refers to satisfactory joint condition. Patients which underwent surgery less then 3 months ago refer to less satisfactory results. Referring to another study on the topic, average result in FJS-12 in patients before UKR was 69,1 points while after surgery it improved to 83,3 points. Average result in OKS in patients with UKR was 23 points. Improvement to average 87 points in FJS-12 as well as improvement to average 43 points in OKS in this study can be interpreted as a significant improvement. From 25 patients 2 underwent revision. Patient which underwent revision because of insert dislocation resulting by trauma shows OKS results lower than average while FJS-12 results higher than average. Patient which underwent revision due to postoperative infection results shows both OKS and FJS-12 significantly higher than average.

Conclusions. OKS and FJS-12 results in patients who underwent UKR as well as comparison to other studies on the topic can be interpreted as satisfactory early postoperative results.

DEVELOPMENT OF A CUSTOM-FIT ORTHOSIS FOR BRACHIAL PLEXUS INJURIES USING 3D SCANNING AND ADDITIVE MANUFACTURING

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Keywords. Customized 3D orthosis; Upper limb; Brachial plexus injuries; Additive manufacturing

Objectives. The study aimed to create a non-invasive, custom-fit orthosis for the upper limb, specifically targeting brachial plexus injuries. This solution involved 3D scanning and printing the orthosis to fit securely around the upper limb.

Materials and methods. The study began with a 3D scanner to capture the anatomical shape of the upper limb of one cadaver provided by the Laboratory of Anatomy from the Department of Morphology at Rīga Stradiņš University. It was followed by an analysis to define the critical lever points and ensure optimal mobility support in the simulated injuries of the brachial plexus. The orthosis was modelled using CAD software to determine stress points and structural integrity. Additionally, the design allows manual remote unlocking, motorized activation, or adjustable friction resistance. The orthosis was produced using additive manufacturing technology to ensure precise fitting and cost-effective production.

Results. The 3D scanning process accurately captured the anatomical shape of the upper limb, providing a detailed foundation for creating precise orthosis models. This high-resolution data ensured that every contour and dimension of the limb was meticulously recorded. Analysis successfully identified critical lever points, ensuring optimal mobility support and enhancing overall functionality. CAD modelling revealed stress points and confirmed structural integrity, allowing adjustments to improve durability and performance. The orthosis integrates features such as a, manual remote unlocking, and resistance control, offering customizable support. Additive manufacturing facilitated orthoses production with precise fitting and cost-effective methods, demonstrating feasibility and efficiency. This process reduced production time and minimized material waste, making it environmentally friendly.

Conclusions. The developed orthosis offers adaptable comfort, flexible support, and a customized fit. It is lightweight, durable, and suitable for long-term use in chronic conditions, providing valuable insights into anatomical accuracy and biomechanical performance.

MID-TERM OUTCOMES OF DYNAMIC DIGITAL PEDOBAROGRAPHY IN PATIENTS FOLLOWING SURGICAL TREATMENT OF SEVERE HALLUX VALGUS DEFORMITY

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Keywords. Dynamic pedobarography; First metatarsal osteotomy

Objectives. Hallux valgus (HV) is the most prevalent foot pathology, associated with a decline in quality of life. The study aimed to evaluate the mid-term digital pedobarography outcome of patients with severe HV deformity after surgical treatment.

Materials and Methods. A retrospective study of 22 women (25 feet) who underwent the first tarsometatarsal joint fusion (Lapidus procedure) for severe HV deformity from January 2017 to December 2022 was conducted. Severe HV was defined as deformity where hallux valgus angle is more than 400, intermetatarsal angle ≥18° (HV grade 3). Dynamic digital pedobarography was used for the foot examination (Medacpateurs T-PLATE 30th). Participants were instructed to walk barefoot at their preferred speed along a straight, level pathway approximately 4 m in length. Evaluated foot regions included hindfoot, midfoot and forefoot divided in first metatarsal and second to fifth metatarsal regions.

Results. The patients' mean age was 60±7.2 years, mean weight 76.5±15.3 kg, and mean height 166.1 ±5.4 cm.

Post-operative left hindfoot mean average pressure was 1155.5 g/cm2, midfoot 1042.6 g/cm2. Forefoot mean average pressure was 1333.3 g/cm2, the first metatarsal - 1183.30 g/cm2 (48.4%), the second to fifth metatarsal - 1176.3 g/cm2 (51.6%).

Postoperative right hindfoot mean average pressure 1266.0 g/cm2, midfoot 1235.6 g/cm2. Forefoot mean average pressure 1213.2 g/cm2, the first metatarsal - 1207.1 g/cm2 (40.7%), and the second to fifth metatarsal 1218.7 g/cm2 (59.3%).

Conclusions. Mid-term pedobarography after first tarsometatarsal joint fusion shows reduced force on the first metatarsal and increased loading in the second to fifth metatarsals, indicating adaptive changes after severe HV deformity. Persistent high pressure under the second to fifth toes may increase the risk of secondary conditions, such as transfer metatarsalgia.

THE OPTIMAL COMPUTED TOMOGRAPHY SCAN COVERAGE FOR PEDIATRIC PATIENTS WITH ACUTE ABDOMINAL SYMPTOMS

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Keywords. Pediatric; Computed tomography; Appendicitis; Organ dose; Effective dose; Carcinogenesis

Objectives. The need for efficient CT scans is crucial for children, who are more vulnerable to radiation-induced damage, to ensure longer lifespans and minimize cancer risks. It's essential to restrict CT scans for diagnosing acute abdominal pathologies in children to only the required areas of the body in order to minimize radiation exposure. This study assesses the effectiveness of limiting CT scans to the L3 vertebra-symphysis region in reducing radiation exposure and associated risks in pediatric patients.

Materials and methods. The study involved 25 pediatric patients (11 girls and 14 boys) aged 7–17 years, with CT examination details retrieved from the Children's Clinical University Hospital's information systems. Inclusion criteria comprised patients aged 0-17 years, specific ICD-10 codes, and abdomen CT scans performed between January and October 2024 using a hospital's scanner. These examinations were analysed by VirtualDose™CT and PCXMC 2.0 software considering effective dose of every organ in particular.

Results. In this study it has been proven that limiting scans to the L3 vertebra-symphysis region significantly reduces effective radiation doses, preventing life expectancy loss by up to 14.3 days and lowering cancer risk. Radiation dose reductions were particularly significant: in the 15-year age group, doses are reduced by 71.02% in males and 56.02% in females, while in the 10-year age group, reductions are 64.39% in males and 67.29% in females.

Conclusions. This study emphasize the critical importance of optimizing CT scan protocols, as even minor adjustments can substantially decrease radiation exposure to organs, ultimately contributing to longer and healthier lifespans for pediatric patients.

THE ASSOCIATION BETWEEN RADIOLOGICAL AND PERIOPERATIVE MORBIDITY PREDICTORS IN PATIENTS WITH HEMORRHAGIC PANCREATIC PSEUDOCYSTS TREATED WITH ENDOVASCULAR EMBOLIZATION

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Keywords. Hemorrhagic pancreatic pseudocyst; Endovascular embolization; Perioperative morbidity predictors; Pancreatitis.

Objectives. Hemorrhagic pancreatic pseudocyst (HPP) is a rare, potentially life-threatening complication of either acute or chronic pancreatitis. Pathogenetically inflammation triggers enzymatic and vascular changes that disrupt pancreatic anatomy and vascular integrity. As a result of pancreatic proteolytic enzyme exposure, vessels that provide pancreatic blood supply (a. gastroduodenalis, a. lienalis, a. mesenterica superior branches) often rupture and cause hemorrhage into the pseudocyst. Endovascular embolization (EVE) is a minimally invasive treatment strategy that offers several advantages compared to a conventional surgical drainage.

Materials and methods. In this retrospective single centre study, we analyzed patients with radiologically confirmed HPP and performed EVE treatment in the Department of Interventional Radiology, Riga East University Hospital, Latvia between the years 2022 and 2024 and supplemented existing database from the same institution. The duration of hospitalization was chosen as the marker of disease severity and its correlation with the potential predictors was analysed using IBM SPSS software.

Results. The study included 72 patients (mean age 48.04 ± 1.46 years), of whom 58 (80.6%) were male. The mean hospitalization duration was 23.83 ± 4.06 days (Max=131) and the mean HPP diameter was 8,32 ± 4.47 cm. Statistical analyses revealed no significant correlations between hospitalization duration and either EVE duration or HPP diameter (Spearman, $p = 0.787$; 0.153, respectively). The duration of hospitalization wasn't correlated to the embolized artery, type of pancreatitis or HPP localization (Kruskal-Wallis, $p = 0.281$; 0.749; 0.93, respectively). No significant correlation was observed between cyst size and EVE procedure duration (Spearman, $p = 0.507$).

Conclusions. HPP diameter, localization, type of pancreatitis and embolized artery did not statistically significantly influence the duration of hospitalization. This suggests that hospitalization duration, as a marker of disease severity appears to be influenced by variables beyond the scope of this analysis.

[18F]PSMA PET/CT NEGATIVE EXAMINATION ANALYSIS IN PATIENTS WITH PROSTATE CANCER BIOCHEMICAL RECURRENCE

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Keywords. Prostate cancer; [18F]PSMA; PET/CT

Objectives. [18F]PSMA PET/CT is a relatively new hybrid molecular imaging method used to visualize prostate cancer early recurrence. Our data shows that in our patient cohort, more than 30% of [18F]PSMA PET/CT findings are negative, which is above the level indicated by international guidelines. In this study, we analyse the correlation between data obtained from PET/CT, histology examinations and history to find possible reasons and solutions.

Materials and methods. This retrospective study involved 53 patients who underwent [18F] PSMA PET/CT at a single clinic between 2023 and 2024. Patients were grouped by PET/CT outcomes – positive and negative. Each group was described by PSA level, Gleason score and administered therapy.

Results. 39.6% (n=21) patients had negative and 60.4% (n=32) had positive PET/CT findings. The groups had statistically significant differences ($p<0.05$) with the negative group's median PSA level – 0.53ng/ml (0.13-8.09ng/ml) and the positive group's median – 2.68ng/ml (0.36-110,00ng/ml). No significant correlation ($p>0.05$, $r<0.3$) was found between PSA levels and Gleason scores. The negative group's most common recurring prostate cancer was Gleason 3+ (61.9%) and patients with Gleason 4+ (28.6%). Regarding administered treatment before the recurrence of prostate cancer, PET/CT negative group had fewer patients that recieved radiotherapy 23.8% (n=5) and more patients with hormone therapy 4.8% (n=1), compared to positive group where 37.5% (n=12) patients recieved radiotherapy and 0% (n=0) patients recieved hormone therapy.

Conclusions. Our study resembles current literature data showing that the PSMA PET/CT is less sensitive in patients with lower PSA levels and low Gleason score. However, cancers previously treated with radiotherapy do not neccesseraly predict negative PET/CT findings. For better treatment outcomes these conclusions should be taken into consideration when reffering patients to [18F]PSMA PET/CT.

BRAIN VOT-THROMBECTOMY FUNCTIONAL OUTCOMES IN ISCHEMILUME AND ITS DERIVATIVES AS PROGNOSTIC BIOMARKERS OF BRAIN RESERVE AND POSC STROKE PATIENTS

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Keywords. Ischemic stroke; Segmentation; Brain volume; ICV; CSFV; Brain parenchymal fraction; Thrombectomy; Outcomes

Objectives. Despite advancements in endovascular treatments, the burden of poor outcomes in acute ischemic stroke patients remains significant, even after successful endovascular thrombectomy (EVT). While traditional prognostic factors (age, comorbidities, stroke severity, timing) are well established, brain volumetric parameters remain understudied. This study aimed to: Develop a robust segmentation protocol for brain parenchyma volume (BPV), intracranial volume (ICV), and cerebrospinal fluid volume (CSFV); Evaluate whether these parameters and their derivatives (e.g., BPV/ICV) can serve as biomarkers of brain reserve and predictors of post-thrombectomy outcomes.

Materials and methods. 40 ischemic stroke patients treated with EVT at University Hospital Stroke Centre from 2019 to 2024 were selected based on successful EVT TICI scores (2b/3). Long-term outcomes were categorized as favourable (mRS 0–3) or unfavourable (mRS 4–6) at 90 days post-procedure. BPV, ICV, CSFV as well as BPV/ICV and Core/BPV were measured on native CT series (in-plane resolution 2.5mm). ICV segmentation was performed using the CTseg extension of SPM12 software package. To validate the results, we applied a custom brain segmentation protocol: ICV was segmented using ITK-SNAP, CSFV was delineated with a custom Python script, and BPV was calculated as ICV minus CSFV.

Results. 40 patients were included in the analysis (Mean age 72.51 ±12.46 years, 61% female). Higher BPV/ICV ratios were associated with favourable outcomes ($p = 0.002$, Mann-Whitney), while increased CSFV/ICV ratios correlated with unfavourable outcomes ($p = 0.01$, Mann-Whitney). Among volumetric parameters, BPV/ICV showed the strongest association with favourable recovery. A combination of volumetric and traditional factors (e.g. NIHSS, EVT procedure duration) improved the prediction of outcomes ($R^2 = 0.45$, $p < 0.001$).

Conclusions. Brain volumetric parameters, particularly BPV/ICV and CSFV/ICV, are promising biomarkers for assessing brain reserve and predicting functional recovery post-thrombectomy.

PERFUSION CT: DEVELOPMENT OF AN AUTOMATED SEGMENTATION METHOD FOR ISCHEMIC STROKE CORE AND PENUMBRA

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Keywords. Ischemic stroke; CT perfusion; Segmentation; Core; Penumbra; AI

Objectives. CT-perfusion-based segmentation of the core and penumbra in ischemic stroke remains challenging, as both visual and simple algorithmic segmentation approaches are suboptimal. AI-based tools address these issues by offering fast, automatic calculations, but their high costs, deployment difficulties, and reliance on cloud-based systems limit accessibility. Aims of this study were to: Develop a minimally assisted automatic approach for ischemic stroke core and penumbra segmentation using Python and its widely available libraries; Evaluate our approach by comparing its volumetric results with those of a clinically validated AI software package.

Materials and methods. We developed Python scripts to automatically identify the brain midline and hemispheres and calculate core and penumbra from CT perfusion-derived maps. Widely accepted thresholds of <30% of CBF for core and Tmax >6 sec. for penumbra detection were used. The pipeline includes mean-weighted CBF calculation, followed by raw threshold-based segmentation and its further refinement through adaptive morphological operations such as dilation, closing, hole filling, erosion and median smoothing.

Results. We compared our segmentation results with clinically approved Viz.ai CTP on 62 ischemic stroke cases from the University Hospital Stroke Centre. Results showed a strong correlation between the methods for core, penumbra, mismatch volume, and mismatch ratio (Spearman 0.98, 0.96, 0.87, 0.75, respectively; $p < 0.001$). Mean absolute differences in volumes were 12.38 ± 12.54 mL for core and 18.32 ± 18.15 mL for penumbra. Wilcoxon signed-rank tests confirmed a significant difference for core volume estimation ($p = 0.007$). However, triage decisions based on DAWN/DEFUSE 3 criteria remained identical in the late window subgroup (>6 hours, n=20), where both correlations and volume estimations remained strong.

Conclusions. Our method demonstrated strong correlation with a clinically approved tool with significant volumetric differences but no impact on patient triage for thrombectomy.

CLINICAL ASPECTS AND EPIDEMIOLOGY OF OS PERONEUM: A META-ANALYSIS

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Keywords. Accessory ossicles; Anatomy; Foot and ankle anatomical variation; Os peroneum; Os peroneum syndrome

Objectives. Os peroneum (OP) is one of the most common accessory bones in the human foot. Its prevalence varies widely in the literature, ranging from 0.4% to 30%. Clinically, OP is the primary cause of a condition known as os peroneum syndrome, which typically presents as pain on the lateral side of the foot. This study aims to provide a comprehensive review of the available data on the prevalence of this accessory ossicle.

Materials and methods. A thorough search of major electronic databases was conducted to identify relevant articles. Data extracted from these studies included information on imaging methods, sex distribution, prevalence, and geographic origin of OP. The PRISMA guidelines were strictly followed throughout the review process, and the AQUA tool was used to assess the quality of the included studies.

Results. A total of 26 studies (22 948 feet) were included in the meta-analysis. The pooled prevalence estimate (PPE) of OP was found to be 6.6% (95%CI: 5.1-8.5) (95%PI: 0.02-0.22) of the analyzed feet. In the X-ray based subgroup, the PPE of OP was 6.7% (95% CI: 5.1-8.7) and in the cadaveric dissection based subgroup was 11.1% (95%CI: 5.1-22.4). The highest prevalence of OP was observed in North America (8.6% (95%CI: 5.9-12.3)), followed by Europe (6.0%, (95%CI: 3.8-9.4)) and Asia (5.9% (95%CI: 3.9-9.0)).

Conclusions. Os peroneum is a very common accessory ossicle which occurs approximately every fifteen feet. The highest prevalence of OP was found in the North American population. The occurrence of pain in the lateral part of the foot should draw physicians attention into considering a potential presence of OP during the differential diagnosis.

INJURIES OF THE LOWER BACK IN POWERLIFTING

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Keywords. Sports medicine; Traumatology; Orthopedic surgery

Objectives. Powerlifting is a non-Olympic sport consisting of three main lifts: squat, bench press, and deadlift. Powerlifting involves repetitive heavy loading and extreme exertion, which can cause injuries to the spine, especially to the lower back. Such injuries can be anything from minor sprains and strains to more significant problems like fractures or herniated discs. This article reviews the scientific research on back injuries and how powerlifting is related to them. The aim was to report on the incidence of lower back injuries and their proportion in powerlifting-related injuries among powerlifters. This study is the first meta-analysis that focuses on lower back injuries in powerlifting as a separate sport.

Materials and methods. Major electronic databases like Embase and MEDLINE/Pubmed were thoroughly searched. Full-text observational studies published in English were included, and studies published in other languages were translated by a bilingual researcher before being deemed eligible. The patients' gender or the year of publication were not restricted. The information about injuries sustained while lifting weights—particularly those involving the lower back—was taken out. Software called MetaXL (version 5.3) was used to conduct statistical analysis.

Results. There were 9 studies in this meta-analysis, a total of 799 patients. Out of the 565 reported injuries, 200 had low back pain. According to statistical analysis, over one-third of all powerlifting-related injuries involved low back pain (PPE = 35.4% (95%CI: 26.2% - 45.8%)), and low back pain affected roughly every fourth lifter (Pooled prevalence estimate (PPE) = 25.6% (95% CI: 15.8%-38.7%)).

Conclusions. Lower back injuries are a prevalent and significant issue in powerlifting, affecting a substantial proportion of athletes. For the purpose of creating efficient preventative and management plans, it is imperative to comprehend the biomechanical, training- related, and individual aspects that contribute to these injuries.

THE PREVALENCE AND ANATOMY OF ACCESSORY NAVICULAR BONE: A META-ANALYSIS

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Keywords. Accessory navicular; Os naviculare; Accessory ossicle; Foot and ankle anatomical variant

Objectives. There have been over 40 descriptions of the common developmental variants of the accessory ossicles of the feet. Although predominantly asymptomatic, they sometimes may be linked to painful conditions. One of the most common accessory ossicles in the foot is the accessory navicular bone (AN), located on the medial side of the foot. Our research provides a first meta-analysis on this topic that establishes its frequency by contrasting 39 studies from across the globe.

Materials and methods. Two major electronic databases (PubMed and Embase) were extensively searched for studies on the AN up to February 2024. Relevant information about the prevalence of AN was extracted. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards were closely followed while conducting this study.

Results. The analysis included 39 studies, 11,015 patients, and 36,837 feet. In patient and foot analyses, the pooled prevalence estimate (PPE) of AN was 17.5% (95%CI: 11.5%–25.7%) and 12.6% (95%CI: 10.1%–15.5%), respectively. AN subtype I (according to Coughlin's classification) was significantly more prevalent than subtypes IIA and IIB, for both patient and foot-based analyses. Bilateral and unilateral presence of AN was equally frequent with 50.0% of analyzed patients being diagnosed with each. AN distribution across sex-based groups was comparable (AN was confirmed in 21.1% of males and 22.0% of females). East Asians had the highest prevalence of AN (38.4%), whereas North Americans had the lowest prevalence (8.0%). There were no notable differences in the prevalence of AN between the two imaging modalities (cadaver dissection and X-ray).

Conclusions. Accessory navicular is a common finding in imaging studies. The population the study is conducted on determines its prevalence, which is unaffected by the patient's gender or the imaging modality used to assess AN.

BIOCHEMISTRY, PHARMACOLOGY, PHARMACY, PHYSIOLOGY

QUANTIFICATION OF POLYMERS (SOLUPLUS AND HPMCAS) AND DRUG (ITRACONAZOLE) IN DISSOLUTION MEDIA

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Keywords. Amorphous solid dispersion (ASD); Hypromellose acetate succinate (HPMCAS); Soluplus; Itraconazole (ITC); Quantification; Reflux; Polymer and metal complexation

Objectives. Amorphous solid dispersions (ASDs) enhance the bioavailability of poorly soluble drugs by incorporating the API in a polymeric matrix. Precise polymer quantification is crucial for solubility, stability, drug release. While previous quantification methods employed SEC-UV for Soluplus and HPLC-ELSD for HPMCAS, in this study an alternative method for the quantification of HPMCAS was investigated through a reflux-based metal-polymer framework (MPF) approach which may allow the indirect quantification of HPMCAS. While the accuracy and precision of the method remains to be improved, its cost-effectiveness and accessibility justify implementation.

Materials and methods. HPMCAS and CrCl3 were dissolved in ethanol, and polymer solution was gradually added to CrCl3 solution, followed by immediate reflux. The absorbance of chromium complex was measured at 242 nm via first derivative analysis. After optimisation, the reaction is planned to be conducted in presence of Soluplus and Itraconazole to assess their influence. The quantification of Soluplus and Itraconazole is to be performed via HPLC-SEC in presence of HPMCAS to evaluate its influence.

Results. The complexation of HPMCAS with CrCl3 was shown via FTIR and melting point determination. The decrease in CrCl3 concentration in solution due to the precipitating complexes allowed for the indirect quantification of HPMCAS. While the method still requires optimisation, repeatability of the current method with a reflux time of 6 hours is with an R.S.D.% of 1.79%.

Conclusions. HPMCAS was indirectly quantified after complexation with chromium by measuring the UV-absorbance of chromium in solution. The influence of Soluplus and Itraconazole, and the comparison of the method with HPLC-ELSD is planned to be investigated. This method offers a cost-effective and accessible alternative, eliminating the need for specialized HPLC detectors and columns required for conventional polymer quantification.

PHYSICAL STABILITY OF IBUPROFEN–HPMCAS SOLID DISPERSION AS FUNCTION OF SOLVENT TYPE

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Keywords. Amorphous solid dispersion; Ibuprofen; Solubility; Hypromellose acetate succinate; pXRD.

Objectives. Amorphous solid dispersion (ASD) is a method used to improve the solubility and bioavailability of orally administered drugs. This is especially important for drugs that belong to II and IV class according to Biopharmaceutics Classification System (BCS). The properties of ASD are influenced by the nature of drug, polymer and solvent used to prepare the ASD. The aim of the study was to evaluate the stability of the ibuprofen-HPMC-AS-L ASD depending on the solvent - acetone, acetonitrile, dimethyl sulfoxide.

Materials and methods. Ibuprofen was used as a model drug belonging to class II according to BCS. Hypromellose acetate succinate (HPMC–AS-L) was selected due to its ability to form ASD with ibuprofen. Acetone, acetonitrile, and dimethyl sulfoxide were used as solvents for ASD preparation because of their ability to dissolve HPMC-AS-L and ibuprofen. First, the solubility of Ibuprofen in each solvent was confirmed experimentally. The mixture of polymer-solvent (7.5% w/v) was prepared and used for turbidity and viscosity tests. The UV-spectroscopy, viscosity measurement, and pXRD were used to characterize the solvent-polymer interaction and kinetic stabilization of ASD.

Results. The turbidity of the HPMC-AS-L solution in acetonitrile was the highest one, while the lowest one in DMSO. The kinematic viscosity test results showed the opposite sequence – the DMSO-polymer solution was the most viscous (227.21 mm2/s) compared to the acetone-polymer and acetonitrile-polymer solution (94.38 mm2/s and 94.40 mm2/s, respectively). The pXRD of IBU–HPMC-AS-L film showed that the fastest crystallization was observed in acetonitrile.

Conclusions. The kinetic stability of ibuprofen–HPMC-AS-L films was dependent on the type of solvent used. The most unstable drug-polymer system was obtained with acetonitrile solvent which can be supported with the highest turbidity, lowest solubility of the polymer in this solvent, and the lower ability for hydrogen bonding.

IN VITRO EFFECTS OF CHROMIUM NANOPARTICLES ON HUMAN PLATELET FUNCTION IN PATIENT CARE: POST SURGICAL CONSIDERATIONS

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Keywords. Platelet aggregation, Orthopedic prostheses, Nanoparticles, Chromium

Objectives. Once in the bloodstream, chromium nanoparticles (NPs) can interact with many blood components. These particles are released from orthopedic and neurosurgical prostheses. A spinal disc implant made of a cobalt-chromium alloy is an example of an orthopedic prosthesis that contains chromium. These implants are utilized in total disc replacement procedures, which treat degenerative disc disease in the spine, one of the most prevalent health concerns in modern society and a common cause of persistent lower back pain or discomfort. There hasn't been enough research done on the possible harmful effects of Cr NPs on blood platelets. With chromium-rich disc implants becoming more and more common and degenerative disc disease in the spine having a high prevalence, this study aimed to examine the impact of chromium nanoparticles (Cr NPs) on platelet function in vitro.

Materials and methods. Using quartz crystal balance with dissipation (QCM-D), flow cytometry, and light transmission aggregometry, the examined NPs' capacity to stimulate platelet activation and aggregation was evaluated. Transmission electron microscopy (TEM), scanning electron microscopy, optical, and immunofluorescence microscopy were used to validate this.

Results. Significant variances in frequency and dissipation were seen when QCM-D sensor crystals containing platelet-rich plasma were perfused with Cr 35-45 nm and Cr2O3 60 nm NPs (0.5-5.0 μg/mL), suggesting that these NPs were responsible for platelet microaggregation. Moreover, transmission electron microscopy demonstrated that platelet lysis and swelling were also caused by Cr NPs. Our study shows that Cr NPs affect platelet function in vitro. Cr NPs cause both platelet aggregation and decreased platelet membrane integrity and lysis.

Conclusions. These results suggest that in patients wearing metal-on-metal Co-Cr prostheses, monitoring serum NP levels and platelet-mediated hemostasis may be beneficial.

DEVELOPMENT AND CHARACTERIZATION OF ALGINATE AND ALGINATE-CHITOSAN HYDROGELS FOR CONTROLLED RELEASE OF CHLOROGENIC ACID

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Keywords. Hydrogels; Drug delivery system; Alginate; Chitosan; Chlorogenic acid

Objectives. Plant polyphenols, including chlorogenic acid (CGA), possess a wide range of biological activity, but their wider application is hindered due to low oral bioavailability and stability. Hydrogels could be used to protect the active substance by controlling the drug release. This study aimed to develop and optimize the preparation of CGA-loaded alginate and alginate-chitosan hydrogel beads and characterize their physicochemical properties and drug release at different pH levels.

Materials and methods. Three formulations were prepared – alginate beads (ALG), chitosan-coated alginate beads (C-ALG), and chitosan-alginate beads (CHI-ALG). The synthesis of beads was optimized in terms of polymer concentration (1%, 2%, and 3% alginate; 0.5% and 1.5% chitosan) and CGA concentration (1 mg/mL vs 10 mg/mL). Ionic crosslinking using 1.5% calcium lactate solution was performed. UV/Vis at 324 nm was used to quantify the CGA content. Drug release tests were performed at pH 1.2, pH 7.4 to determine if pH-responsive drug release was achieved. Additionally, encapsulation efficiency (EE%), the mechanical properties of hydrogels using rheology, and the antioxidant activity of CGA, using the DPPH assay were determined.

Results. The average diameter of all types of beads was 4.78 mm. 2% and 3% alginate were determined suitable for drug-encapsulation. The EE% for 10 mg/mL CGA loaded ALG was 51.92%, while for C-ALG it was 37.04%. For ALG, 76.85% of CGA was released in 2 hours, while only 23.58 % was released using C-ALG. Higher chitosan concentration ensures slower release of CGA (23.58 % vs 13.63% in 2 hours) at pH 7.4. Only 15.69% of CGA is released at pH 1.2 with the rest released only at pH 7.4.

Conclusions. Chitosan-alginate double hydrogels provide a prolonged release compared to alginate hydrogels. pH-responsive behaviour suggests that developed system could be promising for oral delivery of CGA.

OPTIMIZATION OF DRUG RELEASE PROFILES USING HYDROGEL-BASED DRUG DELIVERY SYSTEMS: KEY CHALLENGES AND PERSPECTIVES

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Keywords. Drug delivery system; Drug release; In vitro; Hydrogel; Enhancer cells; Dialysis membrane; Extraction cells; Mathematical models; Paracetamol; Hydrogels

Objectives. Hydrogel drug delivery systems are highly versatile systems used for local drug delivery that allow drugs to be delivered in specific sites in the body. Drug release from hydrogels is a complex process influenced by the drug's properties, external environment and the hydrogel structure including surface area, cross-linking, density, drug loading. The drug release is influenced by the following processes: diffusion, swelling, matrix erosion. There is a lack of standardization for a hydrogel system drug release testing. The testing challenges found include: use of different release media, non-standard dissolution apparatus and long-term studies. The main aim of this study is to model, analyze, and compare various non-standard in vitro testing methods for an alginate hydrogel matrix loaded with paracetamol, serving as a water soluble model drug.

Materials and methods. Sodium alginate is a nontoxic biodegradable anionic natural polymer. The sodium alginate hydrogel was cross-linked ionically using a 5% calcium lactate solution. Hydrogels were made into beads and cylinder shapes and loaded with a soluble model drug: paracetamol. For drug release testing the dialysis bag method, direct immersion method, enhancer and extraction cell method were used. UV-Vis spectrometry was used to determine the quantitative content of paracetamol release in distilled water or phosphate-buffered saline solution.

Results. This study found that drug release is impacted by the hydrogel structure. The main factor influencing drug release was hydrogel surface area.

Conclusions. Our research provides crucial information to interpret the drug release profiles, review and improve the standardization of commonly used testing techniques.

THE EFFECTS OF MELDONIUM IN EXPERIMENTAL MODEL OF HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Keywords. Heart failure with preserved ejection fraction; Meldonium; Metabolic therapy; Mice

Objectives. Heart failure with preserved ejection fraction (HFpEF) is a syndrome associated with high morbidity and mortality. Meldonium has demonstrated cardioprotective effects in clinical and preclinical studies. This study assessed effects of meldonium in a mouse model of HFpEF.

Materials and methods. HFpEF was induced in C57B1/6N male mice subjected to a high-fat diet (HFD) and hypertension-causing agent L-NAME for 16 weeks. Meldonium (200 mg/kg) was administered via drinking water from the ninth week. To assess physical activity and metabolic flexibility, animals were placed in a metabolic and behavioral phenotyping system for one week during week 15. At treatment end, systolic blood pressure (BP), physical strength and endurance were assessed, and glucose tolerance test and echocardiography were performed. Subsequently, animals were anesthetized and left ventricular (LV) systolic and diastolic pressure measured. Vascular reactivity was assessed in isolated aortic rings.

Results. Meldonium-treated animals had lower fasting blood glucose concentration and improved insulin sensitivity compared to HFpEF animals. RER values in animals from HFpEF and meldonium-treated groups were ~0.7 during both light and dark phases, indicating sustained reliance on fatty acid metabolism. HFpEF mice had reduced physical endurance and grip strength, which was not improved by meldonium. Analysis of echocardiographic data revealed normal LV systolic function and heart hypertrophy in HFpEF and meldonium-treated animals. LV hypertrophy was more pronounced in meldonium-treated animals. HFpEF mice had increased systolic BP and LV systolic and diastolic pressure. Meldonium treatment decreased BP and LV systolic pressure and showed a tendency to reduce LV diastolic pressure. Meldonium treatment partially reversed blunted response to phenylephrine in aortic rings.

Conclusions. Our findings demonstrate that treatment with meldonium improves insulin sensitivity, reduces BP, and shows a tendency to decrease LV diastolic pressure. Meldonium at the studied dose facilitates LV hypertrophy development.

A COMPARISON OF POLYPHENOL COMPOSITION, ANTIOXIDANT, AND ALPHA-AMYLASE INHIBITORY ACTIVITY IN FOUR ROWAN BERRY (SORBUS AUCUPARIA) CULTIVARS

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Keywords. Sorbus aucuparia; Sorbus aucuparia “Granatnaya”; Sorbus aucuparia “Moravica”; Sorbus aucuparia “Burka”; Antioxidant; Rowan berries

Objectives. Rowan berries are considered a valuable medicinal plant due to their antioxidant, anti-inflammatory, antidiabetic, antimicrobial, and potential anticancer effects. Their bioactive compounds make them a promising candidate for the prevention and management of various health conditions. This study aimed to compare the chemical composition, antioxidant, and antidiabetic properties of juices from four Sorbus genus species: S. aucuparia (SA), S. aucuparia “Granatnaya” (SG), S. aucuparia “Moravica” (SM), and S. aucuparia “Burka” (SB).

Materials and methods. Four berry samples of each species were collected from various locations in Latvia. Berries were cleaned from impurities and juiced seperately, then freeze dried. Total phenolic content, total tannin content, antioxidants by DPPH (2,2-diphenyl-1-picrylhydrazyl) and alpha amylase activity were determined using UV-VIS spectroscopy.

Results. The juice yield was highest in SA (30.7%), followed by SB (26.2%), SG (24.7%), and SM (17.2%). Polyphenol content ranged from 25.5 mg gallic acid equivalent/g in SG to 72.7 mg in SA. The tannin content was highest in SA (15.3%) and lowest in SM (2.9%). Regarding antioxidant activity, SB exhibited the highest antioxidant capacity with an IC_{50} of 0.1 μg/mL, while SA (1.6 μg/mL), SG (1.4 μg/mL), and SM (2.1 μg/mL) showed lower activity compared to SB. The IC_{50} for Trolox standard was 0.04 μg/mL. For alpha-amylase inhibition, SB showed the strongest effect with an IC_{50} of 59.9 mg/mL, while SG (103.5 mg/mL), SM (106.3 mg/mL), and SA (124.9 mg/mL) exhibited weaker inhibition.

Conclusions. The study highlights differences in the antioxidant and antidiabetic properties of *Sorbus aucuparia* cultivars due to variations in bioactive compounds. SB’s strong activity may stem from specific phenolics with potent effects, while SA’s high polyphenol and tannin content lacked association with enzyme inhibition, emphasizing composition over total content for medicinal potential.

FROM SYNTHESIS TO STABILITY: DEVELOPMENT OF CHLOROGENIC ACID-LOADED TRANSETHOSOMES FOR TRANSDERMAL DRUG DELIVERY

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Keywords. Transethosomes; Nanoparticles; Drug delivery system; Chlorogenic acid

Objectives. To effectively treat various dermatologic conditions, the therapeutic agent must successfully cross the skin barrier. Transdermal nanoformulations could enhance the bioavailability and stability of therapeutic agents, therefore, enhancing antibacterial and antioxidative properties. The study aimed to optimize the synthesis of chlorogenic acid (CGA) loaded transethosomes and assess if the physicochemical properties, stability, and biological activity of the formulations could be suitable for transdermal applications.

Materials and methods. Transethosomes were synthesized using the cold method with optimization regarding surfactant and CGA concentration and synthesis conditions (mixing rate and time). The size, polydispersity index (PDI), and zeta potential (ZP) were determined through the dynamic light scattering method. EE% was determined by using HPLC-UV. The stability was determined for 3 months. The antimicrobial activity of CGA was evaluated by determining minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) against S.aureus, E.coli, and methicillin-resistant S. aureus. Additionally, a DPPH radical scavenging assay was performed to test CGA antioxidative properties.

Results. The optimized synthesis method produced empty transethosomes with a size of 176 nm, PDI 9.2%, and ZP -8.6 mV. A mixing rate of 2000 rpm for 30 min was determined to be suitable for synthesizing uniform nanoparticles. 10 mg/mL CGA-loaded transethosomes were smaller with a size of 141 nm with PDI 11.9% and ZP +6.4 mV, with similar trends observed for 5 mg/mL and 2.5 mg/mL CGA concentrations. The nanoformulations stayed stable for 3 months without forming agglomerates. Antimicrobial tests of CGA revealed that MIC was 5 mg/mL for all tested bacteria. CGA had potent antioxidant activity (IC50% 55 μg/mL).

Conclusions. The developed synthesis method produced uniform, stable transethosomes with a size suitable for transdermal delivery of CGA. Further research on double encapsulation with antibiotics is needed, to enhance the antimicrobial activity of these systems.

ANTIOXIDANT ACTIVITY AND PHENOLIC COMPOUNDS IN DIFFERENT PARTS OF THE URTICA DIOICA PLANT

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Keywords. Common nettle; Antioxidant activity; ABTS; FRAP; Chlorogenic acid

Objectives. Common nettle (Urtica dioica) is a significant source of bioactive compounds, making it a valuable addition to diverse nutrition. Leaves, stems, and roots are rich in bioactive phenolic compounds, which exhibit antioxidant, anti-inflammatory, vasodilatory, cardioprotective, and various other effects. The purpose of this study was to determine the antioxidant activity (AOA) and the concentration of total phenolic compound concentration (TPC) in distinct parts of the nettle with attention to concentration of some separate compounds.

Materials and methods. The biological material was collected in the municipality of Saldus in July 2024. The nettle parts were dried, turned into powder and mixed with methanol to create a nettle extract. Various spectrophotometry methods were applied: FRAP (Ferric ion reducing antioxidant power) and ABTS+ radical scavenging ability for AOA determination, and standard Folin-Ciocalteu method for TPC. HPLC was used to determine separate compounds such as chlorogenic, coumaric, ferulic acids, and quercetin. The extracts were analysed in triplicate; results were expressed in units commonly used according to a standard curve.

Results. The best results were obtained from the extracts of Common nettle leaves. The ability to scavenge ABTS+ for leaves was 13,42 mmol of TE/100 g, FRAP showed approximately 14,54 mmol of Fe2+/100 g, but TPC concentration was 1407,1 mg of GAE/100 g; The chlorogenic acid concentration was 779,25 ug/g – the highest of all substances investigated. The data from stems and roots were similar, up to 10 times lower than leaves for AOA activity and about 5 times lower for TPC, while results for separate compounds were variable, but also 2 to 6 times lower compared to leaves.

Conclusions. Nettle leaves are the most valuable part of the plant with a high content of bioactive phenolic compounds possessing pronounced antiradical and ion-reducing antioxidant activity.

IMPROVING THE SOLUBILITY OF WARFARIN SODIUM BY PREPARATION OF AN INCLUSION COMPLEX WITH B-CYCLODEXTRIN AND 2-HYDROXYPROPYL-B-CYCLODEXTRIN

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Keywords. Warfarin; Cyclodextrin; Solubility

Objectives. The kinetics of the inclusion complexes formed by warfarin sodium clathrate (WSC) with cyclodextrins have not yet been investigated. The aim of this study was to improve the solubility of WSC in 0.1M HCl (pH1) and PBS buffer (pH6.8) by formulating inclusion complexes with β-cyclodextrin (βCD) and 2-hydroxypropyl-β-cyclodextrin (HPB). By improving warfarin's solubility, taste-masked, warfarin-containing pellets can be developed for dose personalization.

Materials and methods. To determine the solubility and complexation ratio 500 mg of WSC was added into various concentration solutions of βCD and HPB. 10%, 50%, 100% solutions from 80% of the corresponding cyclodextrin maximum solubility in water were prepared in 0,1M HCl and PBS buffer. To determine when the complexation equilibrium was reached, 10% and 100% solutions were stirred magnetically at 800 rpm and room temperature for 48, 72, 96 hours. The UV spectrum and absorbance of warfarin in the samples were measured using a Shimadzu UV-1800 UV-VIS spectrophotometer at λ=307 nm.

Results. The chemical equilibrium was reached within 72 hours. The greatest improvement in solubility was observed at pH1 with 100% HPB solution, where the solubility increased from 0.004 mg/mL to 106.25 mg/mL, while for βCD it reached 1.45 mg/mL. In PBS the increasement was from 0.2 mg/mL to 106.26 mg/mL with HPB and 1.96 with βCD. The results for βCD in 10% and 50% solutions were 0.45 mg/mL and 0.99 mg/mL in pH1 and 0.5 mg/mL and 1.07 mg/mL in pH6.8, whereas for HPB it was 4.24 mg/mL and 48.5 mg/mL in pH1 and 5.44 mg/mL and 55 mg/mL for pH6.8.

Conclusion. These results demonstrate that the use of cyclodextrins can be an effective approach to significantly enhance the solubility of WSC—up to 2,500-fold at pH1 and 531-fold at pH6.8—while also providing the added benefit of masking its taste.

IMPROVING FLUORESCENT PROBES BY ENCAPSULATING STYRYLPYRIDINIUM COMPOUNDS IN NANOPARTICLES: CHARACTERIZATION OF THEIR PHOTOPHYSICAL PROPERTIES

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Keywords. Styrylpyridine salts; Nanoparticles; Fluorescent probe; Model membranes

Objectives. Fluorescent probes based on nanoparticles offer advantages like good biocompatibility, enabling precise imaging and tracking of drug distribution. Styrylpyridinium derivatives, known for their photostability, easy synthesis, and modifiability, are widely used in biochemical studies. Optimizing their structure can lead to enhanced probes for applications such as theranostic approaches to pathological processes in tissues and tracking therapy progression. The aim of this study is to explore structure-activity relationships and physicochemical properties of styrylpyridinium derivatives, including their interaction with lipid membranes, to expand the range of fluorescent compounds for diagnostic applications.

Methods. Dynamic light scattering was used to measure the self-assembling properties of the samples prepared by the ethanol injection method. Spectral properties, including absorption and fluorescence spectra, were recorded to investigate the optical characteristics of the compounds in different solvent compositions. The Langmuir-Blodgett method was employed to analyze the molecular packing and stability of the monolayers formed. The ion exchange method studied the effect of ion substitution on fluorescence intensity at varying lipid concentrations.

Results. The average diameter of the freshly formed nanoparticles in 10 μM aqueous solutions ranged from 125.7 to 290.0 nm, with a polydispersity index values between 0.108 and 0.382, and a zeta potential from 13.1 to 23.8 mV. The critical micelle concentration varied from 1.85 to 12.75 μM. The mean molecular area of the monolayers ranged from 74 to 112 Å². Large Stokes shifts ranging from 102 to 154 nm and quantum yields between 0.4% and 12.6% were observed. Ion exchange from bromide to perchlorate successfully enhanced the fluorescence intensity 10 times in incorporation with lipid membranes.

Conclusions. Formed nanoparticles exhibited self-assembly, stability, and distinct photophysical characteristics. Encapsulation of styrylpyridinium compounds enhanced their optical properties, supporting the development of optimized fluorescent probes for biomedical diagnostics and imaging.

IMPROVING NANOPARTICLE PROPERTIES USING ETHYLENE-BRIDGED CATIONIC GROUPS AND BRANCHED ESTER CHAINS IN THE 1,4-DIHYDROPYRIDINE CORE

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Keywords. 1,4-dihydropyridines; N-pyridinium moiety; Branched esters, Nanoparticles

Objectives. Cationic 1,4-dihydropyridines (1,4-DHPs) have been widely studied as nanodelivery systems due to their ability to form liposomes. Effective liposomal drug carriers require stability, biocompatibility, and efficient drug encapsulation and delivery. Their properties are highly influenced by lipid composition, and structural modifications can enhance their performance. The aim of this study was to determine the influence of branched alkyl ester moieties at positions 3 and 5, as well as an N-pyridinium substituent at positions 2 and 6 introduced via ethylene bridge to the 1,4-DHP core, on physicochemical and self-assembling properties, and to characterize nanoparticles formed by these compounds.

Materials and methods. 1,4-DHP amphiphiles were synthesized through a multistep procedure. Liposomal samples were prepared in an aqueous solution using the ethanol injection method, with a final concentration of 0.1 mM. The nanoparticles were characterized using the dynamic light scattering method, while monolayer properties - with the Langmuir-Blodgett trough techniques. The critical micelle concentration (CMC) was determined using pyrene as probe, based on changes in the ratio (I FIII/I FI) of its emission peaks I and III with surfactant concentration. RNA encapsulation was estimated using the Quant-iT PicoGreen ReadyPlate assay.

Results. The formed nanoparticles were with average diameter ranging 60-124 nm, and polydispersity index values 0.272-0.560 for freshly prepared samples. Liposome characteristics remained unchanged during one month of storage. The average CMC value for compounds with linear chains was 0.773 mM, while for branched chain samples it ranged 1.202-1.536 mM. The mean molecular area of the compounds was between 99.17-225.70 Å2. The N-butyl-3-pyridinium substituent (positions 2 and 6) impaired the liposomes ability to bind RNA.

Conclusions. The introduction of branched ester groups and ethylene-bridged cationic moieties into the structure of amphiphilic 1,4-DHPs affects their self-assembling and monolayer properties, CMC, and RNA binding ability.

ALUMINIUM NANOPARTICLES AS A RISK FACTOR FOR ALTERED PLATELET FUNCTION?

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Keywords.

Objective. Endoprostheses are prone to tribological wear and biological processes that lead to therelease of particles, including aluminum nanoparticles (Al NPs). Those particles can diffuse intocirculation. However, the toxic effects of NPs on platelets have not been comprehensively analyzed.

Materials and methods. The aim of our work was to investigate the impact of Al NPs on human platelet function using a novelquartz crystal microbalance with dissipation (QCM-D) methodology. Moreover, a suite of assays, including light transmission aggregometry, flow cytometry, optical microscopy and transmissionelectron microscopy, were utilized.

Results. All Al NPs caused a significant increase in dissipation (D) andfrequency (F), indicating platelet aggregation even at the lowest tested concentration (0.5 μg/mL), except for the largest (80 nm) Al NPs. A size-dependent effect on platelet aggregation was observedfor the 5–20 nm NPs and the 30–50 nm NPs, with the larger Al NPs causing smaller increases in D andF; however, this was not observed for the 20–30 nm NPs.

Conclusions. Our study showed that small (5–50 nm) Al NPs caused platelet aggregation, and larger (80 nm) caused a bridging–penetrating effect in entering platelets, resulting in the formation of heterologous platelet–Al NPs structures. Therefore, physicians should consider monitoring NP serum levels and platelet activation indices inpatients with orthopedic implants.

IMPACT OF CROSSLINKERS ON GALLIC ACID ENCAPSULATION AND RELEASE FROM ALGINATE HYDROGELS FOR WOUND HEALING APPLICATIONS

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Keywords. Hydrogels; Gallic acid; Alginate; Crosslinker; Drug release

Objectives. Gallic acid (GA), a trihydroxybenzoic acid, possesses a range of biological activity, including antibacterial and anti-inflammatory. Since hydrogels are effective in wound care due to their moisture-retaining, and protective properties, GA could be loaded into these systems to achieve a sustained release. This study aimed to determine the impact of ionic crosslinkers and crosslinking conditions on GA encapsulation and release from alginate hydrogels at different pH levels.

Materials and methods. 2% alginate solution was cross-linked with 6 ionic crosslinkers (Ca2+, Ba2+, Sr2+, Zn2+, Fe3+, Al3+) by forming alginate beads. Two crosslinker concentrations (1.5% and 5%) and crosslinking times (30 min and 2 hours) were applied. Hydrogel beads were characterized in terms of physicochemical properties, mechanical strength, antioxidant activity, encapsulation efficiency (EE%), and drug release. Drug release was tested using distilled water, PBS pH 7.4, and PBS pH 5.5. GA content was quantified, using UV/Vis spectrophotometry at 260 nm.

Results. Although, all used agents crosslinked the alginate solution to form beads, only divalent could be used in the case of GA-loaded beads due to the reaction between GA and trivalent cations. 2 mg/mL was determined the optimal concentration of GA used for hydrogel synthesis with the EE% ranging between 40% to 45%, while using Ca2+ and Ba2+ as crosslinker. Zn2+ formed hydrogels with low mechanical strength are unsuitable for GA delivery. Crosslinking with Ba2+ provides a slower release of GA (40% after 2 h) compared to Ca2+ crosslinked beads (77% after 2h) at pH 7.4. At pH 5.5 a more sustained release was observed (48% after 2h) while using Ca2+.

Conclusions. Ionic crosslinking using Ca2+ for 2h forms the most mechanically stabled hydrogels with sustainable release properties at skin pH, making this drug delivery system promising for transdermal delivery of GA.

THE ROLE OF FOOD ADDITIVES AND SPICES IN SHAPING THE ANTIOXIDANT STATUS OF PROCESSED MEAT PRODUCTS

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Keywords. Meat; Food additives; Spice blends; Antioxidant activity; DPPH; ABTS; ORAC

Objectives. The use of food additives in processed meat products is essential for enhancing quality and stability while influencing oxidative processes, which lead to quality deterioration. In Latvia, processed meat products, particularly sausages and smoked meats, are an essential part of the population's diet, their consumption is increasing, whereas the consumption of fresh meat is decreasing. The aim of this study was to analyse the impact of certain food additives and spice blends on the antioxidant properties of two different processed meat products.

Materials and methods. Milk-based chicken sausages and smoked pork sausages were investigated. Extracts from previously frozen samples of meat, products with added spice blend and food additives at different preparation stages including thermal treatment were analysed. The spice blends were analysed separately. Antioxidant activity (AOA) was measured applying three widely accepted methods: the radicals 2,2'-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging activities, and oxygen radical absorbance capacity (ORAC).

Results. Food additives and spice blends possess AOA and significantly impact on AOA of products during meat processing. In chicken sausages, a notable reduction in antioxidant activity about 60% was observed during thermal treatment stages, particularly using ABTS and ORAC methods, mitigated by the addition of selected blends. Pork sausages exhibited higher oxidative stability, showing decreases only about 40% toward finished product processing measuring by ABTS and ORAC methods, whereas DPPH method demonstrate slight increase. These variations highlight the differential impact of additives and blends across products depending on their composition and nature.

Conclusions. Food additives and spice blends significantly influence the antioxidant activity and oxidative stability of processed meat products. Additives play a pivotal role in preserving product quality by mitigating oxidative stress, particularly during thermal processing, and in our study pork sausages demonstrating greater resilience than chicken sausages.

FERULIC ACID EXHIBITS MODULATORY EFFECTS IN A NEUROTOXICITY MODEL INDUCED BY GAMMA-HEXACHLOROCYCLOHEXANE

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Keywords. Ferulic acid; Gamma-hexachlorocyclohexane; Neurotoxicity; Behavioral changes; Antidepressant effects

Objective. Ferulic acid (FA) is a phytophenol that exhibits numerous neuroprotective effects, including anti-inflammatory, antioxidant and neuromodulatory properties. These effects form the basis for its testing in animal models of depression. One of these models is a model of neurotoxicity induced by gamma-hexachlorocyclohexane (HCH), a pesticide and scabicide with neurotoxic effects that can lead to the emergence of depressive behavior. Thus, the aim of this study was to investigate the modulatory effects of FA on behavioral changes present in neurotoxicity model induced by HCH, using forced swimming test (FST).

Materials and methods. Male Wistar albino rats were divided into three groups: H in which we administered HCH at a dose of 0.5mg/kg i.p, F+H in which we administered FA at a dose of 40 mg/kg i.p, after which HCH was administered in a dose of 0.5 mg/kg i.p, and C in which we administered saline in a dose of 0.5 ml/kg i.p. The administration of substances was carried out over a period of one month. After the end of substance administration, the rats were tested in the FST where we monitored time of struggling, swimming and immobility.

Results. The administration of HCH resulted in a statistically significant reduction in struggling time and an increase in immobility time compared to the control group ($p<0.05$). However, no significant difference in swimming time was found between the HCH and control groups ($p>0.05$). Conversely, administering FA prior to HCH significantly prolonged struggling time and reduced immobility time in the F+H group compared to the H group ($p<0.05$). No significant difference in swimming time was noted between the F+H and H groups ($p>0.05$).

Conclusion. Ferulic acid exhibits modulatory effects on depression-related behavior and shows therapeutic potential in an experimental model of neurotoxicity induced by gamma-hexachlorocyclohexane.

CHROMATOGRAPHIC DETERMINATION OF LIPID PEROXIDATION MARKERS

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Keywords. Oxidative stress; Cardiolipin; Lipidomics; Chromatography; Mass spectrometry

Objectives. Changes in the lipidomic profile, including oxidized cardiolipins (oxoCLs), are considered promising biomarkers. However, research in this field is limited by the lack of commercially available standards for oxoCLs. Therefore, the development of in-house preparation methods and the optimization of conditions for achieving the highest levels of oxidation products are essential. The objectives of this study were to investigate and evaluate the conditions for oxoCL preparation, optimize the extraction of cardiolipins (CLs) and oxoCLs following the oxidation process, and identify the primary products of CL oxidation under the tested conditions.

Materials and methods. The preparation of oxoCLs was performed using the Fenton reaction, followed by liquid-liquid extraction (LLE). The study was conducted using tandem liquid chromatography-mass spectrometry Shimadzu Prominence LC-20 HPLC system coupled to Thermo Finnigan LCQ Advantage mass spectrometer. Separation was achieved with Phenomenex Phenyl-Hexyl Column (100 x 3 mm; 3 μm) and mobile phases 10 mM CH3COONH4 in H2O and 10 mM CH3COONH4 in H2O – 5% + ACN:IPA (7:3 v/v) – 95%.

Results. Comparison of Fenton reaction mixtures based on oxoCL generation and extraction efficiency identified 200 μM Cu^{2+} with 30 μL 2 M H_2O_2 in the Fenton mix and chloroform:methanol (4:1) extraction as the most effective. Identification of CL isomers was successfully achieved.

Conclusions. The composition of the oxidation mixture and choice of extraction solvent significantly influenced the recovery of CLs and oxoCLs. The primary products under the tested experimental conditions were identified as mono- and bis-hydroperoxides (desired products).

IN VITRO EFFECT OF URSODEOXYCHOLIC ACID AND DOXORUBICIN ON THE ACTIVITY OF ANTIOXIDANT ENZYMES

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Keywords. Oxidative stress; Ursodeoxycholic acid; Breast adenocarcinoma; Doxorubicin; Apoptosis

Objectives. One of the characteristics of malignant cells is a constitutive increase in the level of oxidative stress due to metabolic reprogramming. Ursodeoxycholic acid is a hydrophilic bile acid with antioxidant properties. In addition, bile acids can modulate gene expression, enzyme activity and cell membrane permeability to drugs, directly and indirectly influencing the pharmacodynamics of drugs. The aim of this study is to investigate in vitro effect of ursodeoxycholic acid on the activity of antioxidant enzymes: superoxide dismutase (SOD), glutathione peroxidase (GPx) and glutathione reductase (GR) in the MCF-7 human breast adenocarcinoma cell line.

Materials and methods. Human breast adenocarcinoma cells (MCF-7) were incubated in a medium containing doxorubicin without/with the addition of ursodeoxycholic acid. After incubation for 24 h, the activity of SOD, GPx and GR was tested.

Results. Incubation of MCF-7 cells with doxorubicin, as well as coincubation with doxorubicin and UDCA, resulted in an increase in the specific activity of SOD and GR compared to contreol group, however without statistical significance. The increase in SOD and GR activity was highest in UDCA dotreated cells. The increase in the specific activity of Gpx in the UDCA-treated group of cells was statistically significant compared to the doxorubicin-treated group of cells ($p=0.032$).

Conclusions. Ursodeoxycholic acid increases the intensity of oxidative stress and the expression of antioxidant enzymes in the model of doxorubicin-induced oxidative stress in MCF-7 human breast adenocarcinoma cells.

FAST DISINTEGRATING AND EFFERVESCENT TABLETS OF ADAPTOGENIC RHODIOLA ROSEA L. EXTRACT: DEVELOPMENT AND EVALUATION

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Adaptogen; fast disintegrating tablets; effervescent tablets; herbal formulation; Rhodiola rosea; double maceration; vacuum drying; direct compression.

This study aimed to develop an extraction method for a standardized Rhodiola rosea L. extract, that can be used to formulate fast disintegrating and effervescent tablets, ensuring adherence to established physical and organoleptic criteria.

A liquid Rhodiola rosea L. Extract was prepared by double maceration with ethanol, followed by quantitative analysis. The liquid extract was subsequently dried using either lyophilization or vacuum drying, with both methods evaluated for physical properties, as well as the content of rosavin and salidroside in the finished extract, alongside method efficiency. Fast disintegrating and effervescent tablets were developed via direct compression using a single-punch compaction simulator tablet press, with each formulation was assessed for post-compression physical and organoleptic properties.

Quantitative analysis confirmed the presence of rosavin and salidroside in the liquid extract. Vacuum drying yielded superior results in HPLC analysis, demonstrating optimal method efficiency and favorable flow properties for the dry powder extract. Two doses of fast disintegrating tablets were formulated and optimized, initially focusing on the taste-masking efficacy of three different sweeteners and citric acid. Subsequently, formulations were refined by varying concentrations of croscarmellose sodium and other excipients, assessing their impact on disintegration time, hardness, and organoleptic properties, resulting in a total of 20 distinct formulations. Effervescent tablets were designed to contain 625 mg of the vacuum-dried extract, with optimization based on the taste-masking abilities of different sweeteners and citric acid, as well as the dissolution times and physical properties of sodium carbonate, sodium bicarbonate, and other excipients in various ratios.

The HPLC analysis results indicated the suitability of the vacuum-dried Rhodiola rosea L. for the development of effective fast disintegrating and effervescent tablet formulations. Among the numerous formulations created, several met the established organoleptic and physical criteria.

INTERNAL MEDICINE I (CARDIOLOGY, PULMONOLOGY)

PREVALENCE OF CARDIOVASCULAR DISEASE AND FACTORS ASSOCIATED WITH HOSPITALIZATION AND LENGTH OF HOSPITAL STAY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Keywords. Cardiovascular disease; COPD; Hospitalization

Objectives. Multimorbidity is common in chronic obstructive pulmonary disease (COPD) patients, with cardiovascular disease (CVD) frequently associated with increased hospitalization and mortality. This study evaluated the prevalence of cardiovascular and respiratory comorbidities in COPD patients and their impact on hospitalization outcomes.

Materials and methods. A retrospective review of medical records from 177 patients hospitalized at Riga East University Hospital (January 2019 - June 2024) was conducted. Excluding 33 bronchial asthma patients, final cohort included 144 COPD patients. Chi-square and Mann-Whitney U tests assessed relationships between variables.

Results. Cardiovascular comorbidities were highly prevalent: 94.4% had hypertension, 81.3% chronic heart failure, 52.8% chronic coronary disease, 33.3% atrial fibrillation, 26.4% previous myocardial infarction, and 4.2% previous cerebral infarction. Additionally, 18.1% had pulmonary hypertension, and 6.9% had cor pulmonale. Chronic coronary disease ($p=0.004$), prior myocardial infarction ($p=0.028$), and persistent atrial fibrillation ($p=0.012$) increased the frequency of COPD-related hospitalizations. Mean hospitalization length due to COPD exacerbation was 8.7±5.0 days, and 19.4±15.6 days for patients requiring intensive care unit admission. Pulmonary hypertension ($p=0.004$), cor pulmonale ($p=0.01$), obesity-hypoventilation syndrome ($p=0.009$), and chronic hypercapnic respiratory failure ($p<0.001$) were associated with longer stays. No significant link between CVD and hospitalization duration was found. Mechanical ventilation was required in 13.9% of patients (mean duration 14.0±15.3 days), associated with acute ($p<0.001$) and chronic hypercapnic respiratory failure ($p=0.033$). Non-invasive ventilation, required by 11.8% (mean duration 4.1±4.55 days), was linked to previous myocardial infarction ($p=0.031$), acute ($p<0.001$), and chronic hypercapnic respiratory failure ($p=0.048$). During hospitalization, exitus letalis occurred in 11.1% of patients, with mortality significantly associated with chronic heart failure ($p=0.029$), cor pulmonale ($p=0.002$), chronic hypercapnic respiratory failure ($p=0.008$), and mechanical lung ventilation ($p=0.002$). Cardiovascular causes accounted for 25% of these deaths.

Conclusions. Cardiovascular and respiratory comorbidities in COPD patients impact outcomes, increasing hospitalization frequency, length of stay, and mortality.

FREQUENCY OF ANTIARRHYTHMIC DRUG PRESCRIPTIONS AND THEIR EFFECTIVENESS IN REDUCING REHOSPITALIZATIONS IN PATIENTS AFTER CARDIOVERSION IN THE EMERGENCY DEPARTMENTS OF THE LARGEST HOSPITALS IN LATVIA

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Keywords. Antiarrhythmic drug; Hospitalisation; Emergency department

Objectives. To evaluate the frequency of antiarrhythmic drug prescriptions and their impact on rehospitalizations in atrial fibrillation patients after cardioversion in emergency departments.

Materials and methods. A retrospective analysis was conducted on 263 paroxysmal AF-related hospitalizations, corresponding to 247 unique patients, at Pauls Stradiņš University Hospital (PSKUS)and Riga East University Hospital (RAKUS) (2022–2024). Data included diagnostics, therapeutic strategies, and discharge recommendations. Statistical analysis using SPSS focused on AAD prescribing patterns and rehospitalization correlations. The cohort size was limited, and the study is ongoing.

Results. Among the 263 hospitalizations, 164 patients (62.4%) were not using any antiarrhythmic drugs (AAD), while 99 patients (37.6%) were receiving ongoing AAD therapy.
Of the patients without prior AAD use, 7.9% (13/164) were prescribed new AADs during hospitalization. This included 3 patients prescribed amiodarone, 3 prescribed propafenone, 1 prescribed sotalol, and 6 prescribed etacizine.
Among those prescribed new AADs, 23% (3/13) were rehospitalized, with only 1 patient rehospitalized within a year.
At the time of admission, 53.6% of patients (141 out of 263) were using beta-blockers(BB), while 46.4% (122/263) were not. Among the patients who were not using BB at admission, 35.2% (43/122) were newly prescribed beta-blockers after hospitalization.
Among those who were prescribed beta-blockers, 16.2% (7/43) were rehospitalized. Additionally, 3 patients received recommendations to use both anti-arrhythmic drugs (AADs) and beta-blockers. Of these, one patient was rehospitalized more than a year later.

Conclusions. Variability in AAD prescribing influenced rehospitalization outcomes. While new AAD prescriptions showed potential to reduce rehospitalization rates, the small sample size prevents definitive conclusions. Further research is needed to expand the cohort and optimize treatment strategies for paroxysmal AF, ultimately improving patient outcomes.

HEMATOMA FORMATION AFTER CIED IMPLANTATION: WHAT DRIVES THE RISK?

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Keywords. Cardiac implantable electronic devices; Complications; Hematoma; Risk factors

Introduction. Postoperative bleeding and hematoma formation are serious complications following cardiac implantable electronic devices (CIED) implantations, which can account for up to 14% of cases. These complications often present with initial signs - swelling, bruising, tension, pain at the surgical site, which can progress to more severe conditions. Identifying risk factors is essential for understanding and managing surgical outcomes.

Objectives. To evaluate the risk factors influencing postoperative bleeding and hematoma formation in patients undergoing CIED implantation.

Materials and methods. A retrospective study was conducted using data from patients treated at the Cardiology Clinic of LUHS Kauno Klinikos between January 1, 2020, and December 31, 2023, for hematoma formation after the implantation of CIED. 17 patients' data were included in the final analysis. The study aimed to evaluate potential risk factors, including preoperative patient demographics, blood test results, echocardiographic findings, surgery and device-related data.

Results. Complications were more experienced by men, who accounted for 58,8 % (n = 10) of all patients, while women made up 41,2 % (n = 7). The age of the subjects ranged from 28 to 92 years, with the most complications occurring in patients aged 75 to 79 years. The average age was 74,59 ± 16,4 years. The study found that patient demographics did not significantly impact the incidence of postoperative bleeding or hematoma formation. However, prolonged prothrombin time ($p = 0,02$) and reduced prothrombin activity ($p = 0,035$), were significantly associated with higher complication rates. Patients with heart failure ($p = 0,014$) were more likely to experience postoperative bleeding and hematomas. Additionally, study showed that different CIED manufacturers had different numbers of complications.

Conclusions. The study identified several key risk factors for postoperative bleeding and hematoma formation, including patients' comorbidities, changes in preoperative blood test results, and implanted device-related factors. These findings underscore the importance of preoperative risk assessment.

THE RISK FACTORS AND INCIDENCE OF PULMONARY EMBOLISM IN TRAUMATIC BRAIN INJURY PATIENTS

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Keywords. Thoracic aortic aneurysm; Genetic variants; Echocardiography

Objectives. Traumatic brain injury (TBI) is a critical health concern, causing a high risk for venous thromboembolism (VTE) among many complications associated with TBI, thromboembolic events, including deep vein thrombosis and pulmonary embolism, affecting up to 20–30% of patients with severe injuries []. This study aims to analyse the risk factors contributing to thromboembolic complications in TBI patients in the intensive care unit (ICU).

Materials and methods. In a retrospective cohort study, the medical records of 143 TBI patients admitted to the ICU were examined between January 1 and December 31, 2023. These patients were included to the study based on ICD codes S06.0-S06.9. Multivariable analysis was used as the primary analysis to identify risk factors for VTE in TBI. Statistical analysis was applied using chi-square and Mann-Whitney U test to find significant associations.

Results. The study consisted of 38 women (26.6%) and 105 men (73.4%), with a mean age of 60.69 ± 20.12 years. Thromboembolic events were observed in 11 patients (7.7%), while 132 patients (92.3%) experienced no such complications. A statistically significant connection was in the 65–75 age group, ($p = 0.027$). No significant coherence was identified with other variables such as gender ($p = 0.172$), ventilation duration ($p = 0.865$), sedation duration ($p = 0.158$), hospital duration (p=0,274), ICU stay duration (0,462), tromboprofilaxis (p=0,395), neurological condition (p=0,319), primary diagnosis (p=0,970), warfarin use (p=0,220), heart disease (p=0,884), operation (p=0,594), oncology (p=0,344), hormone therapy (p=0,722), sepsis (p=0,186), diabetes (p=0,401), obesity (p=0,856), central vein catheter (p=1), GCS (p=0,312), previous tromboembolism (p=0,233), treatment (p=0,217). Notably, fraxiparine use approached statistical significance ($p = 0.086$).

Conclusions. These listed factors are the main ones that cause tromboembolic complications in patiens with TBI. The results reflect the need for the prevention of thromboembolism in particularly high-risk groups, such as those aged 65-75 years. While other factors lacked statistical significance, they need further exploration in a larger sample to improve thromboprophylaxis guidelines and patient outcomes.

THE FREQUENCY OF ORAL ANTICOAGULANT PRESCRIPTIONS FOR ATRIAL FIBRILLATION PATIENTS AFTER CARDIOVERSION IN THE EMERGENCY DEPARTMENTS OF THE LARGEST HOSPITALS IN LATVIA

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Keywords. Atrial fibrillation; Oral anticoagulants

Objectives. Atrial fibrillation (AF) is the most common arrhythmia, with increasing prevalence in Europe and globally. Stroke is the main complication, and despite clear prevention guidelines, strokes remain frequent. Our aim is to analyze the frequency of oral anticoagulant prescriptions in the emergency departments of Latvia's largest hospitals.

Materials and methods. Data from 263 patients presenting to Emergency Department with atrial fibrillation at Pauls Stradins Clinical University Hospital (PSKUS) and Riga East University Hospital (RAKUS) from 2022–2024 were analyzed using IBM SPSS. Metrics included duration of atrial fibrillation, medications, chronic diseases and discharge recommendations.

Results. Among the 263 analyzed patients, 142 (54%) were on oral anticoagulant (OAK) treatment prior to hospitalization, while 121 (46%) were not using any OAK. After cardioversion, at discharge, 43 out of the 121 patients (35.5%) received a first-time OAK prescription. Tendency to recommend OAK first-time prescription varied by CHA2DS2–VASc score: for score = 0, 18.8% (n-3); for score = 1, 41.9% (n-31); for score = ≥2, 36.5% (n-74). At PSKUS, among 112 analyzed patients, 15 (13%) were prescribed OAK for the first time, while 22 patients (20%) did not receive recommendations for OAK use. At RAKUS, among 151 analyzed patients, 28 (19%) were prescribed OAK for the first time, and 57 patients (37%) did not receive recommendations for OAK use. Among patients over 65, rivaroxaban was the most commonly prescribed first-time anticoagulant (22.9%), followed by edoxaban (4.2%) and apixaban (2.1%).

Conclusions. This study highlights variability in the application of ESC guideline recommendations for OAK treatment in Latvia's largest hospitals. Despite overall adherence, gaps remain, with some eligible patients being discharged without OAK, which increases the risk of complications and emphasizes the need for standardized practices to ensure optimal care.

INFLUENCE OF PATHOGENIC GENETIC VARIANTS ON THE THORACIC AORTIC ANEURYSM: AN ECHOCARDIOGRAPHY STUDY

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Keywords. Thoracic aortic aneurysm; Genetic variants; Echocardiography

Objectives. A thoracic aortic aneurysm (TAA) is the dilation of the ascending aorta, which may lead to dissection or rupture. While causes vary, about 20% of cases have a genetic origin. We aimed to evaluate the impact of pathogenic genetic variants on TAA size, clinical features, echocardiographic parameters and indications for surgical treatment.

Materials and methods. We conducted a retrospective data analysis of 57 patients diagnosed with TAA, all of whom underwent genetic testing. Patients were divided into two groups: one group consisted of 24 patients who carried pathogenic genetic variants, while the other group consisted of 33 patients who did not. Clinical features and echocardiographic values were analyzed and compared between the two groups. Furthermore, the patients were categorized according to TAA surgical treatment. Statistical analysis was performed using IBM SPSS Statistics 29.0. Results were considered statistically significant when the p-value was <0.05.

Results. No significant differences in echocardiographic parameters were found between the two groups. The analysis demonstrated a correlation between ACTA2 gene pathogenic variant and the higher rate of surgically treated patients with TAA ($r=0.294$, $p=0.024$). A statistically significant negative correlation was observed between age and FBN1 pathogenic gene occurrence ($r = -0.308$, $p = 0.035$), indicating that FBN1 carriers were younger. However, in the patients with HFE gene pathogenic variant, a positive correlation with the ascending aorta (AAo) diameter ($r=0.305$, $p=0.031$) was observed.

Conclusions. The correlation between the ACTA2 pathogenic variant and higher rate of surgical treatment indicates that the variant influences the progression and severity of TAA. The FBN1 gene was associated with younger age, suggesting that fibrillinopathies are suspected and diagnosed at an early age. The HFE pathogenic gene variant correlated with bigger AAo diameter. However, our study sample is limited, and the data needs further investigation.

INFLAMMASOME ACTIVATION IS POSITIVELY CORRELATED WITH DISEASE SEVERITY OF PULMONARY ARTERIAL HYPERTENSION IN RATS

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Keywords. Pulmonary arterial hypertension (PAH); Inflammation; Right ventricular pressure (mRVP); Occlusion score; Rat model

Introduction. Pulmonary arterial hypertension (PAH) is characterized by increased pulmonary arterial pressure and right heart failure caused by changes in the walls of pulmonary arterioles. The exact mechanisms are still unknown, but inflammation and inflammasomes are believed to play a crucial role. In this study we investigate the relationship between inflammasome activation and disease severity of PAH in a rat model of flow-induced PAH.

Objectives.

Materials and methods. Twenty rats were divided into four groups. Three groups underwent PAH induction and one group served as a control group. PAH was induced by a subcutaneous injection of monocrotaline (60 mg/kg) followed by aortic shunt surgery. The control group received a saline solution and a sham surgery. The main variables were occlusion score and mean right ventricular pressure (mRVP), determined by histomorphometry and right cardiac catheterization, respectively. Inflammatory parameters include caspase-1, interleukine-1β, interleukin-18, NLRP3 and AIM2. Correlations between the main variables and inflammatory mass parameters were assessed using the Pearson's and Spearman's tests. The analysis was performed using SPSS version 28.

Results. A significant correlation was found between the occlusion score and the parameters caspase-1, IL-1β, IL-18, NLRP3, NLRP3/CD68- and AIM2/CD68 double positive cells ($p \leq 0.05$). The mRVP correlates significantly with caspase-1, IL-1β, IL-18 and NLRP3/CD68 double positive cells. These results indicate a link between the presence of inflammatory parameters and the disease severity of PAH.

Conclusions. Our research demonstrates a connection between the activation of inflammatory compounds and the disease severity of PAH in rats, induced by PAH.

EVALUATING THE R-ONE ROBOTIC SYSTEM FOR PERCUTANEOUS CORONARY INTERVENTION: SINGLE CENTER EXPERIENCE

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Keywords. R-One robotic system; Percutaneous coronary intervention (PCI); Coronary artery lesions; Interventional cardiology

Objectives. Traditional percutaneous coronary intervention (PCI) procedures expose operators to considerable radiation and ergonomic strain. This retrospective single-center study evaluates the R-One robotic system for PCI. The R-One system is designed to reduce operator radiation exposure, improve ergonomics, and facilitate precise navigation during PCI. This Polish study included 14 patients with de novo coronary artery lesions.

Materials and methods. Clinical success was defined by the absence of major intraprocedural complications, while technical success was measured by the successful manipulation of PCI devices (guidewires, balloons, stents) without the need for manual conversion. Radiation exposure to patients, a simulated manual operator, and robotic PCI operators was meticulously recorded.

Results. Among the 14 patients, 85.71% (12/14) underwent procedures via radial access. The average duration of the procedure was 43.36± 13.02 minutes. Clinical success was achieved in 100.00% of cases. Technical success was obtained in 85.71% (12/14), with total manual conversion required in only 14.29% (2/14) of cases. The mean number of stents per patient was 1.57±1,02, with mean total stent length 25,93±16,70 mm. Lesions were classified as either B2 or C in approximately 50.00% (7/14) of cases. The majority of treated lesions affected left anterior descending artery – 57.14% (8/14), and 6 out of 14 (42.86%) cases concerned lesions in the right main artery. Radiation dose to the assistant operator's left hand was 14.64 x higher than to the robotic operator's left hand. Radiation dose to the nurse's left hand was 3.76 x higher than to the robotic operator's left hand.

Conclusions. These findings indicate that the R-One robotic system is a safe and effective method for PCI, which not only enhances the ergonomics and procedural precision, while potentially reducing radiation exposure to operators.

RISK FACTORS OF CARDIAC ARREST DURING A ROTATIONAL ATHERECTOMY-ASSISTED PERCUTANEOUS CORONARY INTERVENTION

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Keywords. Cardiac arrest; Coronary angiography; Percutaneous coronary interventions

Objectives. Rotational atherectomy (RA) is generally performed on patients with severely calcified lesions, posing a considerable risk of the intervention. However, the occurrence and hallmarks of cardiac arrest in this patient population are little understood. The objective of this study was to assess the frequency and risk factors of cardiac arrest during percutaneous coronary interventions (PCI) with RA.

Materials and methods. We included 6522 patients treated with RA-assisted PCI from the Polish Registry of Invasive Cardiology Procedures (ORPKI) between 2014 and 2021. We examined patient and procedural characteristics, as well as periprocedural complications, and then compared groups based on cardiac arrest incidence using univariable and multivariable analysis.

Results. Thirty-five (0.5%) patients suffered from cardiac arrest during RA-PCI. They had significantly higher rates of prior stroke and were more likely to present with acute coronary syndromes (ACS) upon admission. Among the statistically significant ($p<0.05$), independent predictors of in-procedure cardiac arrest, there were factors associated to patients' clinical characteristics (older age, female sex, kidney disease, history of stroke and myocardial infarction, acute coronary syndrome at admission time, and multi-vessel disease), periprocedural characteristics (PCI within left main coronary artery [LMCA], femoral vascular access site, and aspiration thrombectomy during procedure) as well as periprocedural complications (coronary artery perforation and no-reflow phenomenon).

Conclusions. Severe clinical conditions at baseline, as indicated by ACS presence and Killip class IV, as well as RA-PCI conducted within LMCA and other periprocedural complications, were the strongest predictors of cardiac arrest during RA-assisted PCI and CA.

ANALYSIS OF THE PESI SCALE AND COMORBIDITIES FOR MORTALITY PREDICTION IN PATIENTS WITH FIRST-TIME HOSPITALIZATIONS DUE TO ACUTE PULMONARY EMBOLISM

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Keywords. Acute pulmonary embolism; Pulmonary embolism severity index; Simplified PESI

Objectives. Pulmonary embolism (PE) has high morbidity with untreated cases reaching up to 30% mortality. Early diagnosis and treatment reduce this to around 8%. Risk stratification tools like PESI and sPESI help estimate prognosis, but their long-term predictive accuracy is uncertain. This study evaluates PESI and sPESI in predicting 30-day and 1-year mortality in PE patients and explores additional risk factors not included in these scores that may impact outcomes.

Materials and methods. This retrospective study included 232 hospitalized PE patients (Jan 2021–June 2023). PESI and sPESI were evaluated using Chi-square tests. Echocardiographic parameters were assessed for mortality prediction. Binary logistic regression identified additional mortality risk factors, and ROC curves evaluated predictive ability.

Results. Mean age: 67.38 years (SD = 15.02). 30-day mortality was 14.5%, 1-year mortality was 27.2%. PESI ($\chi^2 = 47.182$, $p < 0.001$) and sPESI ($\chi^2 = 8.523$, $p = 0.004$) were significantly associated with 30-day mortality. Lower LVEF ($p = 0.043$) and TAPSE ($p = 0.046$) values were associated with higher 30-day mortality. Logistic regression analysis identified reduced glomerular filtration rate (GFR) ($p = 0.031$, Exp(B) = 3.684), oncological diseases ($p = 0.022$, Exp(B) = 3.017), and low systolic blood pressure ($p = 0.002$, Exp(B) = 0.972) as significant risk factors. ROC analysis indicated limited discriminatory ability of the PESI and sPESI scores (AUC 0.328–0.605).

Conclusions. PESI and sPESI were significantly associated with 30-day mortality, but their predictive accuracy was limited (AUC 0.328–0.605) indicating they may not be sufficient as standalone prognostic tools. Low GFR, reduced LVEF, TAPSE were also associated with mortality risk. PESI and sPESI should be supplemented with clinical and echocardiographic parameters.

REGADENOSON- VS. ADENOSINE-INDUCED HYPEREMIA IN CORONARY MICROCIRCULATION ASSESSMENT

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Keywords. Adenosine; Coronary flow reserve; Fractional flow reserve; Index of microcirculation resistance; Regadenoson

Objectives. Little is known regarding the similarities between microcirculation evaluation results obtained with regadenoson and adenosine. The current study aimed to compare coronary flow reserve (CFR) and index of microcirculatory resistance (IMR) assessments using adenosine and regadenoson, as well as to examine determinants of the extent of variations.

Materials and methods. Between 2021 and 2023, 44 people were enrolled. Fractional flow reserve (FFR), CFR and IMR were measured twice in the circumflex (Cx) (n = 8) or left anterior descending (LAD) (n = 36) artery: once with continuous infusion of adenosine (Adenocor 140 μg/kg/min) and 10 minutes later with regadenoson (Rapiscan 400 μg i.v.).

Results. The averaged findings were measured with adenosine and regadenoson for FFR (0.81 [0.75 ÷ 0.89] vs. 0.80 [0.73 ÷ 0.88]), CFR (3.84 [1.67 ÷ 4.08] vs. 3.97 [1.78 ÷ 4.32]), and IMR (20.01 [11 ÷ 24.5] vs. 20.25 [10.75 ÷ 23]), respectively. Neither of the differences was statistically significant. Among the significant ($p < 0.05$) predictors of greater ΔCFR, the following can be noted: prior percutaneous transluminal angioplasty/carotid artery stenting ($\beta = 2.35$), oral anticoagulant usage ($\beta = 0.89$), and prior stroke/transient ischaemic attack (TIA) ($\beta = 1.09$). The latter was also confirmed to be a predictor of higher ΔIMR ($\beta = 8.89$). Patients with New York Heart Association (NYHA) class II/III had higher ΔIMR than those with NYHA class I ($\beta = 11.89$).

Conclusions. Regadenoson may be a feasible alternative to adenosine in coronary microcirculation assessment, as it produces similar outcomes. According to the agent utilized for coronary hyperemia, several characteristics were found to be predictive of larger disparities in IMR, CFR, and FFR values.

BREAKING BARRIERS IN CHOLESTEROL MANAGEMENT: THE GAME-CHANGING ROLE OF PCSK9 INHIBITORS IN HIGH-RISK PATIENTS

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Keywords. PCSK9 inhibitors; Lipid-lowering therapy; Cardiovascular risk; Myocardial infarction; Dyslipidemia

Objectives. Hyperlipidemia is a significant risk factor for atherosclerosis and its complications, including myocardial infarction and stroke. Despite the widespread use of statins and ezetimibe, some patients still do not reach the optimal level of low-density lipoprotein cholesterol (LDL-C), which highlights the necessity for additional therapeutic solutions. PCSK9 inhibitors have been demonstrated to be an effective agent capable of significantly reducing LDL-C levels in patients with high cardiovascular risk.

Materials and methods. The present study comprised 50 patients who were unable to achieve a LDL-C target of less than 3.00 mmol/l with a combination of statins and ezetimibe. Received fortnightly injections of PCSK9 inhibitors and had been using them for a minimum of three months. Blood test results from the patients were obtained at one, three, six and 12 months after the commencement of PCSK9 inhibitor therapy. Statistical analyses were performed using IBM SPSS Statistics.

Results. A total of 50 patients were included in the study, with a median age of 64. The study population was predominantly male (62%). In the third month following the initiation of PCSK9 inhibitor therapy, a significant reduction in LDL cholesterol levels was observed across two groups - one with MI and other with stable CAD, with a decline from 4.06 mmol/L to 1.80 mmol/L being reported ($p<0,05$). After a 12-month period, LDL-C levels had decreased to 1.69 mmol/L ($p<0,05$). 51% of patients achieved LDL-C target after 3 months less than 1,8 mmol/l, but 47% - less than 1,4 mmol/l.

Conclusions. This study provides an important contribution to the existing body of research by examining the significance of PCSK9 inhibitors in cases where statin and ezetimibe treatment has failed to achieve the desired LDL-C target following revascularisation.

INFECTIOUS DISEASES, MICROBIOLOGY, IMMUNOLOGY, ALLERGOLOGY, DERMATOLOGY, DERMATOVENEROLOGY

SKIN EMOLLIENT USE PATTERNS AMONG PATIENTS WITH ATOPIC DERMATITIS OF VARYING SEVERITY

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Keywords. Atopic dermatitis; Emollient use patterns

Objectives. Atopic dermatitis (AD) has a significant burden on the quality of life of patients and families. Basic emollient therapy is the essence of every treatment of AD. This study aims to assess the proportion of AD patients who follow the European Academy of Dermatology and Venereology (EDVA) guidelines for emollient use, identify the correlation between the severity of AD, as assessed by POEM.

Materials and methods. A telephone questionaire-based survey was conducted among Riga 1st hospital patients or their parents in case of children with AD diagnosis during September 2024. The questionnaire included POEM score and closed questions about the compliance of the frequency, duration, and habits of using emollients with the recommendations. Analysis was performed using IBM SPSS version 29.

Results. A total of 92 patients with AD diagnosis participated in the study. Among participants, only 37% applied emollients more than twice a day, 31,5% covered the whole body. At least daily use regardless of symptoms was observed in 28.3% of patients. Emollient volume was below the recommended 200 ml per week in 76.1% of cases. A positive correlation was observed AD severity and emollient use habits (Spearman correlation coefficient, $r(90) = 0.344$, $p < 0.001$). Statistically significant differences were found between severe AD and frequency of emolient application, specifically, those with severe AD were more likely to apply emollients two or more times daily ($p = 0.004$) and to apply emollients every day regardless of symptoms ($p = 0.005$).

Conclusions. These findings indicate varying levels of adherence to emollient use guidelines, which may impact the disease management. Patients with more severe AD more fully adhere to emollient use recommendations.

PREVALENCE OF STAPHYLOCOCCUS AUREUS IN NASAL AND AXILLARY SAMPLES OF MEDICAL STUDENTS: CORRELATION WITH DEMOGRAPHIC AND OCCUPATIONAL FACTORS

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Keywords. Staphylococcus aureus; Colonization; Nasal carriage; Axillary carriage; Medical students; Demographic factors; Occupational exposure.

Objectives. Healthcare-associated infections remain a significant challenge in medical environments. Medical students, due to their transitional role between the general population and healthcare workers, may serve as potential carriers of Staphylococcus aureus. This study aimed to evaluate the prevalence of S. aureus colonization in nasal and axillary regions among medical students and to explore its association with demographic characteristics and professional factors, such as healthcare employment, workload, and workplace settings.

Materials and methods. Samples were collected from 202 medical students, targeting the nasal and axillary regions. In parallel, demographic and occupational data were recorded, including gender, age, academic year, employment in the healthcare sector, and workload. Swabs were inoculated into Trypticase Soy Broth and incubated at 37°C for 24 hours. Following incubation, cultures were inoculated onto Mannitol Salt Agar (MSA) plates and incubated for another 24 hours at 37°C. Suspected and positive colonies were subcultured onto Trypticase Soy Agar (TSA) plates for further analysis. Identification of Staphylococcus aureus was confirmed using latex agglutination test, plasma coagulation test, and VITEK-2 automated microbial identification system.

Results. Of 202 samples, 28.7% (58) were positive for S. aureus. Among these, 79.3% (46) had nasal colonization, 39.7% (23) had axillary colonization, and 19.0% (11) had both. Positivity was higher in females (72.4%) than males (27.6%). Healthcare-employed students constituted 34.5%(20) of positive cases, while 65.5%(38) were non-employed. By academic year, positivity ranged from 25.5% to 35.3%.

Conclusion. Study found a 28.7% prevalence of Staphylococcus aureus colonization among medical students, with nasal colonization being the most common. The results indicated variations in colonization rates based on gender, healthcare employment, and academic year, emphasizing the need for targeted infection control measures.

HSP70 IN CHRONIC SPONTANEOUS URTICARIA: EXPLORING CLINICAL ASSOCIATIONS

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Keywords. HSP70; Anti-HSP70; CSU; Comorbidities; Therapy

Objectives. Chronic spontaneous urticaria (CSU) is characterized by recurrent urticaria and angioedema without a specific trigger. Stress-related proteins, such as HSP70, and their antibodies (Anti-HSP70 IgG/A/M) may influence CSU by modulating immune pathways, though their role remains unclear. This study aimed to assess the associations between HSP70, Anti-HSP70 IgG/A/M, and key clinical features of CSU, including comorbidities, treatment outcomes, smoking, disease duration, symptoms, and triggers, to evaluate their potential as predictors of disease manifestations and therapeutic response.

Materials and methods. This prospective study included 206 CSU patients. Patient histories were collected, and blood samples were analyzed for HSP70 and Anti-HSP70 IgG/A/M levels using ELISA. Data were analyzed with SPSS, employing Mann-Whitney U, Kendall's Tau B, and Kruskal-Wallis tests to compare biomarker levels and assess correlations with clinical variables, with statistical significance set at $p<0.05$.

Results. The study included 206 participants (mean age 42.8±15.2 years, 77.6% female). A weak positive correlation was found between HSP70 and Anti-HSP70 levels ($r=0.108$, $p=0.043$). HSP70 and Anti-HSP70 levels showed no significant associations with most clinical conditions in CSU patients ($p>0.05$). These include cardiovascular, endocrine, autoimmune, dermatological, respiratory, renal, gastrointestinal, gynecological, neurological, and oncological disorders. No significant correlations were observed between HSP70, Anti-HSP70 and smoking, therapies related to CSU or comorbidities, disease symptoms, duration, or triggering factors ($p>0.05$). A significant difference in Anti-HSP70 levels was found between patients with active infections, with higher levels in the non-infected group ($U=1146$, $p=0.039$, $r=0.284$), while HSP70 levels showed no significant differences between these groups ($p=0.184$).

Conclusions. HSP70 and Anti-HSP70 IgG/A/M exhibited limited associations with comorbidities, therapy, smoking, or disease characteristics, suggesting that these biomarkers may not be reliable indicators for CSU. However, Anti-HSP70 IgG/A/M levels were significantly lower in patients with active infections, potentially reflecting their role in modulating immune responses and inflammation during infection.

FAMILIARITY WITH TRICHOLOGY AND TRICHOLOGICAL PATIENTS AMONG DERMATOLOGISTS

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Keywords. Trichology; Education

Objectives. Hair and scalp disorder concerns are gaining popularity among patients. Study of hair disorders known as "trichology" is a prospective branch of dermatology. Up to 20% of dermatology patients present with trichological concerns (Sacchidanand et al., 2015). Aim of this study is to gain insight into dermatologists familiarity with trichological patients and willingness to provide treatment.

Materials and methods. Questionnaire was distributed among dermatologists (19 experienced professionals and 14 residents). Responses were gathered in workplaces and through an online form. All participants had at least one year of experience.

Results. Total of 33 respondents participated in the survey. 51,5%(n=17) rated their knowledge of trichology as minimal and 33,3%(n=11) as adequate. Most of the respondents stated gaining their knowledge in conferences/seminars (42,4%, n=14) or self-study (30,3%, n=10). Respondents stated being most familiar with trichology topics such as - scalp disorders (n=33) and hair loss (n=16), followed by pediatric hair conditions (n=9) and hair shaft disorders (n=5). Regarding diagnostics of hair and scalp disease, more than half respondents (60,6%, n=20) responded feeling somewhat confident, but still having doubts or feeling not confident altogether. Surprisingly, similar number of respondents (63,7%, n=21) have responded to treating trichological patients every month or more. Fairly, 75,7 %(n=25) of respondents stated having less than 20 % of their practice dedicated to trichological disorders. Nevertheless, main challenge identified by respondents in applying trichology was a lack of knowledge (n=23). Most respondents (75,8%, n=25) stated to be interested in additional education about trichology, selecting courses and seminars as preferrable (n=29).

Conclusions. Trichology is yet a subject that requires further insight among dermatologists. A potential reason for lack of expertise could be scarcity of educational courses and time. Despite being a small part of dermatologists daily practice, doctors still wish to gain more insight into trichology.

EFFICACY OF A PHAGE COCKTAIL AGAINST MULTI-DRUG RESISTANT KLEBSIELLA PNEUMONIAE STRAINS: INSIGHTS FROM TITRATION, SPOT ASSAYS, AND EFFICIENCY OF PLATING

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Keywords. Lytic phages; Phage cocktail; Efficiency of plating; Titer

Objectives. Multidrug-resistant (MDR) Klebsiella pneumoniae is a known challenge to public health, necessitating alternative therapeutic strategies. Lytic bacteriophages (phages) are a promising approach to targeting resistant bacterial strains, including K.pneumoniae. Furthermore, phage cocktails enhance therapeutic potential by expanding the host range. This study aimed to evaluate the efficacy of a phage cocktail against nine MDR K.pneumoniae strains isolated from clinical and environmental sources in Latvia.

Materials and methods. Two phages (GPH19 and GPH164) from the phage cocktail were tested against different nine MDR K.pneumoniae strains isolated from patients, hospital environment, and hospital sewage. The evaluation involved three steps, each performed in triplicate. First, the initial titer of phages was determined. Second, phages were tested against nine K.pneumoniae strains to assess qualitative lysis patterns. Third, quantitative analysis of phage activity was performed by calculating efficiency of plating (EOP) values for both phages against selected strains.

Results. The titer for GPH19 alone was 8.17 x 109 PFU/ml against the test strain, while for GPH164 was 2.04 x 104 PFU/ml against the same strain. Spot tests revealed that GPH19 effectively lysed one strain, while GPH164 exhibited activity against two strains, albeit with reduced lysis for one strain. GPH19 quantitative measurements showed an EOP of 0.991 against a selected strain, highlighting its comparable efficiency to the reference strain.

Conclusions. The findings demonstrate a limited efficacy of the tested phages against K.pneumoniae strains. However, the observed lysis of two strains and the EOP values comparable to those of the reference strain suggest that this phage cocktail has the potential utility against MDR K.pneumoniae in Latvia. These results show the necessity of further testing with a broader range of clinical strains to enhance the clinical applicability of phage-based approaches for MDR K.pneumoniae infections in Latvia.

BRIDGING AESTHETICS AND FUNCTIONALITY: EFFECTIVE MANAGEMENT OF BURN SCARS WITH CONSERVATIVE AND SURGICAL APPROACHES

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Keywords. Burn scars; Conservative treatment; Surgical interventions; Scar management

Objectives. Scars from burn injuries affect millions annually, presenting aesthetic and functional challenges. With no universally accepted treatment guidelines, this study evaluated conservative and surgical scar management options and their effectiveness in improving outcomes. We also aimed to determine if combined methods provided superior results.

Materials and methods. This comprehensive review utilized a structured evaluation of conservative procedures and surgical interventions. Types of studies mostly included original research articles, systematic reviews and meta-analysis. A total of 47 studies met the predefined inclusion criteria, focusing on adult burn patients, published between 2004 and 2024, and addressing scar treatment. Key words used in the search were “scars”, “treatment”, “adult”, “burn” and “outcome”. Data sources included PubMed, Google Scholar, and ResearchGate.

Results. Pressure therapy, when combined with silicone products, reduced scar thickness, improved elasticity, and alleviated symptoms like pruritus and pain. Silicone-based treatments demonstrated benefits by maintaining hydration and preventing transepidermal water loss. Ablative fractional laser therapy effectively remodeled collagen, improved pigmentation, and released contractures in high-tension areas. Intralesional corticosteroids reduced hypertrophic scarring and recurrence rates when used as adjunctive therapy, despite risks such as skin atrophy and pigment changes. The combination of intralesional corticosteroids injections with cryotherapy enhances treatment efficacy. Treatments including botulinum toxin (BTA) showed efficacy in reducing scar thickness and improving appearance. Combination therapy of BTA with CO2 laser showed significantly better results than monotherapy without an increase in adverse effects. Z-plasty was effective in improving both function and aesthetics. Tissue expansion and local flaps offered durable solutions for reconstructive challenge. A multimodal approach integrating these methods consistently provided superior outcomes compared to single modalities.

Conclusions. Personalized and multimodal strategies are essential for effective burn scar management. Therefore, a multidisciplinary approach is critical to improving patient outcomes and quality of life.

IMPACT OF THE COVID-19 PANDEMIC ON INCIDENCE AND MORTALITY OF LIVER DISEASES AND DISEASE-ASSOCIATED FACTORS

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Keywords. Liver disease; COVID-19; Incidence; Mortality; Physical activity; BMI

Objectives. The COVID-19 pandemic has changed population behavior, potentially harming liver health, which can increase the incidence and mortality of liver diseases worldwide. This study aimed to evaluate changes in the incidence and mortality of liver diseases and health-related behavior associated with liver health during the last ten years in Latvia.

Materials and methods. The retrospective analysis was performed for the pre-pandemic period (from 2013 to 2019) and pandemic period (from 2020 to 2023) using data on the mortality and incidence records obtained from the Health Statistics Database and data from the Health Behavior among Latvian Adult Population (aged 15-74) survey form The Centre for Disease Prevention and Control (CDPC) of Latvia. Statistical analysis was done using IBM SPSS with Mann-Whitney test and Chi-square test ($p<0.05$).

Results. Mortality of liver diseases, including alcoholic liver disease (20.7 vs 29.7 per 100 000, $p=0.023$), and mortality of liver and intrahepatic bile duct cancer (7.5 vs 9.9 per 100 000, $p=0.008$) increased during pandemic. In contrast, in the pandemic period, the deaths from viral hepatitis declined (2.7 vs 2.1 per 100 000, $p=0.017$). A similar tendency was observed for the incidence of acute HBV and HCV and new-onset chronic HCV compared to the pre-pandemic period. We found an increase in the percentage of people with BMI > 25 kg/m2, e-cigarette use, and spirits consumption, and a decrease in the rate of physical activity (≥ 30 minutes more than 4 times a week). There were no significant relations between the pandemic period and sedentary leisure activities or newly diagnosed type 2 diabetes.

Conclusions. The COVID-19 pandemic negatively impacted the mortality of liver diseases (except for viral hepatitis), which may be related to COVID-19-associated increase in obesity, smoking, alcohol consumption, and reduction of regular physical activity.

PATTERNS OF NON-SKIN CANCERS AND FAMILIAL CANCER HISTORY IN MELANOMA PATIENTS WITH AND WITHOUT HEREDITARY TRAITS

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Keywords. Melanoma; Hereditary melanoma; Familial cancer history

Objectives. A family history of cutaneous melanoma is a well-established genetic risk factor. However, less is known about the possible familial associations between melanoma and other cancers. This study aims to examine the occurrence of non-skin cancers in the personal and familial histories of melanoma patients, and to identify any differences between patients with features suggestive of hereditary melanoma and those without.

Materials and methods. This cross-sectional study surveyed melanoma patients from Vilnius University Santara Clinics between February and July 2024. An original anonymous questionnaire was used to assess melanoma diagnosis characteristics, personal and first-degree relative cancer histories. Patients were then categorised into melanoma with hereditary traits (MHT) group if they had early-onset melanoma (<40 years), multiple primary melanomas or significant family history of melanoma (≥2 relatives). The remaining patients were classified as melanoma without hereditary traits (MWHT). Statistical analyses were performed using R version 4.3.3, with significance defined as $p < 0.05$.

Results. In total, 153 patients (32% men; median age 55 years) were included, comprising 35 MHT and 118 MWHT patients. 16.3% of participants reported a personal history of non-skin cancers, with prostate cancer being the most common (10.2% in males). Additionaly, 45.1% reported a family history of non-skin cancers in their first-degree relatives (FDRs), with prostate cancer being the most prevalent as well (9.15%). In comparison to MWHT patients, MHT females had a significantly higher prevalence of breast cancer (11.5% vs. 1.3%, $p<0.05$). Furthermore, prostate cancer was significanly more common in the FDRs of MHT patients (20% vs. 5.9%, $p<0.05$).

Conclusions. Higher rates of personal breast cancer and prostate cancer in FDRs were observed in melanoma patients exhibiting hereditary features. These findings underscore the importance of thorough family history assessments in identifying candidates eligible for genetic testing for familial cancer predisposition syndromes.

ANTIBACTERIAL PROPERTIES OF PROPOLIS AGAINST GRAM-POSITIVE BACTERIA AND CANDIDA ALBICANS

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Keywords. Propolis; Antibacterial; Gram positive bacteria; Candida albicans; Staphylococcus aureus; Methicilin-resistant Staphylococcus aureus

Intrudoction. Propolis is a bee origin product, containing natural vitamins, carbonhydrates, flavonoids and other ingridients that can affect bacteria and fungi. Staphylococcus aureus is a major human pathogen that causes a wide range of clinical infections. Candida albicans is part of the human microbiota and the most common opportunistic mycotic species that causes infections. This study aims to evaluate the antibacterial effect of propolis on Gram-positive bacteria and Candida albicans.

Materials and methods. The study uses propolis extracts, collected from various locations in Latvia - Kuldīga, Tirza, Daugmale. The samples were dissolved using solvents such as acetonitrile, ethanol, methyl terbutyl ether, ethyl acetate, DCM and hexane. Exctract masses ranged from 145 to 1010 mg. Propolis used for each extract was 1.5 g. The samples were dissolved in DSMO, ensuring standardized preperation and tested for antimicrobial activity against Staphylococcus aureus, methicilin-resistant S. aureus and Candida albicans using agar diffusion method. Inhibition zones were mesured and mean values were calculated to evaluate the efficiacy of the extracts. This study highlights the potential of propolis as a natural antimicrobial agent.

Results. For S. aureus inhibition zones ranged from 6.0 to 21.7 mm, highlighting antibacterial efficency, with variations based on the extract and solvent used. Against methicilin-resistant S. aureus inhibition zones ranged from 7.0 to 18.3 mm, indicating more modarate effectivness against this resistant strain. Propolis extracts also exhibited antifungal activity, with inhibition zones against C. albicans ranging from 10.3 to 20.3 mm. These findings demonstrate the potential of propolis extracts as effective antimicrobial agents.

Conclusion. Propolis extracts show antibacterial activity against Staphylococcus aureus, methicillin-resistant S. aureus, alongside antifungal activity against Candida albicans. These results highlight propolis's potential as a natural antimicrobial agent and encourage further research into its therapeutic applications.

NOVEL BACTERIOPHAGE INFECTING A LOCAL KLEBSIELLA MICHIGANENSIS STRAIN: ISOLATION, MICROBIOLOGICAL PROPERTIES AND GENOMIC ANALYSIS

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Keywords. Bacteriophage; Phage therapy; WGS, genome

Introduction. Klebsiella spp. comprises a diverse group of Gram-negative bacteria from Enterobacteriaceae family. Klebsiella michiganensis, a part of the Klebsiella oxytoca species complex, is one of the causes of nosocomial infections. The emergence of drug-resistant isolates makes K. michiganensis one of the valid target species for the development of alternatives to common antibiotics. Phage therapy represents a promising solution for managing antimicrobial-resistant Klebsiella spp. infections, studies have demonstrated the efficacy of phage therapy in reducing bacterial loads, biofilm formation, and infection severity. However, a comprehensive understanding of K. michiganensis-specific bacteriophage characteristics, their microbiological properties and genomic features is crucial to evaluate any novel phage's suitability as a therapeutic agent.

Materials and methods. A novel bacteriophage RSU-F4K5 infecting a K. michiganensis strain was isolated from Riga's sewage water. The phage was purified, propagated, and subjected to NGS, genome de novo assembly, genome functional annotation, and comparative genomics analyses. Microbiological characterization included documentation of plaque morphology, host range testing, TEM, lysis dynamics turbidimetry, and a one-step growth curve.

Results. K. michiganensis phage RSU-F4K5 is a novel lytic siphophage with a complete genome of 48,657 bp length and 48% GC content, encoding up to 103 predicted proteins. Studied phage effectively lyses its isolation host strain in double-layer agar assays, but fails to infect other local Klebsiella spp. isolates. RSU-F4K5 demonstrated ability to quickly absorb to the host cells, but weak to no lysis in a liquid environment. RSU-F4K5 genome has an intergenomic similarity of less than 70% to other publicly available cultured phage genomes.

Conclusion. The host-specificity and microbiological properties of phage RSU-F4K5 make it of unlikely utility for therapeutical applications. However, isolation and characterization of phage RSU-F4K5 expand our knowledge of Klebsiella spp. phage diversity, with this phage being proposed to represent a novel phage genus and species.

ISOLATION AND MICROBIOLOGICAL CHARACTERIZATION OF NOVEL BACTERIOPHAGES INFECTING A LOCAL CLINICAL STRAIN OF KLEBSIELLA PNEUMONIAE – PHAGE THERAPY AS A LAST RESORT FOR DRUG-RESISTANT INFECTIONS

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Keywords. Bacteriophages; Phage therapy; Antimicrobial resistance; Nosocomial infections

Introduction. Klebsiella pneumoniae is one of the most common causes of nosocomial infections, with an emerging number of antimicrobial-resistant strains. Phage therapy is an alternative way to treat infections using bacteriophages, that represents a promising solution for managing infections caused by antimicrobial-resistant Klebsiella spp.. In this study lytic bacteriophages infecting local K. pneumoniae strain were isolated and tested on their ability for therapeutic use.

Materials and methods. ESBL-producing Klebsiella pneumoniae strain RSU-KP-L was isolated from the patient with chronic osteomyelitis due to phlegmon, and bacteriophages from existing RSU collection were tested for susceptibility. Wastewater from Riga's sewage and hospitals was used to isolate novel phages infecting RSU-KP-L. Microbiological characterization of novel phages included determination of plaque morphology, TEM, host-range testing, lysis , adsorption, and one-step growth curve.

Results. An existing collection of 32 of K. pneumoniae infecting phages showed no susceptibility for the patient's culture. Three novel phages: F4L, F9L and F10L were isolated, purified, and propagated from Riga wastewater samples. They showed lytic properties against the patient's culture in a liquid environment and on agar plates. The lysis curve for different MOIs, adsorption rate and time of burst were measured and expressed in diagrams. Susceptibility of three novel phages was tested on 58 K. pneumoniae strains from RSU laboratory collection both in a liquid environment and on agar plates; phage F4L showed lytic properties in the liquid environment on K. pneumoniae strain Z1 isolated previously from a local hospital patient's biological fluids.

Conclusions. The microbiological properties of three novel bacteriophages are consistent with the ability to potentially be used for phage therapy. Sequencing and genetic analysis of the newly isolated phages are now in progress to determine their genomic safety for phage therapy purposes.

MULTIDRUG-RESISTANT ORGANISM ISOLATES FROM UKRAINIAN PATIENTS TREATED AT A LEVEL II TRAUMATOLOGY HOSPITAL IN LATVIA

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Keywords. Multidrug resistance; Ukraine

Objectives. Infection accompanies war-related injuries, gaining resistance as the patients move through the evacuation chain. This study aimed to investigate the resistance genes, resistance profiles, and antimicrobial treatment strategies in multidrug-resistant organisms (MDRO) isolated from Ukrainian patients with war-related injuries.

Materials and methods. A retrospective study was conducted on Ukrainian patients treated at the Hospital of Traumatology and Orthopaedics, Riga (April 2022-December 2024). Data were obtained from patient medical records, MDRO surveillance records. Resistance gene detection was performed using the BIOFIRE® Joint Infection Panel on pure bacterial cultures. Carbapenemase enzymes were identified using NG-Test CARBA-5, and ESBL-producing bacteria via a combined disk test (CDT).

Results. 14 patients (13 male soldiers, 1 female civilian), median age 44 (IQR: 30.5–48.25) had a median hospital stay of 43 days (IQR: 27.75–76.75). A total of 21 epidemiologically significant Gram-negative MDRO isolates were identified, with 6 individuals harbouring more than one bacterium. The predominant pathogens were Acinetobacter baumannii (28.6%), Klebsiella pneumoniae (23.8%), and Pseudomonas aeruginosa (19.0%). Seven resistance genes were detected in 6/21 pathogens, with one pathogen harbouring two genes; four were blaNDM, encoding NDM enzymes linked to carbapenem resistance. Five carbapenemase enzymes (NDM in 2/5 and VIM-1 in 2/5) were detected in 4/21 pathogens, with one pathogen carrying 2 enzymes. 2/21 pathogens were ESBL producers without further resistance characterization. Of the total 21, soft tissue infections (38.1%), bone infections (33.3%) and implant-associated infections (14.3%) were the most prevalent. Among 7/21 pathogens, colistin (6/21) and tigecycline (1/21) were the only remaining effective antibiotic options. In addition to intravenous therapy, 9/14 patients required antibiotic-loaded bone cement implantation containing colistin, tigecycline, vancomycin or other antibiotics.

Conclusions. The presence of MDRO infections and the severity of war-related trauma are associated with prolonged hospitalization, increased resource utilization, higher disability rates, and limited choice of antibacterial agents.

ANTIBIOTIC RESISTANCE, MRSA PREVALENCE, AND BIOFILM FORMATION IN STAPHYLOCOCCUS AUREUS ISOLATES FROM MEDICAL STUDENTS

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Keywords. Antibiotic Resistance; MRSA Prevalence; Staphylococcus aureus; Biofilm Formation; Healthcare-associated Infections

Objectives. Healthcare-associated infections are a critical concern due to the increasing prevalence of antibiotic-resistant pathogens. Medical students, who act as bridge between patients and the community, may unknowingly harbor Staphylococcus aureus (S. aureus), including methicillin-resistant strains (MRSA), which contribute to transmission in clinical settings. This study assessed the prevalence of S. aureus colonization, antibiotic resistance patterns, and biofilm formation among medical students, highlighting gaps in infection control and preventive measures.

Materials and methods. Samples were collected from 202 medical students, targeting the nasal and axillary regions, using sterile swabs. S. aureus isolates were identified with Trypticase Soy Broth, Mannitol Salt Agar, and confirmatory tests such as latex agglutination, plasma coagulation, and VITEK-2 systems. Antimicrobial resistance was evaluated with disc diffusion methods, while biofilm formation capacity was assessed using the semi-quantitative crystal violet assay. Data analysis was performed using IBM SPSS.

Results. Among 58 S. aureus isolates, antimicrobial resistance rates were: penicillin-G (62.1%), erythromycin (25.9%), clindamycin (17.2%), rifampicin (13.8%), tetracycline (8.6%), linezolid (5.2%), gentamicin (3.4%), and sulfamethoxazole (1.7%). No resistance to chloramphenicol or ciprofloxacin was detected. MRSA prevalence was low (1.7%), while biofilm production analysis classified 64% as weak producers, 13% as strong producers, and 23% as non-producers.

Conclusions. This study reported a 28.7% prevalence of S. aureus colonization among medical students, with high resistance to penicillin-G (62.1%). Routine screening and monitoring of antimicrobial resistance are essential to reduce transmission risks in clinical settings, especially given the role of medical students in healthcare settings. Biofilm formation analysis revealed that 13% of isolates were strong biofilm producers, indicating enhanced resilience and pathogenic potential.

UNVEILING ALLERGY PATTERNS TO LOCAL ANESTHETICS IN CHRONIC SPONTANEOUS URTICARIA PATIENTS

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Keywords. Local anesthetics; Hypersensitivity; CSU; Allergic disease; Urticaria; Angioedema

Objectives. Local anesthetics are widely used across various medical specialties for minor procedures. Although allergic reactions to local anesthetics are rare, hypersensitivity reactions can occasionally occur. Chronic Spontaneous Urticaria (CSU) is a condition characterized by persistent hives and/or angioedema lasting for six weeks or more, with no identifiable trigger. On average, 49% of CSU patients experience allergic diseases, including drug hypersensitivity. This study aims to provide a comprehensive overview of allergic reactions to local anesthetics in CSU patients and investigate whether individuals with CSU are more susceptible to such hypersensitivity reactions.

Materials and methods. A retrospective review, incorporating patient interviews and electronic records from Pauls Stradins Clinical University Hospital and Allergic Disease Diagnosis and Treatment Centre in Riga, Latvia. The statistical analysis of the data was conducted using the SPSS program.

Results. Data from 205 patients were analyzed, of which 159 (77.6%) were women and 46 (22.4%) were men. The mean age was 42.8 ± 15.2 years (range: 15–87 years). Allergy to local anesthetics was identified in only one (0.5%) CSU patient, who developed angioedema due to Novocaine. The patient did not experience any hypersensitivity reactions to newer-generation local anesthetic medications.

Conclusions. Allergic reactions to local anesthetics are uncommon in patients with Chronic Spontaneous Urticaria (CSU). Our study found no evidence of an increased incidence of hypersensitivity reactions to local anesthetics in this group. CSU itself does not serve as a significant risk factor for severe allergic responses to anesthetics. Consequently, medical procedures in these patients should not be delayed, and individuals without a history of local anesthetic allergies need not be referred for allergy testing.

PREDICTORS OF MORTALITY AND POOR OUTCOME FOR PATIENTS WITH INFECTIOUS ENCEPHALITIS

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Keywords. Infectious encephalitis; Predictors; Outcome

Objectives. There are no thorough systematic review assessing predictors of infectious encephalitis, despite the poor prognosis and high mortality. The study aims to investigate predictors of outcome in patients with infectious encephalitis.

Materials and methods. There was performed a systematic review of the literature published from 1998 until 2024. 56 studies, that analyzed infectious encephalitis, were found. 19 of them analyzed all-cause encephalitis, 6 only infectious, 5 viral encephalitis, 12 only Herpes simplex encephalitis (HSE), and others analyzed some specific infectious etiology, for example, Adenovirus, Listeria, Japanese encephalitis, and others. 12,5% analyzed pediatric population. Patients with infectious meningitis, case reports, newsletters, and publications before 1998 were excluded. Only studies, where cases were with radiological and/or biochemical evidence of encephalitis were included.

Results. The most frequent predictors of mortality and poor outcome (PO) identified using multivariate analysis were advanced age (>65 years old) (in 13 studies), Glazgow Coma Scale <8 on admission (in 16 studies), comorbidities (immunodefiency, oncology) (in 8 studies), focal neurologic deficit (in 7 studies), abnormality on MRI/CT (in 11 studies), development of seizures (in 13 studies), coma (in 6 studies), cerebral edema (in 4 studies), mechanical ventilation (in 10 studies), delay of antiviral drug admission (>2 days) (in 7 studies), and delayed Intensive Care Unit admission (in 4 studies). Laboratory variables were less often found as predictors of PO. However, some of them were elevated cerebrospinal fluid (CSF) pressure and protein level, thrombocytopenia, and raised serum inflammatory markers (each in 3 studies). CSF pleocytosis, hypoglycorrhachia, elevated CSF lactate level, and serum leukocytosis were less common predictors of PO.

Conclusions. Multiple clinical and radiologic variables were independent predictive indicators for mortality and PO in patients with infectious encephalitis. Identifying these outcome predictors early may enable the implementation of appropriate medical treatment and help reduce mortality rates.

MOLECULAR DIAGNOSIS IN FUNGI SENSITIZED PATIENTS IN THE REPUBLIC OF MOLDOVA

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Keywords. Fungi; Sensitization; Specific IgE

Objectives. Sensitization to fungi is a risk factor for the development of allergic diseases. Exposure and sensitization to fungal allergens can occur any time in life. The spectrum of diseases includes atopic dermatitis allergic rhinitis and asthma or allergic bronchopulmonary aspergillosis. We aim to describe the particularities of sensitization patterns to molecular components of fungal allergens in patients with allergic diseases in the Republic of Moldova.

Materials and methods. A total of 338 patients with allergic diseases were included in descriptive-retrospective study, we determined sensitizations to fungal allergens by multiplex examination allergy explorer test.

Results. The analyzed patient group 164 males and 174 females, mean age: 31.9 years,. Prevalence of fungal sensitization in the study group is 8.6%, of which 31% are sensitized to *Malassezia sympodialis*, 65.5% to *Alternaria alternata*, 34.5% to *Aspergillus fumigatus,* 13.8 to *Cladosporium herbarum* and 10.3% to *Penicillium*. Among patients sensitized to *Malassezia sympodialis* 33.3% have specific IgE to Mala s5, 55.5% to Mala s6 and 11.1% to Mala s11. Among patients sensitized to *Alternaria alternata* 79% was sensitized to major allergen Alt a1 and 21% to minor allergen Alt a6. Among patients sensitized to *Aspergillus fumigatus* 20% was sensitized to major allergen Asp f1 and 30% to Asp f3 and 40% to Asp f4. Sensitization to Cla h8 is found in 75% of *Cladosporium herbarum* sensitized patients.

Conclusions. Sensitization to fungal allergens was observed in a significant number of allergic patients. Precision medicine and molecular components diagnosis contribute significantly to the personalized management of allergic patients.

ANTIBACTERIAL PROPERTIES OF PROPOLIS AGAINST GRAM-NEGATIVE BACTERIA

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Keywords. Propolis; Antibacterial activity; Gram-negative bacteria; Well-diffusion

Objectives. Propolis is a natural substance made by bees from mixing different parts of plants, wax and enzymes from their saliva. The properties of propolis vary around the world depending on the species and composition of the plants used by the bees. Current research suggests that the antibacterial properties of propolis are more apparent against Gram-positive bacteria. This study aims to investigate antibacterial properties of propolis against strains of Gram-negative bacteria.

Materials and methods. Propolis samples were collected from various regions in Latvia, including Kuldīga, Tiraza, Daugmale and extracted with solvents such as MeCN (acetonitrile), EtOH (ethanol), MTBE (methyl tert-butyl ether) and EtOAc (ethyl acetate). Prior to bacterial testing, the extracted propolis samples were dissolved in DMSO (dimethyl sulfoxide) to prepare for analysis. The initial mass of each sample ranged between 50 mg and 705 mg. The antibacterial activity of the propolis extracts was evaluated using the well-diffusion assay, measuring the inhibition zones as an indicator of effectiveness against Escherichia coli, Pseudomonas aeruginosa , Extended-spectrum beta-lactamase-producing bacteria (ESBL). In addition, the extracts were assessed for their minimum inhibitory concentration and minimum bactericidal concentration.

Results. Propolis extract demonstrated antibacterial activity, with ethyl acetate (EtOAc) being the most effective solvent, especially against E.coli. The inhibition zones for E.coli ranged from 0.0 mm to 11.0 mm. The most significant antibacterial effect was observed with P.aeruginosa strain for which the zone of inhibition varied from 3.0 mm to 19.7 mm. Against ESBL inhibition zones varied from 0.0 mm to 12.0 mm.

Conclusions. Propolis extract shows antibacterial properties of varying strenght, against E.coli, P.aeruginosa and ESBLs, depending on the solvents used, but also point out the need to further investigate the role of propolis as a natural antibacterial agent, that could potentially be used in antibacterial therapy.

AEROSOLIZATION OF BACTERIA AND FUNGI INFLUENCED BY HAND DRYING SYSTEMS IN PUBLIC RESTROOMS

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Keywords. Fungi; Bacteria; Hand-dryers; Restrooms; Air quality

Objectives. Hand-dryers contribute to microbial aerosolization, increasing the risk of infection transmission. This study examines microbial contamination in restroom air, advancing the field by exploring factors such as humidity, airflow mechanics, and particle count concerning various hand-dryer types.

Materials and methods. Ten restrooms were sampled (4 female, 4 male and 2 accessible) with different types of hand-dryers in an academic institution. Airborne microbial contaminants were collected by exposing agar plates to the dryer's airflow for 30 seconds, while surrounding air was assessed using SAS SUPER ISO 180 air sampler. Samples were cultivated on Mannitol Salt, MacConkey, Trypticase soy and Sabouraud agars, manually counted and identified. Fungi were identified by native smears and safranin staining, bacteria using VITEK. Particle count was measured before and during hand dryer use with "TSI P-TRAK", while other environmental variables were also recorded.

Results. Microbial contamination was detected in all restrooms. Restrooms with jet dryers showed 2.2 times fewer colony-forming units (147 CFU) compared to those with warm air dryers (326 CFU). Hand-dryer airflow contained 0–1360 CFU/min, while restroom air had 0–1424 CFU/m³. Most fungi identified were molds (*Mucor spp., Penicillium spp., Aspergillus spp.*), with 22 yeast colonies. Analysis identified various opportunistic and pathogenic bacteria, including *Acinetobacter baumannii, Escherichia coli, Staphylococcus spp.* and other species. The average particle count increased from 7,831 to 11,668 during dryer use. Environmental factors, particularly humidity and CO2 levels, played a role in bacterial dispersal, while airflow temperature contributed to particle dispersion and negatively affected fungal dispersal.

Conclusions. Hand-dryers can disperse pathogenic microorganisms, posing a cross-contamination risk, especially for immunocompromised individuals. This study demonstrates that factors like airflow temperature, humidity, and CO2 levels also influence microbial dispersal. Latvia lacks guidelines on acceptable contamination levels, highlighting the need for regulation to protect public health.

PUBLIC & GLOBAL HEALTH, OCCUPATIONAL MEDICINE, NUTRITION, DIGITAL MEDICINE

PREVALENCE AND INTENSITY OF CRYPTOSPORIDIUM INFECTIONS IN LATVIAN DAIRY CATTLE: PUBLIC HEALTH IMPLICATIONS

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Keywords. Cryptosporidium spp.; Dairy cattle; Latvia; Epidemiology; Public health

Objectives. Cryptosporidium spp. are protozoan parasites causing significant gastrointestinal illness in both humans and animals. This study aims to investigate the prevalence and intensity of Cryptosporidium spp. infections in dairy cattle across Latvia, focusing on regional and age-related variations, and to highlight the public health implications of these findings.

Materials and methods. Over a seven-year period (2013-2020), fecal samples from 2,655 dairy cattle were analyzed using Ziehl-Neelsen staining and flotation methods to detect and quantify Cryptosporidium oocysts. Statistical analyses were conducted to compare prevalence and infection intensity across different regions and age groups.

Results. The overall prevalence of Cryptosporidium spp. in Latvian dairy cattle was 27%, with significant regional differences. Notably, Cryptosporidium parvum, a zoonotic species, was the most common Cryptosporidium species found in Latvian dairy cattle, with a prevalence of 45.9%. The highest prevalence was observed in the Vidzeme region (31%), while the highest oocyst counts were recorded in the Kurzeme region (median = 600 OPG). Age-related susceptibility was evident, with calves aged 0 to 5 months showing the highest infection rates (39.4%) and oocyst counts (median = 800 OPG). Diarrhea was significantly more common in infected calves (56.6%) compared to older cattle.

Conclusions. The high prevalence and intensity of Cryptosporidium infections in Latvian dairy cattle, particularly among young calves, underscore the need for targeted interventions to mitigate the impact on animal health and productivity. Given the zoonotic potential of Cryptosporidium spp., these findings also have significant public health implications, highlighting the importance of monitoring and controlling infections in livestock to prevent transmission to humans. This study provides valuable insights into the epidemiology of Cryptosporidium in dairy cattle, emphasizing the need for region-specific control strategies and further research into environmental and management factors influencing infection dynamics.

ASSESSMENT OF OCCUPATIONAL RISK FACTORS IN A CEMENT PLANT AND THEIR IMPACT ON EMPLOYEES' RESPIRATORY SYSTEM AND SKIN

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Keywords. Cement dust; Occupational health; Particle size distribution; Respiratory symptoms; Dermatitis

Objectives. It has been proven that cement factory workers with direct daily contact with cement dust, have a higher prevalence of respiratory symptoms, along with a higher number of cement dermatitis cases. The aim of the study is to assess the existing workplace risk factors at a cement factory and to evaluate the impact on the health of the factory workers.

Materials and methods. 28 factory workers took part in this study, out of which 14 were participants with daily exposure to cement dust or other types of particulate matter and 14 were office workers with no prolonged exposure to dust on daily. 3 participants were excluded due to absence at time of data collection. The data was obtained during December of 2024 using a questionnaire, which included questions about the respondent's general health and occupational status. Alongside, measurements of particulate matter concentration, microclimate and pulmonary function were taken at four different occasions during the work shift week. Results were analysed with the SPSS 25.0.

Results. The mean age of respondents was 42,2 years, mean height – 178,1 centimetres. 82% of respondents were male. Based on these parameters of individuals, estimated lung vital capacity and peak expiratory flow was calculated. Out of 25 participants, the lung vital capacity on the first day of work shift week was below the predicted value for 40% participants. This number increased to 56% on the last day of shift. For peak expiratory flow, these figures were 16% and 12% respectively. 80% of the participants with insufficient results are factory workers with daily exposure to dust.

Conclusions. The study demonstrates that participants with direct exposure to dust particles have lower measured values of pulmonary function, lung vital capacity affected the most.

ADOPTING BEHAVIOUR CHANGE MODELS AS TOOLS TO INCREASE COLORECTAL CANCER SCREENING RESPONSIVENESS IN LATVIA

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Keywords. Colorectal Cancer screening; Responsiveness; Behavioural change models

Objectives. Although colorectal cancer screening (CRC) has been implemented in Latvia for more than 20 years, the responsiveness remains low (25,8% in 2023). The research aimed to analyse target group's behavioural patterns and increase CRC uptake by developing personalized invitations from collected data.

Materials and methods. The target group was adults aged 50+ in Latvia, participants were randomly selected from different regions as well as socioeconomic backgrounds. Data were collected through semi-structured interviews; thematic analysis was used to analyse the data and identify the factors influencing CRC behaviour.

Results. The data determined that the target group's attitudes and beliefs correspond with the Health Belief Model. Behaviour Change Wheel was used to establish methods for interventions to reach the desirable behaviour. Subsequently specific categories of intervention functions were identified and used to address the identified barriers in CRC. The most recurring obstacles included: unpleasant nature of the procedure, fatalistic health views, mistrust and a lack of awareness.The key directions to overcome barriers and achieve behaviour change are education, training, persuasion, incentivization, and enablement. Three messages based on appropriate behaviour change techniques were developed and will be sent to participants via SMS or email. The initial message will invite the target group to perform screening and explain the information about collecting and returning test kits. The reminder message urges participants to collect the test kits or to return them. The third message is sent to all participants: the ones with negative test results are encouraged to repeat the screening in two years, those with positive results are advised to schedule a follow-up with their GP.

Conclusions. The generated messages will be used to create automated patient engagement and tracking solution. The solution will be implemented in GPs practices throughout Latvia from 2025.

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KNOWLEDGE, ATTITUDES AND AWARENESS OF MEDICAL STUDENTS ABOUT ORGAN DONATION

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Keywords. Organ donation; Medical students

Objectives. Transplantation is a therapeutic procedure that includes taking organs, tissues or groups of cells and transplanting them into the recipient's body. The aim of this research paper was to assess the knowledge, attitudes and awareness of fourth-year students of the Faculty of Medicine at the University of Belgrade about organ donation.

Materials and methods. A cross-sectional study was conducted during December 2023 and January 2024 among fourth-year medical students. To collect data, we used an epidemiological questionnaire consisting of 45 closed questions which had multiple answers to which the students answered about demographic characteristics, knowledge and attitudes about organ donation.

Results. A total of 454 students are attending the fourth year of the Faculty of Medicine in Belgrade, of which 56.2% filled out and returned the questionnaire. Almost all surveyed students were familiar with the basic terminology related to organ donation. A significantly larger number of female students knew about syngeneic transplantation. More than 80% of respondents in both groups adequately stated that after experiencing brain death, subsequent recovery is not possible. Slightly more than half of the surveyed students agreed to donate their organs. About 34.0% of students believe that they have sufficient knowledge about organ transplantation, and 22.7% of them believe that the teaching program at the faculty provides sufficient knowledge in this area. Over 90% of respondents believe that it is important to carry out further education of both health workers and the entire population.

Conclusion. Although the knowledge demonstrated by the students is at a high level, a discrepancy is observed between their awareness of the importance of transplantation as a therapeutic procedure and their consent to actually be organ donors. This leads us to the conclusion that further education is necessary during undergraduate as well as postgraduate studies.

ASSOCIATION BETWEEN THE USE OF ERECTILE DYSFUNCTION MEDICATION AND SEXUALLY TRANSMITTED INFECTIONS AMONG MEN IN LATVIA

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Keywords. Erectile dysfunction medication; Sexually transmitted infections

Objectives. Several studies have reported a positive correlation between the use of erectile dysfunction medication (EDM) and an increase in the rate of sexually transmitted infections (STIs) in men. Among men aged 50-64 in Latvia, 79.4% reported not primarily using condoms. This study aimed to determine the association between EDM consumption and ever-contracted STIs among men aged 40-64.

Materials and Methods. The database from the 2023 cross-sectional study "Research on factors and behaviour affecting the sexual and reproductive health of the population of Latvia" was used, analyzing a population of men aged 40-64 (n=2014). Logistic regression was used to determine the association of ever-used EDM with ever-contracted STIs as the outcome, adjusting for age and education. Data analysis was performed using IBM SPSS. The results were considered statistically significant if p-values<0.05.

Results. Of all participants, 7.0% reported ever-use of EDM and 7.2% - ever-contracted STI; additionally, 24.6% reported to have never used a condom. Among men who ever used EDM, 20.9% ever contracted an STI, compared to only 8.9% in the non-EDM group. There was a statistically significant positive association between education and ever using condoms, but not between education and ever consuming EDM. EDM-consuming men had higher odds of ever-contracted STI than the non-EDM group (aOR=2.83, p<0.001). Men with higher education had higher odds of ever-contracted STI than men with primary or lower education (OR=3.32, p<0.001). There was no statistically significant association between ever using condoms and ever-contracted STIs.

Conclusions. The result of our study showed that men aged 40-64 who ever consumed EDM were more likely to have ever contracted STIs than those who never consumed EDM. This highlights the importance of providing education about STIs alongside prescribing EDM.

THE MEDIATING ROLE OF EMOTIONAL AND CONDUCT PROBLEMS IN THE RELATIONSHIP BETWEEN DEMOGRAPHIC FACTORS AND SMOKING BEHAVIOURS AMONG LATVIAN ADOLESCENTS

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Keywords. Emotional Problems; Conduct Problems; Adolescents; E-cigarette Use; Cigarette; Dual Smoking

Objectives. Adolescent smoking behaviours pose significant public health concerns due to their association with long-term health risks. Understanding the underlying factors influencing smoking is crucial for designing effective interventions. This study analyses associations between age, gender, emotional and conduct problems, and smoking. Additionally, the study investigates the mediating roles of emotional and conduct problems in the relationship between age, gender, and smoking behaviours among Latvian adolescents.

Methods. The representative sample included 4395 adolescents aged 11, 13 and 15 years from Latvia, using data from cross-sectional "Health Behaviour among School-aged Children" study conducted in 2017-2018. Mediation analysis was performed using Jamovi with bootstrap method to examine the direct, indirect and total effects. For logistic regression, a stepwise method was applied. Statistical significance was assessed using p-values ($p<0.05$ considered significant).

Results. The prevalence of current e-cigarette use was 9.6%, cigarette smoking 10.2%, and dual smoking 4.8% among adolescents. Older adolescents were significantly more likely to engage in smoking behaviours. Boys had higher odds of using e-cigarettes (aOR=2.0, $p<0.001$) and engaging in dual smoking (aOR=1.6, $p=0.003$), compared to girls. Emotional problems significantly predicted cigarette use (aOR=1.4, $p=0.039$), whilst conduct problems increased odds of e-cigarette (aOR=2.8, $p<0.001$), cigarette (aOR=2.2, $p<0.001$), and dual smoking (aOR=2.3, $p<0.001$). Emotional problems partially mediated the relationship between age and e-cigarette use, accounting for 6.2% of the total effect. Conduct problems partially mediated the relationship between gender and e-cigarette use, explaining 5.4% of the total effect.

Conclusions. This study demonstrates that age, gender, emotional and conduct problems significantly influence smoking behaviours among adolescents. Furthermore, emotional and conduct problems play a small but significant mediating role in the relationship between age, gender, and smoking. These findings highlight the importance of incorporating psychological and socio-demographic factors in smoking prevention strategies.

ANALYSIS OF THE LEVELS OF PARTICIPATION IN SOCIETY OF POST-AMPUTATION PATIENTS AT THE PURULENT SURGERY CLINIC OF RIGA EAST UNIVERSITY HOSPITAL

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Keywords. Lower limb amputation; Inclusion, WHODAS 2.0.; Post-amputation functioning; rehabilitation

Objectives. To determine the level of participation in society of post-amputation patients. To contribute recommendations for improving post-amputation care and rehabilitation strategies, focusing on increasing societal inclusion and reducing functional barriers.

Materials and methods. Telephone interviews were conducted with 24 patients from the time period of 2022-2023 who had their lower extremity amputations done in the Purulent Surgery Clinic. The World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) was used to assess patient's quality of life. This study analyses the domain of participation in society which consists of 8 sections: 1.Engagement in societal activities, 2.environmental barriers, 3.Living with dignity, 4.Time spent on health condition, 5.drain on financial resources, 6.problems for family, 7.relaxation or pleasure, 8.emotional impact. Descriptive statistics in Excel were used to analyze functioning difficulties in these areas and determine mean score, median score, standard deviation, interquartile range and severity of difficulty in percentage.

Results. The highest percentage of severe difficulty and level of problems was found in the area "engagement in societal functions (for example celebrations, social events, religious activities). With the mean score of 3.62, median score 5.0, severe difficulty percentage 61.7%, standard deviation 1.5. The lowest level of severe difficulty meaning the highest level of functioning was found in the areas of "Living with dignity" with values of mean score 1.83,median score of 1.0 and level of severe difficulty of 12.8%, standard deviation 1.2.

Conclusions. The results show that although a high percentage of patients have retained their feeling of dignity, the participation in societal functions is low and presents a high level of difficulty, high level of strain for families. It is our job as society and medical professionals to further the discussion and advocate for measures to improve the re-integration of post-amputation patients in society.

READABILITY AND COMPREHENSIBILITY OF PATIENT ANESTHESIA INFORMATION AND EDUCATION MATERIALS IN LATVIAN HOSPITALS

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Keywords. Readability; Comprehension; Anesthesia; Patient education

Objectives. Patient information materials should be written at a 6th-grade reading level to effectively convey complex medical information. The aim of this study was to analyze the readability (based on reading grade level) and comprehensibility of written patient information about anesthesia provided by Latvian hospitals.

Materials and methods. We contacted anesthesia departments in Latvian hospitals and collected 12 pre-anesthesia patient information leaflets. The leaflet texts were digitized and analyzed using 10 commonly used readability indexes: Average Reading Level Consensus (ARLCalc), Automated Readability Index (ARI), Flesch Reading Ease (FRE), Gunning Fog Index (GFI), Flesch-Kincaid Grade Level (FKGL), Coleman-Liau Readability Index (CLRI), The SMOG Index (TSM), Original Linsear Write Formula (OLWR), Linsear Write Grade Level Formula (LWRLF), and Forcast Readability Formula (FRF).

Results. The mean number of years of education needed to understand the patient information leaflets was 15 ± 1.1 years. The most comprehensible leaflet still required 13 years of education for understanding. This exceeds the average literacy level of the general population in Latvia. The readability metrics did not significantly differ between regional and local hospitals (15.1 ± 1.1 vs. 14.4 ± 1; $p = 0.3$).

Conclusions. Patient information leaflets in Latvia are written above the recommended reading level. A significant proportion of patients may not be able to fully comprehend the written pre-anesthesia information.

PREVALENCE AND RISK FACTORS OF PELVIC FLOOR DYSFUNCTION IN MEN AND WOMEN IN LATVIA

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Keywords. Pelvic floor dysfunction; Risk factors; Men; Women; Latvia

Objectives. Pelvic floor dysfunction (PFD) is a challenging and global problem. It affects the quality of life, and early diagnosis and treatment may decrease the severity of PFD. This study aims to collect data about the prevalence and risk factors of PFD in men and women in Latvia.

Materials and methods. A questionnaire was distributed to men and women in Latvia aged 35 years and older over a 3-month period (October-December 2024) through family doctors. The questionnaire included 28 questions about patient characteristics, risk factors, health issues, PFD symptoms, and gender-specific questions. All data were collected using MS Excel, and statistical analysis was performed using IBM SPSS (Mann-Whitney U test and Chi-squared test).

Results. The survey was answered by 234 patients - 199 women and 35 men. Among those aged 35 years and older, 65,7% of men and 72,9% of women reported experiencing at least one PFD symptom. Only 39,1% of men and 37,9% of women with PFD symptoms informed their family doctor about their complaints, but 8,7% of men and 10,3% of women with PFD symptoms received treatment. Statistically significant results were found regarding the presence of symptoms and increased BMI ($p<0,037$), as well as positive family anamnesis for PFD ($p<0,002$) in women. No association was found with increased age, physical activities, healthy diet, previous abdominal or pelvic surgeries, heavy lifting, smoking, or persistent cough.

Conclusions. Based on this study, most patients do not inform their family doctors about PFD symptoms, and only a few affected patients receive any treatment. Several risk factors that may influence the development of PFD were identified, but only a few factors (increased BMI, positive family anamnesis for PFD) showed statistical significance in this study.

FACTORS INFLUENCING THE COVERAGE OF COLORECTAL CANCER SCREENING: BARRIERS AND FACILITATORS FROM THE PERSPECTIVE OF FAMILY DOCTORS IN LATVIA

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Keywords. Colorectal cancer; Screening; Family doctors; Barriers; Facilitators; Latvia; Preventive medicine

Objectives. Colorectal cancer (CRC) remains a major global health problem because and it is the second leading cause of cancer-related deaths worldwide. In Latvia, CRC is especially worrying because the participation rate in screening programs is consistently low. In 2022, only 19.1% of individuals between the ages of 50 to 74 underwent CRC screening, ranking Latvia among the countries with the lowest screening rates in Europe. This study aims to identify the key factors affecting CRC screening coverage in Latvia, focusing on barriers and facilitators from the perspective of family doctors.

Materials and methods. A cross-sectional survey was conducted among family doctors in Latvia to report their viewpoint on factors affecting colorectal cancer screening coverage. Quantitative data were analysed to assess trends in their knowledge, attitudes, and practices related to CRC screening.

Results. A total of 42 family physicians participated in the study, of whom 78.6% were female and 21.4% were male. The majority of respondents were in the age group 31 to 41 years (47.6%). The survey revealed key barriers to colorectal cancer screening, including patients' fear of the procedure and hesitation to participate (76.2%), insufficient knowledge about screening (64.3%) and reluctance to learn about a potential negative diagnosis (52.4%). Despite these challenges, respondents highlighted the importance of effective patient education (64.3%) and motivational conversations (61.9%). Additionally, 45.2% of respondents identified inadequate healthcare system support (limited funding and staffing), as a significant challenge to improving screening programs.

Conclusions. The most significant barriers identified were patients' anxiety of the procedure, unwillingness to participate, and fear of receiving a negative diagnosis, which highlights the need for improved patient education and psychological support. Additionally, the lack of knowledge about screening accentuates the importance of increasing public understanding of its benefits and significance.

HISTORY AND SOCIAL CONSEQUENCES OF LEPROSY IN POLAND

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Keywords. Leprosy; Leprosarium; History of Medicine; Medieval Europe

Objectives. This study investigates the historical presence and societal impact of leprosy in medieval Poland, focusing on its origins, spread, and influence on healthcare and social organization. By analyzing historical records and research by historians, the study examines the disease's introduction to Poland and the establishment of leprosariums.

Materials and methods. The research method involved analyzing historical sources and reviewing works by scholars specializing in medieval healthcare and societal structures. The sources of knowledge about leprosy in the Middle Ages often include city and church chronicles. This approach provided insights into the arrival of leprosy in Poland, the establishment of care facilities, and societal reactions to the disease.

Results. Historical evidence suggests that leprosy spread to Poland through German settlers and knights returning from the Crusades. The earliest leprosariums were established in the 13th century, primarily in western Poland, including Środa Śląska. Although the prevalence of leprosy in Poland was lower than in Western Europe, its presence significantly influenced medieval society by prompting the creation of specialized facilities for isolating and treating patients. The disease contributed to changes in healthcare practices and public health management.

Conclusions. Leprosy, while not as widespread in Poland as in Western Europe, had a profound societal impact. The establishment of leprosariums reflected evolving attitudes toward public health and disease management. The study underscores the importance of cultural and historical exchanges in shaping healthcare responses and highlights the resilience of medieval Polish society in managing infectious diseases.

FUNCTIONAL AND ELECTROPHYSIOLOGICAL ANALYSIS OF WRIST FLEXORS AND EXTENSORS: INSIGHTS INTO MUSCLE IMBALANCES AND ACTIVATION PATTERNS

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Keywords. Ergonomics; Work-related upper limb disorders (WRULDs); Dynamometry; Electromyography

Objectives. Muscle imbalances in wrist flexors and extensors contribute to the development of work-related upper limb disorders (WRULDs). Understanding the dynamic between force production and neuromuscular activation is essential for developing ergonomic and rehabilitation strategies. This study investigates the functional characteristics of wrist flexors and extensors and their role in WRULDs.

Materials and methods. The study included 23 participants (mean age: 24.7 ± 4.1 years), with 22 being right-handed. Dynamometry and electromyography (EMG) values were analyzed during rest and maximal effort for flexors and extensors of the right and left wrists. Functional ratios (flexor/extensor and rest/maximal effort) and spectrum frequency comparisons were evaluated. Data analysis was conducted using Jamovi.

Results. Flexors exhibited consistently higher force outputs than extensors, with significant differences across right and left wrists ($p < 0.001$). Mean dynamometry values for the right wrist flexors and extensors were 98.5 ± 19.4 N and 80.6 ± 22.2 N, while left wrist values were 98.3 ± 31.7 N and 83.7 ± 22.8 N. EMG analysis revealed higher resting activation in flexors, particularly in the left wrist (185 ± 34.8 Hz vs. 144 ± 33.1 Hz, $p < 0.001$). Maximal effort analysis showed extensors dominated activation (e.g., 158 ± 21.8 Hz vs. 122 ± 22.9 Hz in the right wrist, $p < 0.001$). Since most participants were right-handed, findings highlight how the non-dominant hand can also become overloaded in compensatory tasks.

Conclusions. The study identifies differences in force and activation patterns between flexors and extensors and between dominant and non-dominant wrists. Flexors exhibited chronic tension at rest, while extensors demonstrated greater fatigue resistance during maximal effort. These findings highlight the need for ergonomic interventions and WRULD prevention.

EFFECTS OF MEDIA USE ON PRE-SCHOOL CHILDREN'S COGNITIVE FUNCTION, COMMUNICATION AND SELF-EXPRESSION

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Keywords. Media; Cognitive function; Communication; Self-expression; Pre-school children

Objectives. Pre-school children often have access to media and their use can affect their cognitive functions, communication and self-expression. The aim of this systematic literature review is to assess the impact of media use on cognitive function, communication and self-expression in preschool children and to identify which cognitive skills are most affected by using media for even a short period of time.

Materials and methods. The systematic literature review was carried out by analyzing scientific articles, most of which were published between 2017 and 2024. The search of scientific articles was carried out in PubMed, Web of science databases.

Results. According to our previous systematic literature review, media is a common part of preschoolers' daily routines; however, excessive use (>60 minutes/day) and intense exposure to uninformative, short-form content can impair alertness, short-term memory, attention span, and communication skills, including storytelling and non-verbal communication. Yet, media use can positively impact self-expression, enhancing motivation, self-confidence, and engagement in activities.

Conclusions. Media use is inevitable in today's world and there is no need to fight it, but we must develop scientific problems and research in order to establish healthy media usage habits as a means to avoid any possible side-effects and/or harm of pre-school children's cognitive skills, communication and self-expression. Abstract authors will confirm any conflict of interest in our presentation at the congress. All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee.

CARBON DIOXIDE AS AN OCCUPATIONAL HAZARD IN A BEVERAGE COMPANY: A CASE STUDY

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Keywords. CO2; Indoor air quality; Beverage company; Brewery

Objectives. Carbon dioxide (CO_2) is a by-product of combustion, fermentation, and respiration. In the beverage industry, elevated CO_2 levels in the air result from fermentation processes and beverage carbonation. At high concentrations, inhaling CO_2 can affect the central nervous, respiratory, and cardiovascular systems, but symptoms typically disappear minutes after exposure ceases. The aim of this study is to monitor CO_2 levels during production and assess the occupational hazard in a beverage company in Riga.

Materials and methods. CO2 monitoring was conducted over 15 days using CO2 monitoring devices (Aranet4homes) placed in 3 different locations: PET bottles filling (207m2; artificial ventilation), glass bottle filling (86.1m2; artificial ventilation) and office premise as a control (10m2; natural ventilation). All data was analysed using Excel and SPSS.

Results. During glass bottle filling process, the average CO_2 levels were estimated to be as high as 4,799 ppm, with the highest concentration reaching 9,319 ppm. On weekends, the levels were lower than 1,000 ppm. Furthermore, the results of PET bottle filling showed the highest average CO_2 levels at 7,991 ppm, with an extreme peak concentration of 9,999 ppm. In office premises, the average CO_2 levels ranged from 467 ppm on weekends to 3,994 ppm during meetings.

Conclusions. CO_2 levels were below 1,000 ppm only during periods of low production, such as weekends. Daytime average CO_2 levels were very close to the Occupational Exposure Limit (OEL) of 5,000 ppm, with peak values exceeding it. Latvia lacks short-term (15-minute) CO_2 OEL regulations. The highest CO_2 concentrations occurred during the PET bottle filling process, driven by high production and beverage spillage. To reduce CO_2 levels, it is essential to improve general ventilation and implement local ventilation systems. Varying CO_2 levels across areas indicate that a single monitor is insufficient for accurate monitoring and control.

CONNECTIONS BETWEEN HOSPITAL INDOOR AIR QUALITY INDICATORS AND PATIENTS' VITAL SIGNS OF THE DEPARTMENT OF LUNG DISEASES AND THORACIC SURGERY

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Background. In this research data is being used relates to patients with lung diseases, for whom it is especially important to receive not only effective therapy and care, but also appropriate air quality conditions.

Aim. The aim of our study is to find a connection between patients' vital signs and indoor air quality indicators (CO2, temperature, humidity, atmospheric pressure) in the wards of the Department of Lung Diseases and Thoracic Surgery.

Methods. A prospective cohort study. Medical and air quality data was collected for 31 patients, the age of patients is 31-96 years. Patients' vital signs (SpO2 level, arterial blood pressure (BP), heart rate(HR)) data were obtained from medical records. Air quality indicators were monitored by "Aranet4" monitoring loggers to automatically collect indoor air quality data. The "Aranet4" devices weree located in three 4-bed wards.

Results. Study data was being collected from 12.01.2024. and completed on 09.02.2024. Looking at the results, we can say that the levels of CO2 are above the permissible norm. As for SpO2 levels in some cases are lower, but heart rate is increased.

Conclusion. There are trends which show connection between high BP and CO2, temperature, humidity changes ($p<0.01$). Also SpO2 is effected by CO2 higher levels ($p<0.05$). Additionally, the relative humidity and atmospheric pressure have an impact on almost all vital signs ($p<0.01$, $p<0.05$).

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MALARIA DETECTION USING ADVANCED DEEP LEARNING ARCHITECTURE

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Keywords. Neural networks; Malaria; CNN; Disease detection

Objectives. Malaria is a life-threatening disease caused by parasites that are transmitted to humans through the bites of infected mosquitoes. The early diagnosis and treatment of malaria are crucial for reducing morbidity and mortality rates, particularly in developing countries where the disease is prevalent. In this article, we present a novel convolutional neural network (CNN) architecture for detecting malaria from blood samples.

Materials and methods. The proposed model is based on the semantic segmentation neural network idea with custom architecture and layers layout. The input of the network consists of a 300 × 300 image taken with a light microscope. The dataset, found on kaggle.com and called "Malaria Bounding Boxes", consists of three sets of images (1364 in total) with description of around 80,000 cells. Blood smears were stained with Giemsa reagent. Blood was obtained from the arm using a syringe with standard procedure.

Results. Our method outperforms the existing approaches in terms of both accuracy and speed, making it a promising tool for malaria diagnosis in resource-limited settings. The CNN was trained on a large dataset of blood smears and was able to accurately classify infected and uninfected samples with high sensitivity and specificity. Additionally, we presented an analysis of model performance on different subtypes of malaria and discuss the implications of our findings for the use of deep learning in infectious disease diagnosis.

Conclusions. The presented solution is able to improve the detection rate and time performance by providing additional information to the microscopy image, helping the doctor performing the evaluation to spot and analyze potential threats. The network achieved a high per-pixel accuracy of 97.1% and a 99.68% accuracy for detecting a potential threat without the ideal border classification on testing data.

PSYCHIATRY, PSYCHOTHERAPY, PSYCHOSOMATICS

ANXIOLYTIC CONSUMPTION PATTERNS AND CORRELATIONS WITH DEPRESSIVE SYMPTOM SEVERITY AMONG INTERNATIONAL AND LOCAL MEDICAL STUDENTS AT RIGA STRADIŅŠ UNIVERSITY, LATVIA

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Keywords. Psychoactive substances; Substance use; Mental health; University students; Medical students; Anxiolytics; Depressive symptom severity; Latvia; International; Local

Objectives. Medical students are prone to psychoactive substance use due to stress, anxiety, and depression. This study investigates anxiolytic substance use patterns and their correlations with depressive symptom severity among international and local medical students at Riga Stradiņš University in Latvia.

Materials and methods. Data were collected anonymously and securely using a bilingual questionnaire (English and Latvian) hosted on SurveyMonkey. The questionnaire included a validated scale for depressive symptom severity, the Patient Health Questionnaire-9 (PHQ-9), a demographics survey, and an appendix assessing anxiolytic substance use based on the World Health Organization Alcohol, Smoking, and Substance Involvement Screening Test (WHO ASSIST) V3.1. Statistical analysis was conducted using Chi-Square tests, Cramer's V, and post-hoc Bonferroni correction.

Results. Out of 596 participants, 55.4% were Latvian and 38.4% were International students. Depressive symptom severity analysis revealed that 24.9% had no depressive symptoms, while 13.1% reported severe depressive symptoms. Anxiolytic use in the past 3 months was reported by 13.4%, with 10.7% using anxiolytics daily or almost daily. A significant moderate association was found between anxiolytic use in the past 3 months and depressive symptom severity ($\chi^2 = 44.829$, $p < 0.001$, Cramer's $V = 0.387$). Severe depressive symptoms were associated with daily or almost daily anxiolytic use. International students were more likely to report no depressive symptoms compared to local students ($\chi^2 = 38.414$, $p < 0.001$, Cramer's $V = 0.277$).

Conclusions. Significant associations were observed between student status (Local/International), depressive symptom severity, and anxiolytic use in the past 3 months. International students exhibited lower severity of depressive symptoms contrary to local students, while daily or almost daily anxiolytic use correlated strongly with severe depressive symptoms. These findings emphasize the need for targeted mental health interventions.

DEPRESSION DOES NOT MEAN MANIPULATION, A CROSS- SECTIONAL STUDY

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Keywords. Depression; Psychopathy; Manipulation

Objectives. Depression at times is a crippling disorder with serious social and health consequences,affecting all aspects from work to relationships.Although less common in the modern world,depression is viewed by the public as laziness,being manipulative and self-centered.Dark triad is a way to test that by measuring Machiavellianism (manipulativeness,cynicism), psychopathy (impulsivity,heartlessness), narcissism (grandiosity,being special) which in turn gives way to grounding or objecting to stereotypes.The aim of the study is to identify the traits of the dark triad in depressive patients with F33 diagnosis,compare the severety of depressive symptoms and possible anxiety symptoms to the identified traits.

Materials and methods. Patients(N30)previously diagnosed with F33(ICD-10),who were at the time in the subacute psychiatric ward and who did not have significant psychiatric comorbidities were chosen.Patients were between 2 and 3 weeks of being stationed in the ward at the time of interview,patients contested to freely participate.The research was conducted from 01.03.24 until 10.10.24.Patients were tested by The Dark Triad test(adaptation by I. Joskte),PHQ-9 and GAD-7 scales,as well as a TEMPS test.After which a statistical analysis using one-sample z-test and t-tests was conducted, interpretation followed suit.

Results. The research hasn't found evidence of Dark Triad traits being statistically important in patients diagnosed with F33.The average amount of psychopathic tendencies patients is 2,00+/-0,48,Machiavellianism 2,993+/-0,71 and narcissism averaged at 2,618+/- 0,81.The irritable trait is less common (24 aren't irratable) in patients with psychopathic tendencies (p=0,006).
The GAD-7 and PHQ-9 scales showed mixed results.Main takeaways are that Machiavellianism correlates with the possibility of cyclothymia. (average DT score for Machiavellianism in patients with possible or likely cyclothymia is 3,325 while the all-patient average being 2,993;p=0,032).

Conclusions. Research concludes that the Dark Triad traits aren't statistically important comparing severity of depressive symptoms,anxiety.Recommendations are to continue research, integrate the newly found data into psychotherapeutic practices, inform society, ground stereotypes.

ALCOHOL CONSUMPTION PATTERNS AND THEIR CORRELATIONS WITH DEPRESSIVE SYMPTOM SEVERITY AND AGE AMONG MEDICAL STUDENTS AT RIGA STRADIŅŠ UNIVERSITY, LATVIA

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Keywords. Psychoactive substances; Substance use; Mental Health; University students; Medical students; Alcohol; Alcohol dependency; Depressive symptom severity; Age; Latvia

Objectives. Medical students face significant stress, which can lead to psychoactive substance use and maladaptive coping. This study explores alcohol consumption patterns and their correlations with depressive symptom severity and age among medical students at Riga Stradiņš University in Latvia.

Materials and methods. Data were collected anonymously and securely through a bilingual questionnaire (English and Latvian) hosted on SurveyMonkey. The questionnaire included a validated scale for depressive symptom severity, the Patient Health Questionnaire-9 (PHQ-9), a demographic survey, and the World Health Organization Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) V3.1. Statistical analysis was performed using Chi-Square tests, Cramer's V, and post-hoc Bonferroni correction.

Results. A total of 502 students participated. Based on the PHQ-9, 24.9% reported no depressive symptoms, while 13.1% had severe depressive symptoms. Alcohol consumption in the past 3 months revealed that 77.0% were low-risk users, while 23.0% were moderate or high-risk. A weak but significant effect size was noted in younger students (17–19 years old) who reported high alcohol consumption in the past 3 months ($\chi^2 = 53.158$, $p < 0.001$, Cramer's $V = 0.164$) and depressive symptom severity ($\chi^2 = 41.375$, $p = 0.003$, Cramer's $V = 0.144$).

Conclusions. The study highlights significant correlations between alcohol consumption in the past 3 months, depressive symptom severity, and age. Younger students with depressive symptoms were more likely to engage in drinking. These findings emphasize the need for integrated mental health and substance use prevention programs, particularly targeting younger students.

BOTULINUM TOXIN A IN DERMATOLOGICAL PRACTICE FOR PSYCHIATRIC DISORDERS: A SYSTEMATIC REVIEW

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Keywords. Botulinum toxin A; Psychiatric disorders; Glabellar region; Dermatology

Objectives. Botulinum toxin A (BONT/A), the most performed minimally invasive aesthetic procedure in dermatology, is widely used worldwide. Millions of injections are administered annually for aesthetics and off-label uses, including rosacea and hypertrophic scars. Additionally, BONT/A may treat psychiatric disorders by targeting glabellar muscles linked to emotional expression. This systematic review evaluates clinical research (2019–2024) on BONT/A's efficacy for major depressive disorder (MDD) and borderline personality disorder (BPD) and associated adverse effects.

Materials and methods. Following PRISMA guidelines, a systematic search was conducted in Google Scholar, ScienceDirect, and PubMed (2019–2024). Inclusion criteria focused on randomized controlled trials (RCTs) with adults receiving facial BONT/A injections, excluding pediatric and non-psychiatric studies. References were managed in Mendeley, with duplicates removed via Covidence. Cohen's d, calculated in JASP, measured effect size as the standardized mean difference, assessing treatment efficacy from baseline to weeks 6 and 12.

Results. From 1,271 screened records, 5 studies met inclusion criteria, investigating MDD (n = 2) and BPD (n = 3). BONT/A injections targeted the glabellar region, with doses of onabotulinumtoxinA (30, 50 U), lanbotulinumtoxinA (100 U), and incobotulinumtoxinA (34 U). Sample sizes: MDD - 353, BPD - 144. Of 479 participants (96.4% women, 4.8% men), 18 men (75.0%) and 243 women (50.7%) received BONT/A, while others received a placebo (0.9% NaCl for MDD, minimal acupuncture for BPD). BONT/A effectiveness in reducing MDD symptoms increased from a Cohen's d of 0.26 to 0.45 between 6 and 12 weeks.
Although BONT/A shows potential for BPD, minimal changes prevented calculations due to limitations. Common side effects were headaches (30.7%) and eyelid ptosis (12.5%).

Conclusions. BONT/A reduces MDD symptoms. Larger, high-quality RCTs, including male populations, are needed to confirm findings and explore long-term efficacy.
The most commonly reported side effects were headaches and eyelid ptosis.

PREVALENCE OF GENDER DISCRIMINATION AND ITS ASSOCIATION WITH PSYCHOEMOTIONAL STATUS, SELF-EFFICACY, AND SPECIALTY CHOICE AMONG RĪGA STRADIŅŠ UNIVERSITY MEDICAL STUDENTS

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Keywords. Gender discrimination; Psychoemotional status; Specialty choice; Medical students

Objectives. Gender discrimination remains a pervasive issue in academic and professional environments - reports from EU countries (Sweden, Germany) indicate that nearly half of medical students have experienced some form of discrimination, more often gender inequality. This study examines gender discrimination prevalence and association with psychoemotional state, self-efficacy, specialty preferences of Rīga Stradiņš University medical students.

Materials and methods. A quantitative cross-sectional study was conducted from December 2024 to January 2025 via self-report surveys using MS forms, distributed to Rīga Stradiņš University medical students (years 1-6) through WhatsApp student groups. The questionnaire included socio-demographic data, gender discrimination assessment, psychoemotional status scales (symptoms of depression - PHQ-9, symptoms of generalised anxiety - GAD-7, self-esteem - RSE and self-efficiency - GSE). Data were analyzed using MS Excel and SPSS Statistics.

Results. 294 students completed a questionnaire: 75.51% female, 18.71% male, 2.04% other gender, 3.74% did not specify. 36.05% (n=106) of medical students experienced gender discrimination, mostly negative jokes (51.36%), inappropriate nicknames (43.53%) and gender preference (38.78%). Discriminated students more frequently experienced severe symptoms of depression 71.00% vs 29.00% ($p<0.001$), severe symptoms of anxiety 60.70% vs 39.30% ($p<0.001$), low self-esteem 57.10% vs 42.90% ($p<0.001$) and self-efficiency ($p<0,001$). Statistically, among those undecided on their specialty 62.5% experienced discrimination, additionally, 83.3% of those unsure about continuing studies and 66.7% of those not continuing experienced discrimination ($p<0.001$).

Conclusion. Over a third of RSU medical students face gender discrimination, leading to higher rates of depression, anxiety, low self-esteem, self-efficacy. It affects career decisions, causing uncertainty in continuing studies. Addressing this issue and offering better psychoemotional support is crucial for an inclusive educational environment.

ASSOCIATION BETWEEN HYPOCHONDRIA AND HEALTH BEHAVIOR AMONG STUDENTS OF RIGA STRADINS UNIVERSITY

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Keywords. Hypochondria; Health anxiety; Health behavior

Objectives. Health behavior is a term used to describe individuals' actions, beliefs, and habits that relate to maintaining, restoring, and improving health. It includes observable actions and internal mental events that can be reported and measured. Recent studies show ambiguous results on this topic, and there is no available data about it among Latvian students. The aim of this study is to describe the association between hypochondria and health behavior among Latvian students at Rīga Stradiņš University.

Methods. A quantitative cross-sectional study was performed in Rīga Stradiņš University student population. Students were asked to complete the questionnaire electronically from December 2023 to January 2024. The questionnaire included the Short Health Anxiety Inventory (SHAI-14) for hypochondria evaluation; and negative consequences, avoidance and reassurance items for health behavior evaluation. Descriptive statistics were done using Microsoft Excel and IBM SPSS Statistics software.

Results. 214 students completed the questionnaire; 81.3% were female and 78.5% were younger than 24 years. Hypochondria symptoms are present in 28.0% of students. Study shows a positive moderate, statistically significant correlation between hypochondria and negative consequences items ($r=0.506$; $p<0.001$). Students with hypochondria tend to think that because of serious illness, they would lose their dignity, illness would ruin their lives and affect their ability to enjoy life. No significant association was found between hypochondria and reassurance and avoidance items ($p>0.05$).

Conclusions. In the population of Rīga Stradiņš University students, hypochondria is not associated with significant changes in reassurance and avoidance health behavior, although it correlates with a higher incidence of illness-caused negative consequences thoughts.

IMPACT OF FAMILY AFFLUENCE ON QUALITY OF LIFE IN PARENTS OF CHILDREN WITH AUTISM SPECTRUM DISORDER

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Keywords. Autism Spectrum Disorder; Quality of Life; Parents; WHOQOL-BREF

Objectives. Parents of children with Autism Spectrum Disorder (ASD) are at risk of lower quality of life (QoL) because of multiple stressors, including the financial burden of raising children with special needs. This study aims to assess the impact of family affluence on parental QoL among families raising children with ASD across physical health, psychological, social and environmental domains.

Materials and methods. A cross-sectional study was conducted using an online form that consisted of a custom demographic survey and the WHOQOL-BREF questionnaire. Participants were grouped by the median QoL domain score: scores above the median meaning higher QoL but scores below - lower QoL. Family affluence was self-reported on a five-point ordinal scale and dichotomised for statistical analysis, performed with Chi-square tests and binary logistic regression.

Results. The study population (n=102) had a mean age of 36.3 years and 1.9 children per family. Most participants were from two-parent households (71.6%), with 53.9% having a high school education.

Higher self-reported family affluence predicted higher (above median) QoL in the physical health (OR= 8.90, p=0.006), environmental (OR=16.11, p=0,009) and psychological (OR=4.27, p=0.036) domains. Lower self-reported family affluence was a predictor of lower (below median) QoL in psychological (OR=4.02, p=0.043) and environmental (OR=4.20, p=0.036) domains, while having no effect on the physical health domain. Family affluence did not predict QoL in the social domain.

Conclusions. Family affluence strongly impacts parental QoL in families with children diagnosed with ASD, with higher affluence being a predictor of higher QoL and lower affluence predicting lower QoL across different domains. Family affluence had no effect on the social domain, indicating that the cultural context has a greater influence on social well-being within this population. These findings underline the importance of financial security for better QoL in this population.

CORRELATION BETWEEN BURNOUT SYNDROME AND SLEEP QUALITY AMONG MEDICAL STUDENTS IN LATVIA

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Keywords. Burnout syndrome; Sleep disturbances; Latvian medical students; Sleep quality; Maslach Burnout inventory; Pittsburgh Sleep Quality Index

Objectives. Burnout syndrome, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, is a significant concern among medical students, adversely impacting academic performance, mental health, and future professional competence. Sleep disturbances, often linked to burnout, exacerbate these challenges by impairing cognitive function and emotional regulation.

This study aimed to analyze the prevalence of burnout syndrome and its impact on sleep quality among Latvian medical students, emphasizing the relationship between burnout dimensions and sleep disturbances.

Methods and materials. This quantitative cross-sectional study was conducted in 2024, involving 176 medical students aged 20–29 years. Participants completed the Maslach Burnout Inventory (MBI) to assess burnout dimensions and the Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality. Data were analyzed using IBM SPSS Statistics 29.0. Relationships between burnout dimensions and sleep quality were examined using Spearman's rank correlation.

Results. Among the participants, 45.8% exhibited high levels of emotional exhaustion, 32.2% reported significant depersonalization, and 41.2% indicated low personal accomplishment. Sleep disturbances were reported by 56.5% of students (PSQI > 5).

Spearman's correlation revealed a strong positive association between emotional exhaustion and sleep disturbances ($\rho = 0.618$, $p < 0.001$), and a weaker but significant correlation between depersonalization and poor sleep quality ($\rho = 0.302$, $p < 0.001$). Personal accomplishment showed a negligible correlation with sleep quality ($\rho = -0.011$, $p = 0.885$).

Conclusions. The findings reveal a strong link between burnout, particularly emotional exhaustion, and poor sleep quality among Latvian medical students. This underscores the need for institutional strategies to mitigate burnout through stress management programs and mental health support while promoting better sleep hygiene. Future longitudinal studies are essential to establish causal relationships and evaluate the effectiveness of targeted interventions.

ANALYZING SOCIAL IMPACT OF DANCE/MOVEMENT THERAPY RESEARCH ARTICLES ON SOCIAL AND ONLINE MEDIA: AN ALTMETRIC STUDY

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Keywords. Dance movement therapy; Altmetric analysis; Social attention

Objectives. Bibliometric parameters have become a standard method for measuring research impact, however, showing a lack of representation of research impact outside the academic community. Increasing numbers of scientific output not only poses a challenge to identify important scientific work, but also highlights the need for more rapid scientific impact measurements in the context of science digitalization. This study investigates the extent of social and online media attention received by dance movement therapy research and determine association between altmetric and bibliometric parameters.

Materials and methods. Firstly, a search in Scopus was conducted using the following combination of keywords: ("dance and movement therap*") OR ("dance movement therap*") OR ("dance/movement therapy") OR ("dance and movement psychotherap*"). Then, the following inclusion criteria were applied: article type- article, review, available DOI or PubMed ID, published from 2011 to 2022. Secondly, a search in the Altmetric Explorer database was carried out, to determine whether the article has received any social attention from online media. Social attention is represented as an altmetric attention score (AAS).

Results. A total of 422 articles were included in the study. Social attention received 52.8% (n=223) of the included articles. The median AAS was 3.0 (IQR 1.0-11.0). The most social attention (AAS=267) received the article "Dance/movement therapy in the treatment of post traumatic stress: A reference model" (Dieterich-Hartwell R., 2017) . The most social attention was received from social network "X" (67.2%). Also, results showed a significant association between AAS and citation count ($r_s = 0.505$, $p<0.001$).

Conclusions. Dance movement therapy research has gained a moderate amount of social attention online. Social network "X" showed to be the most used platform for research dissemination online. Current results highlights an opportunity as well as necessity for the researchers to expand research output dissemination outside academic community.

ACADEMIC AND SOCIAL IMPACT OF CREATIVE ARTS THERAPIES: A BIBLIOMETRIC AND ALTMETRIC STUDY

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Keywords. Dance; Movement; Therapy; Drama; Art; Music; Altmetrics; Bibliometrics

Objectives. Access to scientific literature is crucial for professional development. Restricted access articles tend to have higher scientific research quality but are mainly accessible to academic staff and students, whereas open access articles have a broader impact. Both bibliometrics and altmetrics reflect research article influence and impact, thereby enhancing the understanding of creative arts therapies research visibility.

Materials and methods. Research articles from 2017 to 2022 were identified in Scopus using defined search queries, categorized, and analyzed using EndNote and Rayyan. For each article, citation count, social media scores, and access status were obtained. Chi-Square tests evaluated the relationship between open access and creative arts therapies. Descriptive statistics provided insights into open access trends and altmetric engagement.

Results. A total of 1845 articles were identified (music therapy n=1011, art therapy n=404, dance movement therapy n=261 and drama therapy n=169), with 57.2% of all analyzed articles being open access. Mean Mendeley reader count was 73.77; Scopus had a mean citation count of 10.65 and a median of 5, with a maximum of 173 citations and many articles receiving none. Facebook activity showed high variability, with a mean of 434.50 and a median of 0.

Conclusions. Mean Mendeley reader count indicated moderate reader engagement, while Scopus citation data highlighted a skewed distribution—a small number of articles receive a high number of citations, whereas the majority remain under-cited. This suggests that a few influential studies shape the discourse in creative arts therapies, while many remain less visible in academic circles. Facebook activity exhibited the highest variability, suggesting limited social media engagement. Our findings underscore significant variability in academic and social impact across publication platforms and access types within creative arts therapies research.

THE RELATIONSHIP OF ALEXITHYMIA AND THE SPECIALTY OF RESIDENCY STUDIES AMONG RESIDENT PHYSICIANS IN LATVIA

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Keywords. Alexithymia; Residency; TAS-20

Objectives. Research indicates a link between doctor personality traits and the chosen speciality, however there is a lack of research on the prevalence of alexithymia and its association with profession among physicians. The aim of the study was to determine the prevalence of alexithymia and its correlations with the residency speciality and sociodemographic factors among resident physicians in Latvia.

Materials and methods. A quantitative, cross-sectional study based on anonymous web-based survey among resident doctors from 2 medical universities in Latvia was conducted. The questionnaire included socio-demographic, occupational factors, and the Toronto Alexithymia Scale (TAS-20). IBM SPSS was used to process the data.

Results. 188 respondents - 46 (24,5%) males and 142 females (75,5%) completed the survey. The prevalence of alexithymia among medical residents was 11,7%, while possible alexithymia was indicated for 17% of the respondents. Alexithymia was more prevalent among surgical residents (17,4%), compared to non-surgical residents (9,9%), however the difference was not statistically significant (p=0,321). Alexithymia was more commonly observed for men - 20%, compared to women - 9,8%, although the difference was not significant (p=0,234). There was no significant difference among alexithymia and age (p=0,745), relationship status (p=0,636), universities (p=0,607), or residency year (p=0,472). Among the 3 most widely represented professions in the study - surgeons (n=20), general practitioners (n=25) and radiologists (n=29) - the lowest alexithymia prevalence was observed among radiologists (6,9%), compared to general practitioners (16%), while surgeons had the highest prevalence (20%).

Conclusions. The prevalence of alexithymia among study participants corresponds to the average level in general population. Although alexithymia was not statistically significantly associated with age, gender, relationship status or specialty, there is an observable tendency of higher alexithymia rates among surgical professions and male sex. Further research is needed, expanding the study population.

INTEGRATING SPIRITUALITY INTO DRAMATHERAPY: PRELIMINARY RESULTS

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Keywords. Spirituality; Dramatherapy

Objectives. Growing research emphasizes the importance of integrating spirituality into healthcare for positive patient outcomes. A research highlights spirituality's significant role in recovery, personal growth, and therapeutic benefits (Lucchetti et al., 2021). However, there is limited information on how drama therapists work with spirituality or its impact on mental health. This study aims to explore how spirituality is defined, addressed, and integrated in drama therapy by examining current practices among therapists and their use of spiritual concepts, symbols, and experiences in therapy sessions.

Materials and Methods. To meet the objectives, a preliminary scoping review was conducted, collecting information from research databases in English without time limitations. A inductive tematic analysis was then used to explore how spirituality is defined in drama therapy and its role in therapeutic practice, resulting in key categories that describe spirituality within this context. To ensure a rigorous and transparent research process, the methodology was conducted in accordance with the updated PRISMA 2020 guidelines for scoping reviews (Page et al., 2021) and the scoping review methodology developed by JBI (Peters et al., 2020).

Results. A total of 1118 articles were identified. After removing duplicates and screening titles and abstracts, 95 articles were selected for full-text review. 12 records were excluded due to the unavailability of full texts, and 23 articles were assessed based on inclusion criteria. The results highlights four key themes: meaning-making, transcendence, connectedness, and defining life values. The thematic analysis depicts spirituality as an "inner space" where clients explore the meaning of life, connect to a higher purpose, connects to self, others and nature and reflect on their personal values.

Conclusions. This study outlines spirituality's role in drama therapy. Results underscore spirituality's potential in promoting personal growth, mental health, and well-being, supporting a structured approach to integrate spirituality in therapeutic practice.

CORRELATION BETWEEN MAGICAL THINKING AND OBSESSIVE-COMPULSIVE DISORDER: A META-ANALYSIS

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Keywords. Magical thinking; Obsessive-compulsive disorder (OCD); Thought-action fusion; Paranormal beliefs; Correlation; Meta-analysis

Objectives. To investigate the correlation between magical thinking and OCD, exploring the role of thought-action fusion, inferential confusion, and other subscales of magical thinking across clinical and non-clinical populations.

Materials and methods. This meta-analysis includes data from 12 studies conducted between 2004 and 2024, with sample sizes ranging from 120 to 1,194 participants. These studies employed various tools, including the Magical Ideation Scale (MIS), Illusory Beliefs Inventory (IBI), and Paranormal Beliefs Scale (PBS), to measure magical thinking. OCD symptom severity was assessed using scales such as the Obsessive-Compulsive Inventory-Revised (OCI-R) and the Padua Inventory (PI-WSUR). Correlational and regression analyses were conducted to examine relationships between magical thinking and OCD symptoms.

Results. The meta-analysis revealed a moderate positive correlation ($r = 0.33$) between magical thinking and OCD, with consistent data clustering around the mean value. Confidence intervals for individual studies overlapped, indicating low heterogeneity. Funnel plot analysis showed no significant publication bias, as points were symmetrically distributed around the mean correlation. Heterogeneity analysis ($Q = 18.71$, $p = 0.067$) confirmed no significant heterogeneity, with $I^2 = 41.2\%$ indicating moderate variability due to methodological differences. Gender distribution varied across studies, with female participants predominating (e.g., up to 74.6% in non-clinical groups), suggesting gender-based differences in the relationship between magical thinking and OCD. The findings are robust and generalizable across populations.

Conclusions. This meta-analysis confirms a moderate positive correlation between magical thinking and OCD, suggesting that individuals with higher magical thinking are more likely to exhibit OCD symptoms. Gender differences highlight the need for further research to examine their influence on this relationship. Despite moderate heterogeneity, the data is reliable, and no significant publication bias was detected. Further exploration of magical thinking's role in OCD pathogenesis, with attention to gender effects, is essential.

THE ASSOCIATION BETWEEN THE USE OF AFFECTIVE SUBSTANCES AND ANXIETY LEVELS AMONG RSU LATVIAN AND INTERNATIONAL MEDICINE STUDENTS

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Keywords. Affective substances; Anxiety; Medicine students

Objectives. Affective substances have a significant connection to the mental health of medicine students. Medicine students, known to experience high levels of anxiety during studies, are at increased risk of turning to such substances as coping mechanisms. Aim of the study is to investigate whether there is a connection between the use of affective substances and the level of anxiety among RSU Latvian and international medicine students, as well as the differences between Latvian and international groups of medicine students.

Methods and materials. A quantitative cross-sectional study in the population of Rīga Stradiņš University medicine students was performed during December 2024-January 2025. Students were asked to fill an anonymous online survey that included The Alcohol, Smoking and Substance Involvement Screening Test and Generalized Anxiety Disorder 7-item scale, which was used to detect anxiety symptoms severity. The data was analyzed by using IBM SPSS software.

Results. The survey was completed by 98 respondents, 83,7% were female and 46,9% were in the age group 24-26 years. 67,3% (n=66) students were from Latvian groups and 32,7% (n=32) students were from international groups. Study showed that Latvian and international medicine students have statistically significant difference in anxiety score (p=0,048) when paired with tobacco substances. Students from year 4-6 exhibited higher levels of alcohol use. There was no statistically significant association found between anxiety and gender.

Conclusions. Medicine students at Rīga Stradiņš University who use tobacco products exhibit significantly higher levels of anxiety compared to non-users; Latvian group had higher scores of using affective substances (alcohol, tobacco).

ANXIOLYTIC CONSUMPTION PATTERNS AND THEIR CORRELATIONS WITH ANXIETY SYMPTOM SEVERITY AND GENDER AMONG MEDICAL STUDENTS AT RIGA STRADIŅŠ UNIVERSITY, LATVIA

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Keywords. Psychoactive substances; Substance use; Mental health; Medical students; Anxiolytics; Anxiety symptom severity; Gender; Latvia

Objectives. High stress levels faced by medical students can lead to psychoactive substance use, particularly to manage anxiety. This study examines anxiolytic consumption patterns and their correlations with anxiety symptom severity and gender among medical students at Riga Stradiņš University in Latvia.

Materials and methods. Data were collected anonymously and securely through a bilingual questionnaire (English and Latvian) hosted on SurveyMonkey. The questionnaire included a validated scale for anxiety symptom severity, the General Anxiety Disorder Questionnaire-7 (GAD-7), a demographics survey, and an appendix assessing anxiolytic substance use based on the World Health Organization Alcohol, Smoking, and Substance Involvement Screening Test (WHO ASSIST) V3.1. Statistical analysis was conducted using Chi-Square tests, Cramer's V, and post-hoc Bonferroni correction.

Results. The gender distribution (n = 592) was 73.8% female, 25.2% male, and 1.0% other. Anxiety symptom severity analysis (GAD-7, n= 509) revealed minimal anxiety symptoms (22.4%), moderate anxiety symptoms (24.4%), and severe anxiety symptoms (26.5%). Anxiolytic use in the past 3 months (n = 77) was reported as never by 46.8%. Gender and anxiety symptom severity showed a significant moderate association ($\chi^2 = 61.901$, $p < 0.001$, Cramer's $V = 0.247$). Severe anxiety symptoms were more common in females (22.1%) than males (3.9%). Anxiolytic use in the past 3 months was significantly associated with anxiety symptom severity ($\chi^2 = 25.272$, $p = 0.014$, Cramer's $V = 0.335$), with severe anxiety symptoms correlating with frequent anxiolytic use.

Conclusions. Anxiety symptom severity is significantly associated with both gender and anxiolytic use in the past 3 months. Severe anxiety symptoms are more frequent in females and correlates strongly with regular anxiolytic use. These findings highlight the importance of gender-sensitive mental health interventions tailored to the specific needs of medical students.

DIGITAL TECHNOLOGY APPLICATION FOR IMPROVING PSYCHIATRIC PRACTICE IN LATVIA

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Keywords. Digital technology; Psychiatry

Objectives. Digital technologies have become increasingly relevant in psychiatric care. This study evaluated the adoption of digital technologies in Latvian psychiatric institutions, identified associated barriers and benefits, and explored the potential of advanced tools like AI and social media analytics to improve mental care.

Materials and methods. A quantitative cross-sectional anonymized electronic survey was conducted among 348 psychiatrists from the Latvian Psychiatric Association in Sep–Oct 2024, yielding 63 responses (18%). Participants included general psychiatrists, child psychiatrists, residents, and addiction specialists (aged 25–72).The survey assessed the usage of digital technologies, along with perceived benefits, barriers, and the integration of advanced technologies.

Results. Of the respondents, 85.7% (54/63) reported using digital technologies. The most commonly used technologies were EHR systems (50%), telepsychiatry (44.4%), and educational platforms (87%). Digital data considered most beneficial included medication adherence monitoring (90.5%), patient self-assessments (79.4%), sleep tracking (73.0%), and substance use monitoring (66.7%). Primary benefits included improved patient monitoring (68.3%), long-term mental health analysis (66.7%), additional data acquisition (66.7%), and medication reminders (66.7%). These benefits support personalized and proactive care. The most prevalent barriers included uncertainty in data application (47.6%), insufficient patient training (47.6%), and insufficient clinician training (61.9%). A negative correlation was observed between reported barriers and perceived benefits of digital technologies (Spearman's $\rho = -0.243$, $p = 0.055$), indicating that clinicians facing more barriers tended to undervalue the technologies' utility; however, this result was not statistically significant. Social media were used by 26 (41.3%), primarily for gathering patient information and identifying suicidal tendencies. Despite low AI adoption 9 (14.3%), it showed potential in research (44.4%) and diagnostics (22.2%).

Conclusions. Digital technologies can improve psychiatric practice through better patient monitoring and personalized care. However, clinicians facing more barriers tend to undervalue these technologies. Addressing training and data usage challenges is crucial.

NATURE-BASED INTERVENTIONS THAT ARE USED TO IMPROVE ADULT MENTAL HEALTH: A RAPID REVIEW

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Keywords. Nature-based interventions; Mental health; Health care

Objectives. To summarize available research on the use of nature-based interventions in adult healthcare to improve mental health.

Materials and methods. The methodology is based on the PICO (Population, Intervention, Comparison, Outcome) approach and Following the PRISMA ScR guidelines. Several scientific databases were used to obtain information: PubMed, EBSCO, ProQuest and Google Scholar. The search strategy used keyword combinations and Boolean operators ("AND", "OR"), for example, "Nature-based interventions" AND "mental health" AND "health care" or "Green exercise" OR "forest bathing".

Results. Initially, 864 studies were found, 258 publications were reviewed with full texts, but the Rapid Review included and analyzed nine studies on nature-based interventions for improving adult mental health in healthcare settings.

Conclusions. This study examines various nature-based interventions used to improve mental health in adults. These include: horticultural therapy, Shinrin-yoku therapy, agricultural therapy, adventure therapy, surf therapy, hiking therapy, wilderness therapy, physical activity in nature, ecotherapy, environmental conservation therapy, and the effects of various forests on mental health. These methods are primarily used to reduce mental disorders such as anxiety, depression, and stress-related illnesses, including burnout. They are also particularly effective in cases of low self-esteem and emotional problems, including social isolation. Overall, nature-based interventions are increasingly being integrated into healthcare practices due to their ability to effectively address mental health issues and promote emotional stability and overall well-being.

ASSESSMENT OF THE PERCEIVED IMPACT OF LATVIA'S FIRST TELEMENTORING PROGRAMME: THE ECHO SCHOOL OF PSYCHIATRY FOR FAMILY DOCTORS

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Keywords. Telementoring; ECHO model; Primary care; Psychiatry; Mental health education

Objectives. The study aimed to evaluate the subjective impact of Latvia's first educative telementoring program, "ECHO School of Psychiatry," on family doctors.

Materials and methods. Participants were selected through convenience sampling, based on voluntary enrollment in the program. A custom-designed online questionnaire assessed general practitioners' perceptions and opinions upon course completion.

Results. The study included 58 participants, predominantly female (94.8%), with a mean age of 49.4 years (SD = 13.0). The average duration of professional experience was 20.1 years (SD = 13.2). Participants expressed high satisfaction with the program's structure and organization, with a mean score of 8.88 (SD = 0.93), and the majority rating their satisfaction as 9 (38.8%) or 10 (28.6%) on a 10-point scale. The likelihood of recommending the program to colleagues was similarly high, with a mean score of 9.47 (SD = 0.77) and 61.2% of participants giving the highest possible score of 10. No significant relationships were found between participants' age or years of professional practice and their evaluations of the program. Participants reported significant improvements in their self-assessed knowledge and skills in caring for patients with mental disorders after completing the program. Before the program, the majority of participants rated their knowledge and skills as "moderately good" (79.6%), with an average score of 1.84 (SD = 0.43) on a 5-point Likert scale. After the program, the majority (55.1%) rated their knowledge and skills as "good," with a mean score of 2.55 (SD = 0.50), with a statistically significant improvement (< 0.001). Regarding professional isolation, 79.6% agreed or strongly agreed that the program reduced their sense of isolation.

Conclusions. The findings highlight the program's consistent satisfaction and positive impact, fostering professional connection and enhancing confidence in mental healthcare delivery within primary care.

THE IMPACT OF PSYCHOLOGICAL STRESS AND DEPRESSION ON CANCER PROGRESSION: EXPLORING BIOPSYCHOSOCIAL MECHANISMS AND PATIENT OUTCOMES

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Keywords. Psycho-oncology; Tumorigenesis; Chronic stress; Biopsychosocial mechanisms; Depression

Objectives. In 1946, the World Health Organization (WHO) defined health as "a complete state of physical, mental, and social well-being, not merely the absence of illness or disease." This highlights the interconnectedness of mental and physical health. Chronic stress and depression significantly influence cancer progression and outcomes, disrupting balance, impairing immunity, and promoting tumor growth. Depression worsens quality of life, increases mortality, and complicates treatment [1]. Addressing these factors is crucial for improving care, prognosis, and well-being in cancer management.

Materials and methods. A literature review was conducted following PRISMA guidelines. Twenty-one medical articles published within the last five years were analyzed, focusing on the interplay between stress, depression, and cancer progression. The studies were selected based on relevance, methodological rigor, and adherence to the PRISMA framework.

Results. Chronic stress and depression significantly worsen cancer progression by disrupting homeostasis and immune responses, leading to tumor growth and metastasis [2]. Stress hormones, like glucocorticoids, suppress natural killer (NK) cell activity and enhance angiogenesis and genomic instability [3,4]. Depression, prevalent in 30% of cancer patients, reduces serotonin levels, compromising immune defense and treatment adherence [5]. Patients with depression face higher mortality, prolonged hospital stays, and increased readmission rates [6]. Stress also activates beta-adrenergic signaling, promoting tumorigenesis through p53 degradation [7]. Additionally, stress-induced autophagy further supports cancer proliferation, particularly in aggressive forms like gastric cancer, highlighting the multifaceted ways psychological factors exacerbate tumor behavior [8].

Conclusions. Chronic stress and depression exacerbate cancer progression through endocrine, immunological, and behavioral pathways. Interventions addressing these psychological factors can improve survival rates, treatment compliance, and overall quality of life for cancer patients. Recognizing and managing the biopsychosocial aspects of cancer care is essential for holistic patient management.

DEVELOPMENT OF ANXIETY AND FEAR-RELATED SYMPTOM SCALES FOR ADOLESCENTS: PRELIMINARY RESEARCH RESULTS

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Keywords. Anxiety disorders; Adolescents; Test development; Mental health; Content validity; Face validity

Objectives. Anxiety disorders are among the most common mental health conditions in adolescents (*Mohammadi et al*., 2020), with increasing rates annually (*Parodi et al*., 2022). The COVID-19 pandemic significantly worsened adolescent mental health globally (*Benton et al*., 2021), including adolescents in Latvia (Konstantinovs et al., 2021). However, Latvia lacks psychological tools to evaluate adolescent mental health. This study aims to develop and assess the content validity and face validity of scales for evaluating anxiety and fear-related symptoms in adolescents aged 13 to 19, as part of the National Research Project "Development of a new computer-assisted assessment tool for measuring and monitoring mental health outcomes of adolescents in the context of the post-COVID pandemic".

Materials and methods. Five scales were developed to measure Generalized Anxiety, Panic Disorder, Agoraphobia, Specific Phobia, and Social Anxiety, based on the International Classification of Diseases-11 (ICD-11). Items were collaboratively reviewed, retaining the most appropriate and effective ones. Content validity was evaluated by six experts, leading to a second version of the scales, which was resubmitted for expert evaluation. Face validity of scales was assessed through interviews with five adolescents to ensure clarity and appropriateness.

Results. Content validity indices (CVI) for the first version ranged from 0.17 to 1 (M=0.89). Items with a CVI below 0.83 were revised. In the second version, CVI scores improved, ranging from 0.75 to 1 (M=0.99). Adolescents' feedback indicated that items were understandable and easy to interpret, though some could potentially be combined.

Conclusions. Repeated item refinements improved content validity indices. Adolescent feedback supported the scales' face validity, highlighting their clarity and relevance. Future work will involve conducting a pilot study and a final study on a larger sample to further validate the scales and ensure their reliability and validity.

THE EXPERIENCE OF SOCIAL-MEDIA USE IN ADOLESCENTS HOSPITALISED WITH MOOD DISORDERS – A QUALITATIVE STUDY

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Keywords. Adolescents; Smart devices; Social media; Mood disorders; Depression

Objectives. Depression is one of the most common mental health disorders, with approximately 1.1% of adolescents aged 10 to 14 and 2.8% of those aged 15 to 19 globally diagnosed, according to the World Health Organization (WHO). Adolescents are frequent users of technologies such as mobile phones, computers, tablets, television, and social networks, making it essential to understand their impact on mental health and well-being. While research shows that excessive use of social networks is linked to a decline in mental health, other studies suggest that social media can help young people manage anxiety and distress. This study aims to explore the relationship between mood and social network usage and to learn more about the experiences of adolescents with mood disorders in their use of smart devices and social media.

Materials and methods. Semi-structured interviews with adolescents (14-18 years) hospitalized in a child psychiatry inpatient ward diagnosed with depression (n=7) were conducted between July 2024 and December 2024 in Children's Clinical University Hospital, Riga. Interviews were recorded, transcribed, and analysed using a thematic analysis approach.

Results. Thematic analysis identified two main themes: (1) coping strategies that include subthemes such as (1a) social support and relationships, (1b) hobbies and creativity and (1c) online sources for self-help. And (2) challenges with subthemes such as (2a) cyberbullying, (2b) family conflicts and (2c) technology addiction.

Conclusions. This study highlights the complex relationship between adolescents' use of smart devices and their mental health, particularly in the context of mood disorders. Participants highlighted both positive and negative aspects of technology usage. Understanding these dynamics is critical for developing targeted interventions to support adolescents in effectively managing their mental health.

INVOLUNTARY PSYCHIATRIC IN-PATIENT TREATMENT AT "ĢINTERMUIŽA" HOSPITAL IN 2022 AND 2023: A RETROSPECTIVE ANALYSIS

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Keywords. Involuntary treatment; Inpatient; Law; Psychiatry; Latvia

Objectives. In Latvia, there is no data available regarding the number of involuntary admissions, and the overall picture of involuntary admission is fragmentary. The objectives are to evaluate involuntary admission rates in the "Ģintermuiža" hospital (Latvia) and investigate sociodemographic variables associated with involuntary admission.

Materials and methods. This retrospective study included all psychiatric inpatient units of "Ģintermuiža" hospital, Latvia, Jelgava. Hospitalization data were collected from discharge records. Descriptive statistics summarized hospitalization durations and court-ordered days. Crosstabulation analysis assessed gender-diagnosis trends.

Results. The study included 48 patient cases. Two age groups, 20-31 and 32-43, each represented 12 patients, comprising 50% of the sample. The sample consisted of 21 males (43.8%) and 27 females (56.3%). The study used ICD-10 codes, representing 19 psychiatric diagnoses, classified as F06, F20, F23, F60. Diagnoses representing only one patient were classified as "other" (F01.81, F22.00, F31.2, F71.1). The most represented were F20 50% (n=24) and F23 27.1% (n=13). Males more frequently had repeated hospitalizations. Only 4 male patients had single hospitalization, compared to 12 female patients. 8 patients (16.7%) received 30 day court order, 35 (72.9%) received 60 day court order, excluding 3 with repeated orders during the study, and one received 43 day court order. Of 45 valid cases 17 patients (37.8%) fulfilled the court order (30 or 60 days), 28 (62.2%) were discharged earlier. Early discharge was not associated with hospitalization count and diagnosis.

Conclusions. Intensive outpatient monitoring for patients with schizophrenia spectrum disorders is needed to reduce the number of involuntary hospitalizations. Over half of patients were discharged early, with adherence unaffected by hospitalization count or diagnosis. Further research is needed to understand treatment effects and what causes early discharges and repeated hospitalizations.

ASSOCIATION BETWEEN ANXIETY, THE SENSE OF QUALITY OF LIFE AND ATTITUDE TOWARDS AGING OF 18-60 YEAR OLDS

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Keywords. Anxiety; Quality of life; Attitude toward aging

Objectives. The prevalence of anxiety is rising, with geopolitical tensions exacerbating concerns about future negative events. Aging-related anxieties and their impact on quality of life and attitudes toward aging remain understudied, especially across age groups. This study aimed to determine the relationship between anxiety level of individuals aged 18-60 years and their attitudes towards aging and quality of life, and to determine whether the anxiety level in relation to attitudes towards aging and quality of life differs across age groups.

Materials and methods. A quantitative cross-sectional web-based study in Latvia (respondents age 18-60) was conducted in November 2024 - January 2025. Anxiety was assessed using the State-Trait Anxiety Inventory (STAI), attitude toward own aging - using the Attitudes Toward Own Aging (ATOA) scale, and quality of life with WHO Quality of Life Scale-Brief (WHOQOL-BREF). Participants were asked demographic data - education level, age, gender, occupation. For data comparison, respondents were divided into 3 groups: 18-25; 26-45; 46-60 years. Data was analyzed using SPSS- Spearman's Correlation, Independent-Samples Kruskal-Wallis Test.

Results. Data from 104 participants (mean age 37 ±12; 79.8% female) showed that there was a statistically significant strong negative correlation between state and trait anxiety and age (state: r = -0,379, p<0,001; trait:r = -0,410, p<0,001); negative attitude toward own aging (state: r = –0,364, p<0.001; trait:r = –0,386, p<0.001) and negative perception of quality of life (state: r-0,616, p<0,001; trait:r=-0,583, p<0,001)
However, the distribution of negative perceptions of quality of life and attitudes toward aging did not differ significantly between age groups (p=0.759 and p=0.451).

Conclusions. Higher anxiety correlated with younger age, more negative attitude towards own aging and negative perception of quality of life. There was no correlation between age groups and negative perceptions of quality of life and attitude towards own aging.

VALIDATION OF THE LATVIAN TRANSLATION OF THE SCREENING INSTRUMENT "CHILDHOOD AUTISM SPECTRUM TEST (CAST): RESEARCH PROTOCOL"

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Keywords. Autism spectrum disorder; Screening tools; Latvian adaptation; CAST; Psychometric properties

Objectives. Due to rising prevalence of autism spectrum disorder (ASD), effective screening tools are essential to identify children requiring further evaluation. Although many tools are globally available, few are translated for use in Latvia. The Childhood Autism Spectrum Test (CAST), designed for school-aged children, bridges gaps left by early childhood-focused tools—offering simplicity, cost-effectiveness for educational and healthcare use. This study aims to adapt CAST into Latvian by evaluating its validity, reliability, and factor structure.

Materials and methods. A quantitative, non-experimental study is planned, selecting participants based on inclusion criteria: parent of children aged 4–11 years diagnosed with F80, F81, or F84.0 (ICD-10), and parent of children without significant behavioral or communication difficulties. Two participant groups are planned: one of parents whose children have received rehabilitation at Piejūras Hospital, and another of parents of children without significant difficulties enrolled in general education programs. At least 100 respondents are expected in each group. The study follows the 2024 guideline for validation studies by Cruchinho and colleagues. Phase one involves translating and adapting CAST into Latvian. Phase two includes data collection via an online questionnaire (January–March 2025). The final phase–psychometric validation–will assess factor structure, reliability, and validity using descriptive and inferential statistics (specific analyses defined post-data collection). The study protocol has been submitted for review to the Rīga Stradiņš University Research Ethics Committee.

Results. The validated CAST will provide Latvian educators and healthcare professionals with a reliable tool for identifying ASD traits, enhancing screening processes, and supporting future research. Its implementation will strengthen ASD assessment practices in Latvia.

Conclusions. A study protocol has been developed to validate the CAST for use in Latvia with data collected from parents of children aged 4–11 years. The validated tool will improve ASD screening and support future research.

IS AI CURRENTLY USED IN PSYCHIATRIC PRACTICE IN POLAND? ASSESSING THE FREQUENCY OF USE AND OPINIONS ON THE USE OF AI IN PSYCHIATRIC PRACTICE

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Keywords. Artificial intelligence; Psychiatric practice; Diagnostic process; Medical ethics

Objectives. Artificial intelligence in psychiatry is a general term that means the use of computer techniques and algorithms to diagnose, prevent and treat mental illnesses. Although there has been a noticeable increase in the use of artificial intelligence over the last few years, its role in psychiatric practice in Poland is not yet established. The aim of this work is to assess the current use of AI in psychiatric practice in Poland and possible willingness to implement it, and to indicate whether there are differences between genders. It is also crucial to indicate opinions on ethical issues related to the use of AI in psychiatric practice.

Materials and methods. A paper survey was distributed during a psychiatric conference. 135 people (psychiatrists, interns, doctors undergoing specialization and psychologists) took part in the study. The respondents were asked questions about the use of AI in working with patients and in research.

Results. The majority of respondents indicated that they do not currently use AI in the diagnostic process of patients, but are open to this possibility (76.3%), and this answer was regardless of gender. Women responded much more often that additional patient consent is always required for the use of their data for AI purposes (women 42.86%, men 26%), while 40% of men did not notice such a need at all, which was statistically significant (chi square, $p<0.005$).

Conclusions. In Poland, AI is not yet widely used in psychiatric practice, but there is a significant willingness to implement such solutions with a similar frequency, regardless of the activity for which AI is to be used. Ethical issues are debatable, with a noticeable difference in opinions depending on gender.

ALCOHOL CONSUMPTION AMONG RESIDENT PHYSICIANS IN LATVIA: A CROSS - SECTIONAL STUDY

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Keywords. Alcohol; AUDIT; Residency

Objectives. Given Latvia's consistently high alcohol consumption rates, there is a growing interest in understanding its effects within high-stress professions, such as medical professionals. Data regarding resident physicians in Latvia alcohol behaviors is scarce. The study aimed to assess the prevalence of alcohol disorder risk among resident physicians in Latvia and investigate its potential associations with sociodemographic factors and residency profiles.

Materials and methods. An anonymous online survey was conducted as part of a quantitative, cross-sectional study among resident doctors from two medical universities in Latvia. The survey contained 18 questions, 8 of which addressed socio-demographic and occupational factors, and 10 that were a part of the Alcohol Use Disorders Identification Test (AUDIT). The data was processed using IBM SPSS software.

Results. The survey was completed by 188 respondents, comprising 46 males (24.5%) and 142 females (75.5%). Low-risk alcohol consumption was reported by 82.4% of medical residents, while 17.6% exhibited hazardous or harmful consumption patterns, with a likelihood of dependence. Hazardous consumption was more frequently observed for men – 31.4%, than for women – 14.4%, ($p=0.025$), also for respondents who are not in a relationship - 29.3% compared to in a relationship – 18.4% and married - 10% ($p=0.037$). There is a statistically significant difference in alcohol consumption patterns among universities ($p=0.042$), but no significant difference regarding study year ($p=0.518$) and the specialty profile (surgical vs non-surgical) ($p=1$). Increased age correlates negatively with the risk of alcohol consumption (Spearman's coefficient=-0.102), although not statistically significantly ($p=0.163$).

Conclusions. The risk of alcohol disorder among resident physicians varies according to gender, relationship status and university. There is a negative correlation between the increase of age and risk of alcohol consumption, although the correlation is not statistically significant. Further research is necessary to cover a larger study population.

GYNAECOLOGY, OBSTETRICS, PERINATOLOGY

NATIONAL POLICIES AND REGULATIONS ON ABORTION ACCESS: COMPARATIVE STUDY BETWEEN BELGIUM, ESTONIA AND WHO GUIDELINES BY LATEST EVIDENCE-BASED ABORTION CARE

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Keywords. Abortion care access; Abortion policies; Belgium; Estonia; WHO guidelines

Objectives. Access to safe abortion care across the EU is shaped by national policies, which hinder or facilitate it. This includes time limits, waiting periods, parental consent, financial coverage, procedure availability and conscientious objection. This literature review compares abortion care access in Belgium and Estonia, focusing on policy-based factors and their alignment with the WHO guideline recommendations. Additionally, the impact of restricted access is explored.

Materials and methods. An in-depth data analysis is conducted from policy documents, medical journals, articles, qualitative and quantitative studies. Sources are selected and a comparative analysis between Belgium, Estonia, and the WHO guidelines is performed. Shortly, the impact of abortion care access is discussed.

Results. Belgium and Estonia both align with and diverge from the WHO abortion guidelines. Both countries have legalized abortion, liberalized laws, removed parental consent, and offer financial support. However, key differences remain. Criminal sanctions persist, gestational age limits (Belgium: 14 weeks LMP, Estonia: 12 weeks LMP) conflict with WHO recommendations, and Belgium imposes a mandatory six-day waiting period and counseling. Both countries allow conscientious objection and restrict medical abortion to nine weeks LMP, while WHO advises up to 12 weeks. Only OB/GYN specialists can perform abortions, despite WHO recommendations for a broader provider base. Limited access to abortion care may increase maternal health risks and unsafe procedures, but data on these outcomes in Belgium and Estonia is lacking. Cross-border abortion travel is documented from Belgium to the Netherlands, though no data exists for Estonia.

Conclusion. National abortion policies in Belgium and Estonia align and differ from WHO guidelines and impose restrictions that can limit abortion access. This can impact maternal health risks and lead to cross-border travel, emphasizing the need for policy reforms to ensure safe, equitable and evidence-based abortion care.

PARITY AND MULTIPLE GESTATIONS: EFFECTS ON INDUCTION AND SPONTANEOUS BIRTH OUTCOMES

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Keywords. Induced Labour vs. Spontaneous Labour; Impact on Birth Outcomes Based on Parity and Fetal Number

Objectives. With increasing rates of labour induction and multiple pregnancies linked to assisted reproduction, understanding how delivery mode influences birth outcomes is more pertinent than ever. This research investigates whether induction affects outcomes differently in twins compared to singletons, focusing on a woman's parity and the number of fetuses.

Materials and Methods. This retrospective study analyzed data from Riga Maternity Hospital, encompassing 12306 women who underwent induced and spontaneous labour between 2021 and 2023. Utilizing IBM SPSS Statistics version 28, outcomes were compared across two primary groups: first-primiparas and second-multiparas, with further classification into four categories: A (primiparas with singletons), B (primiparas with twins), C (multiparas with singletons), and D (multiparas with twins).

Results. In Group A, 22.5% of induced cases resulted in cesarean section (CS), while spontaneous births accounted for 19.4% CS. Group C showed 8.6% CS for induced labour and 23.3% for spontaneous labour. Group B had a 20% CS rate with induction, while spontaneous delivery yielded a 72.4% CS rate. In Group D, induced labour had a mere 5.5% CS, contrasting with a 69.4% CS rate for spontaneous births.

Conclusions. Twin pregnancies, particularly in multiparas, show increased CS rates during spontaneous labour. Induced labour consistently favors vaginal delivery across all groups, indicating that induction may be an effective strategy for lowering CS rates, especially in twin pregnancies. This underscores the importance of individualized labour management approaches based on parity and the number of fetuses, as spontaneous deliveries with twins often lead to higher CS rates.

DESCRIPTION OF IL-12, IL-13 AND IL-17A IN THE HUMAN PLACENTAS AFFECTED BY PLACENTAL DISTRESS SYNDROME

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Keywords. Placental distress syndrome; Interleukins

Introduction. Pathologic placenta is present in 73,8% cases of pathologic pregnancies. The most popular condition in the placenta is maternal vascular malperfusion (Loverro M.T et al, 2022). It can be caused by uncontrolled cytokine production, which results in pathologic function of placenta or placental distress syndrome (PDS). It's important to look into the underlying mechanisms of PDS to decrease number of pathologic placentas, therefore pregnancies.

Objectives. The aim was to evaluate interleukin: IL-12, IL-13 and IL-17A, in PDS by measuring the appearance of ILs in placental tissue from patients of different ages, delivery weeks, and numbers of pregnancies.

Methods:15 placental samples from pathologic pregnancies were obtained from three developmental times: 28, 31, 40 weeks. Signs of inflammation were detected by H&E stain. ILs expression - by immunohistochemistry. Data were evaluated semi-quantitatively. Independent-Samples Kruskal-Wallis Test, pairwise comparisons and Spearman correlation were performed.

Results. The number of IL-12 in endotheliocytes, macrophages, cytotrophoblasts didn't change during the placental development, while number in extraembryonic mesodermal cells (EEM) was higher at earlier developmental weeks. IL-13 dominated in endothelium in 40 weeks, in macrophages negatively correlated with the age of the patient, dominated in EEM in patients of 39 years old, but didn't change in cytotrophoblasts. IL-17A decreased in cytotrophoblasts and increased in macrophages around 40 weeks, but didn't change in endotheliocytes. The significant difference was found in the expression of the IL-17A in EEM between two delivery week groups: 31 and 40 ($p=0,009$). Spearman revealed different monotonic correlations between the factors.

Conclusions. Cytotrophoblasts, EEM and macrophages with slight variations display the IL-12, IL-13 and IL-17A positivity in placental developmental weeks 28-40 suggesting the role of these cytokines in the regulation of placental distress. Domination of IL-13 in endotheliocytes of 40 weeks old placenta can be the cause of PDS angiogenesis.

COMPARISON OF MATERNAL AND FETAL OUTCOMES IN PREGNANT WOMEN WITH TYPE 1 AND TYPE 2 DIABETES

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Keywords. Pregnancy outcomes; Type 1 diabetes; Type 2 diabetes

Objectives. The prevalence of type 1 and type 2 diabetes is rising, including women of reproductive age. Despite sharing high blood glucose as a key symptom, differences in pathogenesis, progression, and treatment raise questions about their impact on pregnancy outcomes. This study compares pregnancy outcomes in patients with type 1 and type 2 diabetes.

Materials and methods. This retrospective cohort study included 354 women who gave birth at Pauls Stradins Clinical University Hospital between January 1st 2019 and December 31st 2022. Participants were categorized into groups: women with type 1 diabetes (T1DM), type 2 diabetes (T2DM), and those without impaired glucose tolerance (control group). Pregnancy outcomes were directly compared and analyzed. Analysis was performed using IBM SPSS 29.

Results. This study comprised 106 women with T1DM (30%), 27 with T2DM (8%), and 221 from control group (62%). Women with T2DM were older on average (36.07 years, SD 4.14) than T1DM patients (29.83 years, SD 4.95), ($p < 0.001$). Both elective (T1DM: 29.25%; T2DM: 29.63%) and emergency cesarean section rates (T1DM: 30.19%; T2DM: 29.63%) were higher in DM patients compared to the controls (elective: 4.52%; emergency: 1.36%), ($p < 0.001$). Fetal macrosomia (T2DM: 25.93%; T1DM: 19.81%) and perineal tears (T2DM: 18.52%; T1DM: 15.09%) were more common in T2DM. Gestational hypertension was more common in T1DM (11.32%) than T2DM (7.41%). Preeclampsia rates were similar (T1DM: 19.81%; T2DM: 18.52%), while severe preeclampsia occurred more in T1DM patients (52.38%) than T2DM (0%). Despite these variations, no statistically significant differences were found ($p > 0.05$).

Conclusions. Both elective and emergency cesarean section rates were similarly elevated in diabetic patients in comparison with control group. T1DM was associated with more severe hypertensive disorders, while T2DM correlated with older maternal age, fetal macrosomia, and a higher risk of perineal tears.

PREVALENCE OF PELVIC FLOOR DYSFUNCTION IN WOMEN OF PREMENOPAUSAL AGE IN LATVIA

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Keywords. Pelvic floor dysfunction; Premenopausal women; Latvia

Objectives. Pelvic floor dysfunction (PFD) is a global issue, often underdiagnosed, leading to significant impact on quality of life. Early identification and intervention can reduce development of PFD symptoms. In literature, there are defined risk factors including parity, mode of delivery, birthing trauma, and elevated body mass index (BMI). This study aims to determine prevalence of PFD in women of premenopausal age within the Latvian population and identify potential risk factors.

Materials and methods. A questionnaire-based survey was conducted among male and female participants in Latvia, aged 35-55, from October to December 2024. The survey was distributed through family medicine practitioners. The questionnaire was developed following focus group discussions and a pilot survey involving 20 potential respondents. Questionnaire included 28 questions about sociodemographic factors, overall patient health, PFD symptoms and possible risk factors. Statistical analysis was performed using IBM SPSS Statistics 30.0. Mann-Whitney U and Pearson Chi-Square tests were performed.

Results. In total, 235 respondents participated in the study, of which 109 were premenopausal women. The median age was 41.0 (37.0; 47.5) years old (Q1; Q3), median BMI was 25.4 (21.9; 28.7). 67.9% reported experiencing at least one of the PFD symptoms. However, 31.9% of these women informed their family medicine practitioners and 15.3% of those with at least one PFD symptom have received any treatment. No statistically significant correlation was observed between PFD and potential risk factors.

Conclusion. The findings indicate a high prevalence of PFD among Latvian women of premenopausal age. Less than half of women experiencing PFD symptoms tell their primary care physician, and only few women receive treatment. No statistically significant correlation was found between potential risk factors - age, parity, lifestyle factors and PFD. Further research is necessary to understand the contributing factors that lead to development of PFD.

RISK FACTORS FOR PELVIC FLOOR DYSFUNCTION IN MENOPAUSAL WOMEN IN LATVIA

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Keywords. Pelvic floor dysfunction; Menopause; Risk factors

Objectives. Pelvic floor dysfunction (PFD) significantly impacts menopausal women's quality of life. This study aims to identify and analyze PFD risk factors among menopausal women in Latvia to inform targeted interventions.

Materials and methods. A cross-sectional study was conducted with 91 menopausal women (average age 51) from general practitioners' practices across Latvia from October to December 2024. Participants completed structured questionnaires assessing PFD symptoms and potential risk factors. Data were analyzed using IBM SPSS, employing crosstabulations, Mann-Whitney U tests, and chi-square tests to determine associations between PFD symptoms and these variables.

Results. Significant associations were found between PFD symptoms and several factors. 74.6% of women with PFD symptoms reported chronic illnesses, compared to 47.4% without symptoms ($p = 0.023$). Additionally, 44.3% of symptomatic women had undergone surgeries, versus 15.8% of asymptomatic women ($p = 0.023$). Higher BMI was significantly associated with PFD symptoms ($p = 0.001$), as was a longer menopause duration ($p = 0.026$). Furthermore, 97.1% of women with PFD symptoms had given birth. A higher prevalence of PFD symptoms was observed among urban residents ($p = 0.045$). All respondents whose first-degree relatives had symptoms reported PFD symptoms themselves (100%), compared to 75.3% of respondents whose relatives did not have symptoms ($p = 0.044$). No significant associations were found between PFD symptoms and age at menopause onset, smoking status, chronic cough, age, supplementation, labor complications, or mode of delivery.

Conclusions. This study identifies several significant risk factors for pelvic floor dysfunction among menopausal women in Latvia, including chronic illnesses, surgical history, higher BMI, longer menopause duration, childbirth history, urban residence, and having a first-degree relative with symptoms. These findings provide valuable insights for healthcare professionals to develop targeted prevention and intervention strategies to improve outcomes and quality of life for this population.

RADIOLOGICAL EVALUATION OF CHRONIC PAIN SYNDROMES: PELVIC CONGESTION AND MAY-THURNER SYNDROMES – A COMPARATIVE STUDY

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Keywords. Computer Tomography; Pelvic Congestion Syndrome (PCS), May-Thurner syndrome (MTS), V.ovarica sin.

Objectives. The study aimed to examine the relationship between Pelvic Congestion Syndrome (PCS), May-Thurner Syndrome (MTS), and the venous vascular changes that lead to these conditions and to investigate the frequency of PCS and MTS and compare them with asymptomatic anatomical variations.

Materials and Methods. The case group comprised women diagnosed with PCS and MTS, while the control group comprised patients without these syndromes. The assessed risk factors included venous outflow obstruction (VOD and VOS), dilation of theleft common iliac vein (VICS), and compression of the right common iliac artery. Radiological assessments were conducted to identify cases with over 70% strictures in the proximal segment of the left common iliac vein . Precise measurements were taken for the right ovarian vein at the fourth lumbar vertebra (L4) level and the left ovarian vein at the third lumbar vertebra (L3) level. CT images from RAKUS and the Radiology Centre's PACS database were used in the study. All CT scans were anonymized for retrospective analysis.

Results. Measurement of v.ovarica sin. between group of patients with MTS and the control group are statistically significantly (Manny-Witney U=472.0; p=0.001). In the group of PCS cases and control are statistically significant (Manny-Witney U=356.0; p=0.002) in measuring v. ovarica dex. et sin. Between the group of patients with asymptomatic MTS there and MTS are statistically significant differences in the measurements of sin v. ovarica. sin. **(Manny-Witney U=43,5; p=0.008).**

Conclusions. The two syndromes significantly impact anatomical features and the venous system. Further research using venography and MRI to diagnose PCS is essential for acquiring more precise data.

NEONATAL OUTCOMES OF WOMEN WITH AND WITHOUT COVID-19 INFECTION DURING PREGNANCY

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Keywords. COVID-19 infection; Pregnancy; Neonatal outcomes.

Objectives. To evaluate neonatal outcomes based on whether the mother had a COVID-19 infection during pregnancy or not.

Materials and methods. A retrospective cohort study covering all women who gave birth at the Obstetrics and Gynecology Department of Lithuanian University of Health Sciences Kauno Klinikos from 01/01/2021 to 12/31/2021 (gestation 22-42 weeks) was conducted. A total of 2967 women with singleton pregnancies were identified from the Birth registry database. Women who at any time during the pregnancy had COVID-19 were included in the COVID group (CG, n=273), and those who did not were included in the non-COVID group (NCG, n=2694). The neonatal outcomes of interest included gestational age at delivery, Apgar score at 1 and 5 minutes, neonatal birth weight, stillbirth, preterm birth, hypotrophy, macrosomia, and dysplasia rate. Neonatal characteristics were compared between women who had and did not have COVID-19 during pregnancy.

Results. The gestational age and birth weight of neonates were similar, and the rates of hypotrophy, macrosomia and dysplasia were not significantly different in the compared groups. However, preterm deliveries were statistically more common in the CG (14,3%) rather than NCG (9,5%, p=0.015). The incidence of stillbirth was low in both groups but statistically significantly higher in the CG (1,8%, p=0.039). The assessment of Apgar scores did not differ significantly either, as well as when assessing those born with Apgar <7. The median Apgar score at 1 and 5 minutes was the same in both groups (9 and 10 respectively).

Conclusions. Maternal COVID-19 infection during pregnancy was associated with a significantly increased risk of adverse neonatal outcomes, including preterm delivery and stillbirth.

PATIENTS' ATTITUDES TOWARDS THE 72-HOUR WAITING PERIOD BEFORE ABORTION AND ITS SIGNIFICANCE IN THE ABORTION PROCESS

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Keywords. Abortions; Waiting period; Reproductive rights

Objectives. Latvia is among the 15 European nations that require a mandatory waiting period before undergoing an abortion. This study aimed to investigate attitudes toward the 72-hour waiting period and its potential impact on abortion care among women who have considered terminating a pregnancy.

Materials and methods. This study employed a cross-sectional mixed-methods approach, utilizing an anonymous online questionnaire distributed from August 30, 2024, to January 9, 2025. The questionnaire included both close-ended and open-ended questions. It was distributed using social media and by fliers in various healthcare facilities. The questions focused on waiting period implications, attitudes about the waiting period, and abortion accessibility. The qualitative data underwent descriptive analysis, while the qualitative portions were coded and categorized into themes and subthemes.

Results. The questionnaire was filled out 117 times. After applying quality control measures and adhering to inclusion/exclusion criteria, a sample of 45 participants aligned with the target population was identified. The majority of participants reported that the waiting period negatively impacted their experiences by adding to the financial burden, time constraints, and negative effects on their emotional well-being. Most participants indicated that the waiting period did not alter their confidence in their decision to have an abortion. These findings were echoed by qualitative analysis. Three key themes emerged: "Emotional distress and the waiting period", "The need for a waiting period or an alternative", and "Medical personnel impact on abortion care and patient choices".

Conclusion. The mandatory waiting period can cause significant emotional distress and increase the financial burden associated with pregnancy termination. Healthcare professionals also play a crucial role in ensuring successful abortion care. Further research and a review of local laws and healthcare guidelines are necessary.

FAMILY HISTORY OF ONCOLOGICAL DISEASES AS A FACTOR IN CERVICAL CANCER PREVENTION BEHAVIOURS IN LATVIA

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Keywords. Family history of cancer; Cervical cancer; Prevention behavior

Objectives. Latvia has one of the highest incidence and mortality rates of cervical cancer in Europe. A family history of cancer is a known risk factor for various cancers, but its role in cervical cancer prevention behaviour is less studied. This study aimed to explore the relationship between the oncological disease history of first-degree relatives and cervical cancer prevention behaviours in women in Latvia.

Materials and methods. This cross-sectional study used data from the Baltic research programme "Towards elimination of cervical cancer: intelligent and personalised solutions for cancer screening", 2021-2022. The study population was women aged 19-69 (n=1296) in Latvia. The outcomes studied were cervical cancer prevention behaviours (condom use with a new sexual partner; Pap smear testing; human papilloma-virus (HPV) testing, HPV vaccination status) comparing women with and without a family history of cancer. Women who didn't know their family history of cancer were excluded (n=70). A double stratification by age and education was done. Crosstabs and chi-square tests were used.

Results. Among study participants, 36.5% had a family history of cancer. Prevalence of women who reported condom use with a new sexual partner (5.0-5.8%, p=0.106), ever-done Pap smear (84.2-88.1%, p=0.168), annually done Pap smear (33.3-34.0%, p=0.995), ever-done HPV testing (25.5-26.2%, p=0.899), and received HPV vaccine (2.5-3.3%, p=0.388) doesn't significantly differ in groups based on the family history of cancer. In stratified analysis, statistically significant differences in condom use habits with a new sexual partner were observed in women aged 25-34 with a higher education. Pap smear testing frequency differed among women aged 65-69.

Conclusions. The prevalence of cervical cancer prevention behaviours doesn't differ based on the oncological disease history of first-degree relatives. To improve preventive behaviours for all women, regardless of family history, additional education and targeted health campaigns are required.

OPINION OF PREGNANT WOMEN ON THE MOST APPROPRIATE FORM OF DELIVERY AFTER CAESAREAN SECTION

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Keywords. Caesarean section; Vaginal birth; Women opinion

Objectives. Childbirth methods significantly impact mother and baby health. Clarifying pregnant women's opinions on delivery methods after a caesarean section (CS) and understanding influencing factors is essential.

Materials and methods. A quantitative cross-sectional study was conducted from April to December 2024 via an online questionnaire, targeting pregnant women with a history of caesarean sections. Data were analyzed using MS Excel and SPSS Statistics.

Results. The study involved 240 women with varying delivery preferences: 70 (29.17%) opted for vaginal birth after caesarean (VBAC), 45 (18.75%) - repeat CS, 75 (31.25%) are having an elective CS due medical indications, 50 (20.83%) were undecided. Significant factors for VBAC were 30-34 years ($p<0.001$), monthly income >2000 euros ($p=0.007$), and married status ($p=0.022$). Women who preferred CS were 25-29 years old ($p<0.001$) and lonely ($p=0.22$). Statistically, women prefer the same delivery method as their previous one ($p<0.001$), except those with emergency CS who lean towards VBAC ($p<0.001$). No association was found with education, place of residence, last delivery year, or post-caesarean "skin-to-skin" and lactation experiences. Leading motivational factors for CS were pain relief (44.10%), last birth (41.30%) and postpartum (37.00%) experience, for VBAC - stronger mother-child bond (58.50%), feeling of fulfillment, femininity (57.60%) and faster recovery (53.40%). 20.42% were not informed by doctors about VBAC possibilities, 55.42% about its benefits, and 40.42% about its risks.

Conclusion. Women's opinion of appropriate birth mode after CS are influenced by previous birth experiences, type of last birth, maternal fulfillment, and pain management. One in five are uninformed about VBAC, and over half about its benefits. Personalized care and antenatal caregiver education are essential to avoid misconsultation.

VASOMOTOR SYMPTOMS AFTER SURGICAL MENOPAUSE: A SINGLE-CENTER STUDY FROM LATVIA

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Keywords. Bilateral oophorectomy; Surgical menopause; Vasomotor symptoms

Objectives. Surgical menopause, induced by bilateral oophorectomy (BO), is characterized by vasomotor symptoms (VMS), that can be particularly severe, impacting the quality of life. The objectives of this research is to evaluate the prevalence, characteristics and contributing factors for VMS following BO in premenopausal women.

Materials and methods. In this prospective longitudinal cohort study premenopausal women after BO performed at Riga East Clinical University Hospital between September 2022 and December 2024 were surveyed. The data collected during surgery-associated hospitalization and at 3 and 6 months post-surgery was registered in survey questionnaire, including sociodemographic data, risk factors, gynecological history, prevalence, frequency and severity of VMS (hot flushes, night sweats). Statistical analysis was performed with IBM SPSS 29.0.0.0.

Results. In this study, a total of 34 women who underwent BO were enrolled. The prevalence of VMS increased at 3 and 6 months post-surgery, with hot flushes rising from 88.1% to 100%, night sweats from 79.4% to 82.4%. During this study, the severity of hot flushes and night sweats increased in 32.4% and 26.5% cases, respectively. Overweight women experienced longer hot flush episodes ($p=0.037$), while alcohol consumption was associated with increased frequency of hot flushes ($p<0.05$). Physical activity correlated with milder night sweats ($p=0.019$). 82.4% of women initiated therapeutic interventions for symptom management within the 6 months post-surgery, mostly focusing on non-pharmacological approach. 44.1% chose Menopausal Hormone Therapy (MHT), of which 41.2% experienced milder VMS compared to those without MHT ($p=0.005$).

Conclusions. BO in premenopausal women results in a significant increase in prevalence and severity of VMS, which are additionally affected by such factors as weight, alcohol consumption, and physical activity, highlighting the importance of implementation of both pharmacological interventions and life-style changes for the relief of these symptoms and the improvement of quality of life afterwards.

KNOWLEDGE OF MENOPAUSAL SYMPTOMS AND AWARENESS OF LIFESTYLE HABITS AMONG WOMEN OF REPRODUCTIVE AGE IN LATVIA

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Keywords. Menopause; Health; Education

Objectives. Evaluating menopause awareness among women of reproductive age is crucial for developing educational programs that encourage healthier lifestyles and improve well-being during and after the menopausal transition. This study aims to assess the knowledge of Latvian women in this demographic about menopausal symptoms and lifestyle habits.

Materials and methods. A 47-question online survey was conducted with 431 Latvian women aged 18-49 to assess their knowledge of menopause, symptoms, lifestyle practices, and the importance of menopause education. Respondents were divided into two age groups: 18-39 (Group 1, 38%) and 40-49 (Group 2, 62%). Data analysis was performed using SPSS, including descriptive statistics, cross-tabulations, the Shapiro-Wilk test, and the Mann-Whitney test, with survey reliability assessed via Cronbach's alpha.

Results. 94% of respondents (n=404;p=0,04) understand the term "menopause" and agree that it affects all women, though many reported partial understanding of the process. Group 1 showed less interest in menopause (55%;n=90), though some sought information due to pregnancy planning, gynaecological surgeries, or preventive health improvement, Group 2 (85,4%;n=229) considered menopause more due to perimenopausal symptoms ($p<0,001$). 93% (n=401) of respondents knew heatwaves, 66% (n=285) weight gain, and 80% (n=344) vaginal dryness are menopause symptoms. 94% of respondents (n=407) agreed that physical activity can improve menopause symptoms. However, 63% (n=272) reported low physical activity, with 55% (n=90) in Group 1 and 68% (n=182) in Group 2 engaging in no or irregular physical activity ($p=0.014$). 55% (n=238) of all respondents agreed that menopause impacts life quality, 72% (n=313) supported education on menopause for women of reproductive age ($p=0,01$).

Conclusions. Both groups demonstrated some knowledge of menopause but lacked awareness of specific symptoms, health risks, and the impact of hormonal changes and lifestyle habits. Enhanced public education can help women better understand and manage these changes, improving their quality and longevity of life.

UNVEILING ENDOMETRIOSIS: BIOLOGICAL MECHANISMS, CHALLENGES IN DIAGNOSIS, CURRENT AND INNOVATIVE MANAGEMENT STRATEGIES

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Keywords. Endometriosis; Endometriosis diagnosis; Endometriosis prevention; Endometriosis treatment; Inflammatory pathways

Objectives. Endometriosis is a chronic condition where endometrium-like tissue grows outside the uterus, causing pain, infertility, and reduced quality of life. It affects 10% of reproductive-age women, with diagnosis often delayed by 7–10 years. Early detection and better treatment strategies are essential to alleviate its physical, emotional, and social burden.

Materials and methods. A systematic review of 26 studies published in the past five years was conducted to explore the mechanisms, diagnostic challenges, and management strategies for endometriosis. A literature search was conducted in PubMed, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency and accuracy.

Results. Endometriosis affects 5–10% of women of reproductive age. Its development is linked to retrograde menstruation, immune dysfunction, and genetic predisposition. Hormonal factors, such as elevated estrogen and progesterone resistance, contribute to lesion growth, while immune alterations like reduced NK cell activity and high levels of pro-inflammatory cytokines (TNF-α, IL-6) promote lesion survival. Diagnosis relies on laparoscopy, but non-invasive methods like TVUS, MRI, and biomarker testing (CA-125) are being explored to avoid delays in treatment. Treatment involves hormonal therapy (progestins, COCs, GnRH agonists) and laparoscopic excision for persistent symptoms. Lifestyle changes, such as dietary modifications to reduce trans fats and increase antioxidants, may support symptom relief. Newer therapies, including elagolix, resveratrol, and curcumin, target inflammation and oxidative stress, offering alternative treatment options.

Conclusions. Endometriosis significantly impacts women's health, with diagnosis often delayed due to varied symptoms. Advances in research reveal roles of hormonal imbalance, immune dysfunction, and genetics. Current treatments, like hormonal therapy and surgery, help manage symptoms but have limitations. Emerging therapies, including targeted treatments show promise. Early detection, personalized approaches, and continued research are essential to improve outcomes and quality of life.

PUERPERAL INFECTIONS: RISK FACTORS, PREVENTION STRATEGIES, TREATMENT, AND IMPACT ON PATIENT OUTCOMES

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Keywords. Puerperal Infections; Postpartum Sepsis; Maternal Morbidity; Infection Prevention; Antibiotic Therapy

Objectives. Puerperal infection, also known as postpartum infection, is a bacterial infection affecting the genital tract within six weeks (42 days) after miscarriage, induced abortion, or childbirth. It presents with symptoms such as pelvic pain, fever, abnormal vaginal discharge, and delayed uterine involution. Despite progress in obstetric care, it remains a significant cause of maternal morbidity and mortality, especially in resource-limited regions.

Materials and methods. A systematic review of 23 studies published in the past five years was conducted to explore the risk factors, prevention strategies, treatment, and impact on patient outcomes associated with puerperal infections. PRISMA guidelines were followed to ensure transparency and accuracy.

Results. Puerperal infections are influenced by risk factors such as maternal conditions (obesity, diabetes, anaemia, hypertension) and delivery complications (prolonged labour, caesarean sections, postpartum haemorrhage). Socioeconomic factors, including poverty, malnutrition, and limited healthcare access, increase vulnerability. Preventive measures include antenatal care with routine screenings for bacterial vaginosis, group B streptococcus, hygiene during delivery, sterile techniques, and prophylactic antibiotics. Treatment depends on severity: mild cases like uncomplicated endometritis respond to outpatient antibiotics, while severe cases (e.g., sepsis) require hospital care, broad-spectrum antibiotics, and possibly surgery. Timely diagnosis and treatment reduce risks of infertility, organ damage, and maternal mortality. Prevention is key to addressing maternal health disparities.

Conclusions. Puerperal infections remain a critical challenge in maternal healthcare, particularly in resource-limited settings. These infections often stem from preexisting conditions, delivery complications, or inadequate prenatal care. Prevention through antenatal screenings, sterile techniques, and risk management during labor is essential. While mild cases respond to antibiotics, severe infections like sepsis can cause prolonged recovery or fatality. Addressing risk factors and improving obstetric care practices can greatly enhance global maternal outcomes.

PELVIC ORGAN PROLAPSE: CAUSES, PREVALENCE, EFFECTS ON PATIENT WELL-BEING, AND NON-SURGICAL TREATMENT OPTIONS

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Keywords. Pelvic organ prolapse; Vaginal bulge; Pelvic organ prolapse diagnosis; Non-surgical treatment; Pessaries

Objectives. Pelvic organ prolapse (POP) is a common gynaecological condition where weakened ligaments or muscles cause pelvic organs to herniate into the vagina. Symptoms include pelvic pressure, vaginal bulge, urinary or bowel dysfunction. POP affects women worldwide, disrupting physical, psychological, and sexual well-being, significantly impacting quality of life.

Materials and methods. A literature search was conducted in PubMed following PRISMA guidelines. Inclusion criteria focused on full-text, English-language articles published within the last five years. Of 40 identified articles, 27 met eligibility criteria and were analyzed, covering causes, prevalence, patient experiences, and non-surgical treatment options for pelvic organ prolapse.

Results. Pelvic organ prolapse (POP) is influenced by factors such as vaginal birth, parity, high BMI, aging, postmenopausal estrogen deficiency, and genetic polymorphisms (e.g., ESR1, FBLN5, PGR). Collagen and elastin imbalances, oxidative stress, and pelvic floor muscle denervation contribute to extracellular matrix metabolism disruption, weakening pelvic tissues. POP affects 1%–65% of women, with 40% experiencing symptoms globally and 11.1% requiring surgery by age 80. It impacts physical activity, self-perception, and sexual health, while stigma and delayed care highlight the need for education. Diagnosis involves symptom evaluation, physical exams, and imaging tools like ultrasound or MRI. Treatment includes pelvic floor muscle training, local estrogen, and pessaries, with types like silicone ring, Gellhorn, Donut, and cube, which provide symptom relief in 50–80% of cases.

Conclusions. Pelvic organ prolapse affects women's physical, psychological, and social well-being, with risk factors including childbirth, aging, and genetics. Diagnosis involves medical history, exams, and imaging. Non-surgical treatments, such as pelvic floor training and pessaries, are effective. Awareness, patient education, and stigma reduction are crucial for timely intervention.

MENSTRUAL CYCLE CHARACTERISTICS ASSOCIATED WITH THE RISK OF ENDOMETRIOSIS

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Keywords. Endometriosis; Risk factor; Menstrual cycle characteristics

Objectives. Endometriosis is a disease with complex and multifactorial etiology, and no exclusive theory exists that can explain all its phenotypes. Various endometriosis-associated risk factors are described in the literature, including menstrual cycle characteristics. A short menstrual cycle, early menarche, late menopause, long duration of flow and heavier menstrual flow have frequently been identified as possible risk factors. This study aims to determine the association of menstrual cycle characteristics with the risk of developing endometriosis.

Materials and methods. A retrospective single-centre study was conducted. Data were obtained from patients' medical records. The study involved 150 patients aged 19 – 80 years, divided into two groups. The study group included 75 patients with surgically confirmed endometriosis. The control group included 75 patients who underwent surgical procedures for various pelvic diseases, with no endometriotic lesions detected during surgery. Data processing was carried out with Microsoft Excel and IBM SPSS Statistics software.

Results. No statistically significant association was observed between menstrual cycle characteristics and the risk of endometriosis. Patients who reported menstrual cycle length ≤ 27 days seemed to be more likely to develop endometriosis, however no statistically significant correlation was found (OR 1,6; 95% CI 0,611-4,404; p=0,325). Long duration of menstrual flow, i.e. ≥ 7 days did not show statistically significant association with the risk of developing endometriosis (OR 0,9; 95% CI 0,375-1,934; p= 0,701). Similarly, early age of menarche, i.e. ≤ 11 years, did not show the association (OR 0,9; 95% CI 0,238-3,360; p= 0,869).

Conclusions. The current study did not find the association between menstrual cycle characteristics and the risk of endometriosis, possibly due to a small sample size. Further studies with a larger sample size are needed for a deeper analysis of the association between menstrual cycle characteristics and endometriosis risk.

KNOWLEDGE AND ATTITUDES TOWARDS CERVICAL CANCER PREVENTION BEHAVIOURS: DOES ONCOLOGICAL FAMILY HISTORY MATTERS?

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Keywords. Family history of cancer; Cervical cancer; Knowledge and attitudes

Objectives. Cervical cancer (CC) is a significant public health concern in Latvia, which has one of the highest incidence and mortality rates in Europe. A family history of cancer may influence women's awareness and engagement in preventive measures. This study aimed to explore the relationship between the family oncological anamnesis of first-degree relatives and knowledge and attitudes towards CC prevention behaviour in women in Latvia.

Materials and methods. This cross-sectional study used data from the Baltic research programme "Towards elimination of CC: intelligent and personalised solutions for cancer screening", 2021-2022. The study population was women aged 19 to 85 (n=1305) in Latvia. The outcomes studied were knowledge and attitudes towards CC prevention behavior (both knowledge and attitudes about CC screening and human papilloma-virus (HPV) vaccination). Women who didn't know their family oncological anamnesis were excluded (n=70). A double stratification by age and education was done. Crosstabs and chi-square tests were used.

Results. Among study participants 36.5% had a family history of cancer, and 63.5% didn't. The proportion of women who reported having heard of HPV vaccination (70.1-71.2%, p=0.680), knowing the recommended frequency of CC screening (76.7-77.2%, p=0.856) and thinking that HPV vaccination for girls is necessary (47.2-53.2%, p=0.086) didn't differ based on family oncological anamnesis. In stratified analysis, there were statistically significant differences in knowledge and attitudes towards CC prevention behavior among women with and without a family history of cancer. 72.3% of women with a family history of cancer and 63.1% of women without reported having heard of HPV vaccination among aged group 25-34 (p=0.042).

Conclusions. The knowledge and attitudes towards CC prevention behaviour doesn't differ based on the oncological disease history of first-degree relatives. To improve cervical cancer prevention, targeted educational campaigns should raise awareness about HPV vaccination and screening.

INTERNAL MEDICINE II (GASTROENTEROLOGY, NEPHROLOGY, ENDOCRINOLOGY, RHEUMATOLOGY)

METABOLIC FACETS OF CUSHING'S SYNDROME

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Keywords. Cushing's syndrome; Adrenocorticotropic hormone; Metabolic complications

Objectives. Cushing's syndrome involves chronic hypercortisolism of various origins, associated with multiple complications and high mortality rates. This study aimed to determine the frequency of metabolic complications in subjects with various aetiologies of Cushing's syndrome, investigate differences in lipid status parameters and bone mineral density based on the disease's etiology, and explore correlations between cortisol levels and lipid status and bone mineral density.

Materials and methods. Retrospective analysis involved 38 Cushing's syndrome patients treated at the University Clinical Center of Vojvodina. Data were collected from available medical records and statistically analyzed.

Results. Arterial hypertension was the most common (76.32%), while osteoporosis was the least common (15.79%) complication. Bone mineralization disorders were significantly more prevalent in subjects with adrenocorticotropic hormone-independent Cushing's syndrome ($p=0.014$). No significant differences were found in lipid status parameters or bone mineral density among subjects with Cushing's syndrome of different aetiologies. Morning cortisol levels moderately correlated positively with total ($\rho=0.399$), low-density lipoprotein ($\rho=0.443$), and non-high-density lipoprotein cholesterol ($\rho=0.437$), while evening cortisol levels moderately correlated negatively with hip joint ($\rho=-0.481$) and femoral neck ($\rho=-0.403$) bone mineral density.

Conclusions. Due to high morbidity and mortality rates, further research on a larger number of subjects is needed to provide more detailed insights into the metabolic aspects of Cushing's disease.

FINDINGS AND MULTIORGAN INVOLVEMENT IN PRIMARY HYPERPARATHYROIDISM (PHPT): A THREE-YEAR RETROSPECTIVE STUDY (LATVPHPT) AT THE RIGA EAST UNIVERSITY HOSPITAL (REUH)

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Keywords. Primary hyperparathyroidism; Parathyroidectomy; Osteoporosis

Objectives. The clinical manifestations of PHPT can range from asymptomatic cases to significant multiorgan involvement. The frequency and spectrum of symptoms vary widely in the literature.

Materials and methods. We enrolled 177 patients with PHPT and conducted a comprehensive analysis of their medical, laboratory, radiology, surgical, and histopathology findings.

Results. Of 177 patients, 89% were females. 118 of the patients underwent parathyroidectomy, postponed surgery due to unknown adenoma location − 14.7% (n=26), declined surgery − 1.1% (n=2), and awaiting surgery − 19.2% (n=34). MEN1 syndrome −2 patients. Radiologic imaging and histopathology of operated patients revealed a single adenoma 94.0% (n=108), double adenomas 1.7% (n=2), hyperplasia 2.6% (n=3), carcinoma 1.7% (n=2), ectopic adenomas 6.1% (n=7). Contrast-enhanced ultrasonography (CEUS) exhibited the highest sensitivity at 94% (17/18) for detecting typical localized adenomas, compared to ultrasonography at 75% (81/108), scintigraphy at 73% (45/62), SPECT/CT at 78% (42/54), and 3D-CT at 82% (18/22). The mean preoperative calcium was 2.9±0.3mmol/L, iPTH 251.2±242.1pg/mL, phosphorus 0.8±0.2mmol/L, 25-OH vitamin D 27.6±13.3ng/mL. The mean postoperative calcium was 2.4±0.1mmol/L, iPTH − 59.9±36.5pg/mL, phosphorus − 1.1±0.2mmol/L, 25-OH vitamin D − 43.4±16.1ng/mL. Comorbid conditions presented osteoporosis − 35% (n=62), osteopenia − 54% (n=95), and osteoporotic fractures − 15% (n=26). nephrolithiasis − 25% (n=44), gallstones − 23% (n=41). Treatment: oral bisphosphonates − 17.5% (n=31), intravenous bisphosphonates − 4.0% (n=7), denosumab − 8.5% (n=15), medication holidays − 1.1% (n=2). Thyroid nodules − 81% (n=143), nontoxic goitre − 53% (n=93), autoimmune thyroiditis − 29% (n=51), hypertension − 43% (n=76), T2DM − 14% (n=24). Malignancy − 20% (n=36) with predominant breast and thyroid cancers.

Conclusions. This is the most comprehensive study on PHPT at REUH. Multiorgan involvement and associated conditions are frequent, with high rates of skeletal complications and malignancies.

THE ASSOCIATION BETWEEN RHEUMATOID ARTHRITIS DISEASE ACTIVITY SCORE AND DEPRESSION AND ANXIETY SEVERITY

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Keywords. Rheumatoid arthritis; Depression; Anxiety

Objectives. According to World Health Organization, 18 million people had rheumatoid arthritis (RA) in 2019. Depression is a common complication in RA patients, affecting 13-42% of RA patients (2-4x more than in general population) and significantly affects the quality of life. Anxiety also affects RA patients, with a reported 16% lifetime prevalence. The aim of this study was to determine the correlation between RA disease activity and depression and anxiety severity in RA patients.

Materials and methods. A prospective study included 52 patients with RA in Riga East University Hospital clinic "Gaiļezers". Patients underwent a questionnaire about currently used psychiatric medications, morning stiffness, VAS pain score, painful and swollen joint count and RA disease activity score (DAS28). They were also given a PHQ-9 depression test and GAD-7 anxiety test.

Results. Data from 52 patients (8 men, 44 women) with median age 60 years (range 33-85) and median time with RA diagnosis 13,5 years (range 2-30) were collected and analysed. There was a moderate positive correlation (Spearman's rho correlation coefficient +0,379, p=0,006) between DAS28 score and PHQ-9 score results, which shows a positive correlation between RA activity score and depression severity. There was no significant correlation between DAS28 score and GAD-7 score results (Spearman's rho correlation coefficient +0,128, p=0,365), which indicates no correlation between RA activity score and anxiety severity. From 52 patients psychiatric medications were prescribed to 9 patients (17,3%), 6 of them had clinically significant depression (PHQ-9 score 5-27) and anxiety (GAD-7 score 5-21), while 3 had clinically significant depression (PHQ-9 score 5-27) without anxiety.

Conclusions. Higher RA activity is linked to increased depression severity. However, there was no significant correlation that would indicate an association between RA activity score and anxiety severity.

CLINICAL AND HISTOPATHOLOGICAL INSIGHTS INTO ADULT IGA NEPHROPATHY: A SINGLE-CENTER EXPERIENCE 2013-2024

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Keywords. IgA nephropathy; MEST-C score

Objectives. IgA nephropathy (IgAN) is the most prevalent primary glomerular disease globally and is associated with a significant lifetime risk of kidney failure. The Oxford classification/ MEST-C score is a well-established histopathological tool for assessing IgAN. This study analyzed demographic, laboratory, and histological data from Latvian adult IgAN patients, exploring the associations between MEST-C scores and key clinical variables.

Materials and methods. The study included 223 Latvian adults with biopsy-confirmed primary IgAN. Histopathological samples were obtained from the National Center of Pathology in Vilnius, spanning 2013 to 2024. The analysis focused on demographics and the correlations between histopathological findings (MEST-C score) and clinical variables, including proteinuria, hematuria, serum creatinine, and glomerular filtration rate (GFR). Additionally, clinical parameters were compared across the age groups.

Results. IgAN was diagnosed in 223 of 1,045 native kidney biopsies (21.3%), with a male-to-female ratio of 1.8:1 (143:80). The mean age of patients was 41.9 years (range 18–80). Average proteinuria was 1.4 g/24h, mean serum creatinine 173 μmol/L, and mean GFR 61 mL/min/1.73m². Hematuria was present in 88% of cases. Statistically significant correlations were found between the T score and proteinuria, serum creatinine, and GFR ($p<0.001$). The M and S scores also showed significant associations with proteinuria ($p<0.05$ and $p<0.001$). Furthermore, age groups correlated significantly with hematuria ($p=0.043$), creatinine ($p=0.005$), and GFR ($p<0.001$).

Conclusions. Approximately one-fifth of all native kidney biopsies revealed IgA nephropathy, with a male predominance. The majority of IgAN patients presented with proteinuria, hematuria, and impaired renal function. The T score strongly correlated with kidney function decline, while M and S scores were significantly associated with proteinuria severity.

RISK FACTORS, INCIDENCE, AND PREVENTION OF COMPLICATIONS IN ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY

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Keywords. Endoscopic Retrograde Cholangiopancreatography (ERCP); Post-ERCP Pancreatitis (PEP); Risk Factors; Prevention

Objectives. ERCP is the gold standard for pancreaticobiliary diagnostics and treatment, however, it is associated with complications, most notably post-ERCP pancreatitis. This study evaluates patient and procedural factors, pre- and post-procedural care, preventative measures, and their impact on complication incidence.

Materials and methods. This retrospective study included 102 patients undergoing ERCP at Riga East University Hospital between February and November 2024. Data collected from medical records and procedure protocols included demographics, ERCP indications, procedure details, medications, and outcomes.

Results. The study included 65 women (64%) and 37 men (36%), with a mean age of 71.6 years (SD=14.4). The most common presenting symptom was jaundice (47%), followed by abdominal pain (23%), while 19% of patients were asymptomatic. The most frequent ERCP indication was bile duct stones (73%), followed by malignant biliary obstruction (12%). The difficulty of cannulation was low in most cases (64%), with 17% classified as difficult. Early post-ERCP complications occurred in 6% of patients. Among those with bile duct stones, 4% developed moderate PEP, while bleeding and perforation occurred in 1%. Within patients with malignant obstruction, acute moderate cholangitis was the most common ERCP-associated infectious complication, occurring in 1 of 12 patients. No significant association was found between papilla type and the incidence of PEP. Absence of premedication with analgesics ($p=0.004$) and cannulation difficulty ($p=0.012$) were significantly associated with PEP. Patients with malignant obstruction had significantly lower ERCP success rates than those with bile duct stones (67% vs. 90%, $p=0.046$).

Conclusions. Premedication with analgesics should be considered to reduce the risk of PEP. Assessing cannulation difficulty is crucial, as problematic cannulation increases irritation of the pancreaticobiliary system and the risk of PEP. Malignant biliary obstruction cases are procedurally challenging, requiring careful imaging and experienced operators to ensure procedural success.

UPDATED CLASSIFICATION OF LIVER FIBROSIS AND INFLAMMATION IN CHRONIC LIVER DISEASES: A COMPARATIVE ANALYSIS USING NON-INVASIVE IMAGING METHODS AND BIOCHEMICAL MARKERS

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Keywords. Liver Fibrosis; Chronic Liver Disease; Ultrasound-Based Techniques; Elastography

Objectives. The study compared ultrasound-based techniques, Shear Wave 2D Elastography (SWE) for liver fibrosis (LF) and viscosity by Dispersion (SWD) for inflammation, in chronic liver disease (CLD) patients. It evaluated updated liver fibrosis classification, its relationship with inflammation, and the impact of biochemical markers on risk assessment.

Materials and methods. A total of 162 adult patients (41.4% male, 58.6% female) with CLD participated in the study. Fibrosis and inflammation were evaluated using multiparametric ultrasound in a single session, adhering to SRU guidelines (Rule of 4). Compensated Advanced Chronic Liver Disease (cACLD) was categorized into the following stages: Rule-out (<9 kPa), Suggestive (9–13 kPa), Rule-in (>13 kPa), and clinically significant portal hypertension (CSPH) (>17 kPa) combined with a platelet count of <150k. Inflammation was defined as values exceeding 12 (m/s/(kHz)), and biochemical markers of inflammation were analyzed. Blood test results were categorized as elevated or normal.

Results. Updated fibrosis classification reduced overdiagnosis by 14%, with a threshold of 9kPa. cACLD Rule-in (>13 kPa) was linked to a 10-fold higher inflammation risk ($p<0.002$, CI 95% (0.30 - 0.75)). CSPH risk was better assessed by combining platelet count with Suggestive and Rule-in categories, showing 11.9% (n=14) vs. 2.6% (n=4) in >17kPa ($p=0.001$). Biochemical markers correlated with ultrasound findings. AST strongly correlated with SWE ($r = 0.643$, $p < 0.001$) and SWD ($r = 0.431$, $p < 0.001$), reflecting fibrosis and inflammation. ALT had weaker correlations with SWE ($r = 0.186$, $p = 0.101$) and SWD ($r = 0.042$, $p = 0.613$).

Conclusions. Advanced fibrosis is associated with inflammation, detectable through ultrasound dispersion. Revised ACLD guidelines improved CSPH risk assessment while minimizing mild fibrosis overdiagnosis. Correlation between elevated AST and elastographic findings emphasizes integrating imaging with biochemical markers, which alone are insufficient for determining liver disease severity.

COMPARISON OF DIFFERENT ULTRASOUND METHODS AND BLOOD TESTS IN DIAGNOSING AND CLASSIFYING HEPATIC STEATOSIS IN METABOLIC-ASSOCIATED STEATOTIC LIVER DISEASE (MASLD)

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Keywords. Liver steatosis; Compensated advanced chronic liver disease; Ultrasound; Blood tests

Objectives. Liver steatosis is common in patients with compensated advanced chronic liver disease (cACLD) and is often linked to Metabolic Dysfunction–Associated Steatotic Liver Disease (MASLD), requiring accurate assessment for proper diagnosis and management. This study evaluated the effectiveness of visual grading of liver steatosis using ultrasound compared to quantitative ultrasound techniques- Attenuation Imaging (ATI) and Ultrasound-Derived Fat Fraction (UDFF), in patients with cACLD and analyzed how changes in blood test parameters (liver enzymes, bilirubin, lipids, and glucose) correlate to ultrasound findings.

Materials and methods. The retrospective study included 162 patients (41.4% male, 58.6% female) with MASLD (mean age: 55.1 ± 14.69, range: 18-97 years), who underwent ultrasound examination and the ATI, UDFF and blood tests values were compared with greyscale grading for diagnosing liver steatosis. Based on ATI values patients were classified into: S0 (<0.61), S1 (<0.7), S2 (>0.7), and S3 (>0.75) groups, measured in dB/cm/kHz. UDFF levels categorized patients into normal fat fraction (<5%) and elevated fraction (>5%). Blood test values were categorized as elevated or non-elevated.

Results. UDFF 5% in comparison with visual steatosis S0 showed Se84.9% and Sp80.0% (AUC=0.945) and ATI 0.61 showed Se90.4% and Sp72.0% in comparison to visual steatosis S0 (AUC=0.933), p=0.001. ATI 0.61 showed Se100% and Sp89.9% in comparison with UDFF 5% (AUC=0.995), p=0.001. S1,S2 and S3 grading was improved to 69.1%, 87.0% and 100% by use of UDFF and 32.8%, 13.6%, 74% by ATI, respectively (p=0.001). Triglycerides levels (< 1.7 mmol/L) were significantly associated with visual steatosis S0 with Se85.0% and Sp64.4% (AUC= 0.792), p=0.001.

Conclusions. UDFF outperforms ATI for diagnosing mild and moderate liver steatosis. Visual grading tends to overestimate liver steatosis in the presence of fibrosis. Blood tests, except for triglycerides, show no significant correlation with liver steatosis assessed by ultrasound.

CORRECTION OF ANEMIA IN PATIENTS WITH UPPER GASTROINTESTINAL BLEEDING, A RETROSPECTIVE ANALYSIS

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Keywords. Iron-deficiency anemia; Gastrointestinal bleeding; Erythrocyte mass transfusion

Objectives. Iron-deficiency anemia (IDA) is commonly caused by gastrointestinal bleeding especially in men and postmenopausal women. Erythrocyte mass transfusion (EMT) remains a critical treatment for anemia caused by gastrointestinal bleeding, given the associated high morbidity and mortality risks. This study aims to evaluate anemia correction in patients with upper gastrointestinal bleeding.

Materials and methods. A retrospective study at Utena Hospital, Lithuania, analyzed 29 patients hospitalized for upper gastrointestinal bleeding (January 1 – July 1, 2023). Anamnestic data, laboratory results, and treatment strategies were evaluated. Statistical analysis was performed using IBM SPSS 29.0, applying Mann-Whitney U, Fisher-Freeman, Kruskal-Wallis, Wilcoxon, and chi-square tests, with significance set at $p < 0.05$.

Results. A total of 29 patients were included in the study, consisting of 14 men (48.3%) and 15 women (51.7%), with an average age of 70.4 years (SD 13.5). Anemia was present in 24 patients (82.8%). During the study, it was found that 10 out of 29 patients (34.5%) were taking anticoagulants. The average hemoglobin on admission was 97.7 g/l (SD 27.3). EMT were performed in 19 patients (65.6%). On average, each unit of erythrocyte mass transfusion raised hemoglobin levels by 6.1 g/L (SD = 7.5 g/L). The average length of stay was 5 days (SD 2.6). Anemia was statistically significantly independent of the patient's age ($p = 0.052$. Patients taking anticoagulants had a significantly higher degree of anemia ($p < 0.05$). Hemoglobin levels at discharge were significantly higher than on the first day of hospitalization ($p < 0.05$).

Conclusions. EMT effectively corrects anemia in acute upper gastrointestinal bleeding, with an average increase of 6.1 g/L in hemoglobin per unit transfused. It plays a key role in managing anemia during hospitalization, while other treatments were not analyzed as they were prescribed post-stabilization for outpatient care.

HEADACHE AS THE MOST COMMON MANIFESTATION OF GIANT CELL ARTERITIS?: A SYSTEMATIC REVIEW WITH META-ANALYSIS

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Keywords. Giant cell arteritis; Headache; Jaw claudication; Polymyalgia rheumatica; Temporal artery biopsy; Vasculitis

Objectives. This study aimed to assess the relative frequency of clinical features of giant cell arteritis (GCA) and to investigate the predictors of temporal artery biopsy (TAB) outcomes.

Materials and methods. A literature search of Pubmed/Medline, Embase, and ScienceDirect was conducted from January 1, 1990 to September 1, 2024. Observational studies that reported original data on clinical features in patients diagnosed with GCA in accordance with 1990 ACR and/or 2022 ACR/EULAR diagnostic criteria were deemed for inclusion. A random-effects meta-analysis was performed to determine the pooled prevalence estimates. The study's design adhered closely to the MOOSE standards. The JBI appraisal tool was used to evaluate the risk of bias. The study's protocol was pre-registered on PROSPERO (ID: CRD42024584763).

Results. Out of initial 8404 records, 62 articles (9971 patients) met all of the eligibility criteria. Mean patients' age upon diagnosis was 74.33 years (95%CI: 74.12 - 74.54 years). The most prevalent clinical feature of GCA was new-onset headache (75.7%; 95CI%: 72.2-79.0; 95%PI: 0.47-0.92). Other common symptoms of GCA were temporal artery abnormalities (51.5%; 95%CI: 45.2-57.7; 95%PI: 0.25-0.77), weakness/malaise (46.7%; 95%CI: 35.4-58.4; 95%PI: 0.09-0.88), and scalp tenderness (39.1; 95%CI: 35.3-43.1; 95%PI: 0.22-0.59). Positive TAB results were present in 73.8% of patients (95%CI: 68.1%-78.8%; 95%PI: 0.35-0.94). The presence of headache (LogOR = -1.11; 95%CI: -1.92 to -0.29) or PMR (-0.71; 95%CI: -1.09 to -0.32) significantly decreases the chance of receiving positive TAB results. Whereas jaw claudication (LogOR = 0.52; 95%CI: 0.11-0.94) and TA abnormalities (LogOR = 0.96; 95%CI: 0.40-1.52) are associated with higher risk of positive TAB results.

Conclusions. Any patient over 70 years of age who develops a new-onset headache along with jaw claudication, PMR, constitutional symptoms, and elevated inflammatory markers should be strongly suspected of having giant cell arteritis.

MULTIDRUG-RESISTANT BACTERIAL (MDRB) COLONISATION AND RELATED INFECTION RISK FACTORS IN LIVER TRANSPLANT RECIPIENTS

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Keywords. Bacteria; Infection; Liver transplantation; Multidrug-resistance; Risk Factors

Objectives. Liver transplantation is the only curative treatment for patients with end-stage liver disease or hepatocellular carcinoma. The main objectives of this study are to evaluate MDRB colonisation, infections, and identify associated risk factors among liver transplant recipients in the peri-transplant period.

Materials and methods. 23 patients with liver transplant from Pauls Stradins Clinical University Hospital were enrolled in a retrospective study. Patients were followed-up in pre- and post-transplant period for total of 6 months for MDRB colonisation and infection. Data analysed included patient's anthropometrics, liver disease diagnosis, complications associated with cirrhosis, Model for End-Stage Liver Disease (MELD) score, history of prior hospitalizations, treatment in intensive care unit (ICU) prior to transplantation, presence of MDRB colonisation and infection. Median and interquartile range (IQR) were used to describe non-normally distributed data. Data was analysed using IBM SPSS Statistics 29.0.

Results. Median age of participants was 54 years (IQR: 47 - 60); BMI - 26 kg/m2 (IQR: 22 - 30); MELD score – 13 (IQR: 9 - 18). MDRB colonisation was observed in 7 patients. 2 patients with MDRB colonisation developed MDRB infection after transplantation.

Fisher's exact test (two-sided) revealed statistically significant association between previous ICU admission and MDRB colonisation ($p = 0.011$). No statistically significant associations were observed between MDRB colonisation and previous ascites ($p = 0.340$), hepatic encephalopathy ($p > 0.999$), esophageal varices ($p > 0.999$), previous hospital admission ($p = 0.179$).

Mann-Whitney U test showed no statistically significant difference in distribution of MELD score between MDRB and non-MDRB group (Mann-Whitney U test; $U = 27.0$; $z = -1.690$; $p = 0.091$).

Conclusions. MDRB infections can be observed in liver transplant patients and carry a high morbidity risk. Early treatment of cirrhosis complications can help to reduce the risk of MDRB colonisation.

HELICOBACTER PYLORI ASSOCIATION WITH GASTROINTESTINAL SYMPTOMS

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Keywords. Helicobacter pylori; Gastrointestinal symptoms

Objectives. Helicobacter pylori (H.pylori) is a pathogenic microorganism that causes chronic gastritis. It is very prevalent infection all over the world, but symptoms associated with the disease are debatable. The aim of the thesis was to analyse associations between Helicobacter pylori infection and gastrointestinal symptoms.

Materials and methods. The study included 100 patients who underwent an upper digestive tract endoscopy (EGD) examination, biopsy material was taken to identify H.Pylori infection using histological examination. Patients were given validated questionnaire about upper and lower gastrointestinal symptoms during last 4 weeks.

Results. Among 100 patients who underwent an upper digestive tract endoscopy examination, there were 35 cases of H.pylori infection. Most common complaint among people infected with H. pylori was epigastric pain 77.1% (n=27), followed by heartburn 62,9% (n=22), flatulence 60% (n=21) and abdominal bloating 57.1% (n=20). Other symptoms: acid reflux 51,4% (n=18), stomach growling 40% (n =14), hunger pains 37.1% (n=13), belching 37.1% (n =13), loose stools 37.3% (n=12), constipation 31.4% (n=11), hard stools 25.7% (n=9), diarrhea 22.9% (n=8), feeling of incomplete bowel movement 22.9% (n=8), nausea 20% (n=7), faecal urgency 14.3% (n=5). There were 65 patients uninfected with H.pylori, most common complaints among them were flatulence 55.4% (n=36) heartburn 53.8% (n=35), epigastric pain 50.8% (n=33), abdominal bloating 50.8% (n =33). Other symptoms: belching 46.2% (n=30), stomach growling 44.6% (n=29), feeling of incomplete bowel movement 38.5% (n=25), acid reflux 36.9% (=24), constipation 35.4% (n=23), nausea 33.8% (n=22), hunger pains 33.8% (n=22), hard stools 30.8% (n=20), diarrhea 27.7% (n=18), loose stools 24.6% (n=16), faecal urgency 20% (n=13). A statistically significant (p=0.019) prevalence of epigastric pain was found in H.pylori positive group. Frequencies of other symptoms were no different in infected and uninfected groups.

Conclusions. Patients infected with H.pylori infection were statistically more likely to complain of epigastric pain.

PROGRESSION RATE OF PULMONARY FUNCTION AND RADIOLOGICAL CHANGES IN LATVIAN PATIENTS WITH NEWLY DIAGNOSED SARCOIDOSIS (HYPERCALCAEMIA SUBGROUP ANALYSIS)

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Keywords. Sarcoidosis; Hypercalcaemia; Pulmonary function

Objectives. Sarcoidosis is a systemic disease that is defined by the formation of granulomas in different organ systems. Changes in serum and 24 h urine calcium can influence the course of disease. The goal of this study was to analyse the progression (worsening) rate of pulmonary function (spirometry) and radiological changes in patients with newly diagnosed sarcoidosis and hypercalcaemia.

Materials and methods. In a retrospective study, medical records of all screened patients due to suspected sarcoidosis (n=936) in the Riga East University Hospital's 'Clinic of Tuberculosis and Lung Diseases' between 2014 and 2018 were analysed. For further analysis, only patients with first-time confirmed diagnosis of sarcoidosis (n=816) were selected. Serum calcium level was evaluated in 568 patients, hypercalcaemia >2.55 mmol/l was found in 65 (33 men and 32 women). This subgroup was selected to investigate a potential influence of calcium values on the disease progression rate. Sarcoidosis progression was established based on deterioration of radiological or pulmonary function (decrease ≥10% of FVC and/or ≥15% DLCO) in 1-2 years after initial diagnosis.

Results. Patients' age ranged from 20 to 68 years with mean age 40.6 years. Radiological changes improved in 37 (57%), remained unchanged in 17 (26%), and worsened in 11 (17%) patients. Pulmonary function changes were assessed in 38 from 65 patients. They improved in 12 (31%), remained unchanged in 22 (58%), and worsened in 4 (11%) patients. In the stable group, 2 demonstrated tendency to worsening and 9 – to improvement. From 65 patients with hypercalcaemia, serum calcium was controlled in 54 cases between 1-2 years after initial diagnosis. In 41 patients it returned to normal remaining elevated in 13.

Conclusions. The progression rate of pulmonary function and radiological changes match the literature data. Control group analysis is planned to assess the influence of calcium values.

ANALYSIS OF NATIVE KIDNEY BIOPSY RESULTS IN RAPIDLY PROGRESSIVE GLOMERULONEPHRITIS: SINGLE-CENTER DATA FROM 2013 TO 2024

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Keywords. Native kidney biopsy; Rapidly progressive glomerulonephritis; cANCA; pANCA

Objectives. Pauci-immune glomerulonephritis (RPGN III) is the most prevalent form of rapidly progressive glomerulonephritis (RPGN), characterized by rapid renal decline. It is divided into serological subtypes to evaluate antibody-mediated outcomes. This study presents the incidence and clinical features of RPGN III at a single center in Latvia.

Materials and methods. The kidney biopsies (KB) of adult patients performed at Pauls Stradiņš Clinical University Hospital from January 2013 to December 2024 were retrospectively reviewed. Native KB with a morphological diagnosis of RPGN were included and categorized into five types based on immunofluorescence, focusing on type III. It was further subdivided into three subtypes based on serology. Kidney function was assessed before biopsy using clinical parameters. Analysis was conducted using IBM SPSS Statistics 29.0.0.0.

Results. During the 12 years, a total of 1,752 KB were performed, of which 1,024 were native. From these, 13.4% with a diagnosis of RPGN were further analyzed. The cohort consisted of 51.8% females and 48.2% males, with a mean age of 57.7±16.4 years. The predominant type was RPGN III (77.4%), followed by RPGN II (13.9%), RPGN V (7.3%), RPGN I and IV (each 0.7%). Among RPGN III cases, 50.9% were pANCA positive, 48.1% cANCA positive, 0.9% ANCA negative. Kidney damage was assessed in pANCA and cANCA positive patients based on clinical parameters: hematuria (96.3% and 94.1%), proteinuria (mean [g/24h] – 1.9±0.2 and 2.0±0.3), serum creatinine (mean [μmol/l] – 420.8±67.4 and 321.7±40.1), eGFR (mean [mL/min/1.73m²] – 28.6±3.8 and 31.5±4.1), respectively.

Conclusions. The majority of cases in this cohort were RPGN III, with a significant prevalence of pANCA, cANCA positivity. Both groups showed kidney damage markers, including proteinuria, hematuria, and reduced eGFR. These findings highlight the need of a national renal biopsy database to remain interconnected for timely intervention and improved outcomes.

ASSOCIATION OF VITAMIN D AND BMI WITH GLUCOREGULATION PARAMETERS IN PATIENTS WITH TYPE 2 DIABETES

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Keywords. Vitamin D; DM2; HbA1c; FBG; BMI

Objectives. Diabetes and obesity are metabolic diseases with high prevalence and can be caused by vitamin D deficiency. Goal was to determine the association of vitamin D with glycosylated hemoglobin (HbA1c) and fasting blood glucose (FBG) , as well as with body mass index (BMI) in patients with diabetes type 2.

Materials and methods. A retrospective study included 50 patients of both sexes, older than 50, under the diagnosis of DM2. The following data were taken from the medical records: name and surname, birth year, anthropometric parameters, FBG, HbA1c, vitamin D.

Results. The study included 50 patients, 62% female and 38% male, in average 66 years old. The mean values of FBG were 8.24 mmol/l, and HbA1c was 7.19%. The mean values of vitamin D were 76.80 nmol/l. The mean value of BMI was 27.94 kg/m². A negative correlation was found between vitamin D and glucoregulation parameters (HbA1c and SUK), but statistically insignificant. Vitamin D and BMI are also statistically insignificant, indirectly proportional. Insignificant negative correlation is also present between BMI and glucoregulation parameters.

Conclusions. Inadequate metabolic control of type 2 diabetes is associated with low serum vitamin D levels in both sexes. Obese patients with type 2 diabetes have lower levels of vitamin D, but better metabolic control of the disease.

THE COURSE OF DIABETES MELLITUS IN PATIENTS INFECTED WITH HCV

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Keywords. HCV, T2DM, Fibrosis, PCR

Objectives. This study examines the relationship between chronic hepatitis C virus (HCV) infection and type 2 diabetes mellitus (T2DM). A retrospective analysis of the medical records of 53 patients with T2DM infected with HCV was conducted. The study aims to investigate the impact of HCV on the course of T2DM.

Materials and methods. A retrospective analysis was performed on the medical records of 53 patients with T2DM infected with HCV. HCV infection was confirmed serologically and through qualitative and quantitative PCR. Patients received antiviral therapy under the guaranteed volume of free medical care in Kazakhstan. Patient medical records were processed using SPSS and GraphPad software.

Results. The study group included 53 patients with T2DM infected with HCV. Males predominated (56%), with a median age of 66 years.

The body mass index (BMI) in the study group averaged 27.34, corresponding to overweight status. The first HCV genotype was predominant (75%) among the patients. Stage 4 fibrosis was more common in patients infected with the third HCV genotype.

The median glucose level was 7.36 mmol/L. The glycated hemoglobin level in the study group significantly exceeded normal values at 7.45. The neutrophil-to-lymphocyte ratio in the group was 1.6. Among diabetic patients infected with HCV, lymphocytosis (35.05 versus 32.82) and monocytosis (9.1 versus 6.05) were predominant.

The levels of urea and creatinine were within normal limits. Fibrosis and cirrhosis were diagnosed in the study group. A correlation was found between RNA copy number and leukocyte count (0.44), as well as between fibrosis and glucose level (0.38).

CARDIOVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Keywords. T2DM; Comorbid conditions; Cardiovascular complications

Objectives. The study aimed to determine how age affects the development and progression of cardiovascular complications in patients with T2DM.

Materials and methods. The medical histories of 51 patients with T2DM were analyzed. The patients were divided into two equal groups: under 65 years old and over 65 years old. Statistical analysis was performed using the EasyMedStat program.

Results. In the study group, male patients predominated (52.9%). Based on age, 58% of patients were under 65 years old, and 42% were over 65 years old.

Patients with T2DM under 65 years old were less likely to have concomitant arterial hypertension (60% versus 70%), much less likely to be diagnosed with ischemic heart disease (less than 20% versus 40%), heart failure (30% versus 40%), arrhythmia (10% versus 15%), or valvular damage (10% versus 20%).

Cardiovascular complications were more frequently identified in the group of patients with diabetes over 65 years old. The median age of T2DM patients with concomitant arterial hypertension was 65 years.

Ischemic heart disease was not detected in T2DM patients under 40 years old; it was more commonly diagnosed in patients over 60 years old.

A correlation was found between age, glucose levels, glycated hemoglobin levels, creatinine, and urea levels. A correlation between glomerular filtration rate (GFR) and patient age was identified.

Conclusions. Old age is a risk factor for the progression of cardiovascular complications in patients with T2DM.

NEUROLOGY, NEUROSURGERY

ENHANCING DIAGNOSTIC AND TREATMENT STRATEGIES FOR POSTHEMORRHAGIC HYDROCEPHALUS IN INFANTS

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Keywords. Post-hemorrhagic Hydrocephalus; Intraventricular haemorrhage; Neonates; Diagnosis; Treatment; Complications; Neuroimaging; Surgical interventions; Neonatal neurology; Quality of life

Objectives. Post-hemorrhagic hydrocephalus (PHH) is a severe complication of intraventricular haemorrhage (IVH), affecting preterm infants with low birth weight and gestational age. This condition causes significant neurodevelopmental challenges if not promptly diagnosed and treated. The study aimed to evaluate and improve methods for early diagnosis and effective management of PHH in neonates, focusing on identifying optimal diagnostic tools and therapeutic strategies to reduce complications and enhance outcomes.

Methods. The study (2009–2023) at the Neurosurgical Department of City Children's Hospital No. 2 in Astana included 100 newborns up to six months old, divided into a main group (n=50) and a control group (n=50). Males predominated (63%), with 37% females. Diagnostic methods included clinical assessment, laboratory tests, ultrasound, CT, and MRI. Mortality was 19% (n=19), with 14 deaths (29%) in the control group and 5 deaths (12%) in the main group. Ventriculosubgaleal drainage significantly reduced complications and improved survival.

Results. Neonates with low gestational age and low birth weight were at the highest risk of complications. Repeated invasive procedures, such as punctures and external drainage, were associated with infection and catheter occlusion. MRI proved to be the most effective diagnostic method, with superior accuracy in identifying structural and functional brain abnormalities compared with ultrasound or CT. The proposed diagnostic and treatment algorithm reduced complication rates, shortened hospital stays and improved the quality of life of affected infants.

Conclusion. The study emphasizes the importance of early PHH diagnosis using MRI, as 79% of patients were premature. Timely interventions, including ventriculosubgaleal drainage, reduced mortality to 12% vs. 29% in the control group, improving overall survival to 81%. The proposed algorithm standardizes neonatal neurological care, optimizing treatment and minimizing complications in infants with PHH.

BRAIN CORTICAL PARCELLATION AND ATROPHY PATTERNS IN PARKINSON`S DISEASE PATIENTS

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Keywords. Brain parcellation; Neuroimaging; Parkinson's Disease; Brain mapping

Objectives. Cortical brain atrophy is detectable with magnetic resonance imaging in advanced Parkinson's disease (PD), but due to lack of biomarkers and distinct non-motor clinical features in early stages, its clinical relevance remains uncertain. Brain cortical parcellation and subcortical segmentation has lately showed potential applicability in quantification of brain structure volume. In this study we evaluate patient cognitive function in comparison to brain volume changes aquired by standardised MRI postprocessing protocol.

Materials and methods. A total of 50 participants were included, 25 PD patients with mild cognitive impairment and 25 healthy controls. Montreal Cognitive Assessment was used for cognitive testing. Patients were divided: Mild cognitive disorder or no cognitive disorder group. Brain parcellation and brain region volume extraction was done via Freesurfer v7.4 with Desikan-Killiany atlas as a reference. Statistical analyses were conducted using SPSSv29, significance considered $p<0.05$.

Results. In total 24 (48.98 %) males and 26 (51.02 %) females with a median age of 57 years (IQR: 46.5 – 64.5) were included. Decreased brain cortical volume was observed in individuals with lower overall MoCA scores bilaterally in multiple regions: left superior temporal gyrus ($p=0.001$) and right superior temporal gyrus ($p=0.014$), left middle temporal gyrus ($p=0.039$) and right middle temporal gyrus ($p=0.043$), left lateral occipital gyrus ($p=0.024$) and right lateral occipital gyrus (posterior portion $p=0.005$), as well as the left lateral occipital gyrus (superior portion $p=0.032$), with right superior temporal gyrus volume showing highest correlation coefficient $r=0.445$. Hippocampal atrophy including other medial temporal lobe volume changes was absent.

Conclusions. Our data shows cortical volume reductions in temporal lobes, which likely reflects impairments in memory and language centers and corresponds to previous reported data. However, occipital lobe alterations have not been previously reported and could underlie visuospatial dysfunction in our patient group.

MULTIPLE SCLEROSIS ACROSS THE LIFESPAN: INSIGHTS FROM PEDIATRIC, ADULT, AND LATE-ONSET GROUPS IN THE POLISH POPULATION

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Keywords. Demyelinating autoimmune diseases; Multiple sclerosis; Age of onset; Relapsing-remitting multiple sclerosis

Objectives. Multiple sclerosis (MS) is a chronic autoimmune disease that primarily affects the central nervous system, with onset typically occurring in young adults around 30 years old. In some cases, MS onset can also develop in children under 18 years or individuals aged 50 years or older. Our study aimed to compare clinical and demographic differences, treatment approaches, and comorbidities in MS patients with pediatric-onset (POMS), adult-onset (AOMS), and late-onset MS (LOMS).

Materials and methods. Medical records of 439 MS patients hospitalized between 2018 and 2023 in the University Clinical Center, Medical University of Silesia, Katowice, Poland were retrospectively analyzed. Patients were divided into three categories based on their age at MS onset: POMS – <18 years, AOMS – 18–49 years, and LOMS – ≥50 years. Age at diagnosis, prevalent onset symptoms, diagnostic delay, Expanded Disability Status Scale (EDSS) scores, disease course, comorbidities, and characteristics of disease-modifying therapy usage were compared between the groups.

Results. The LOMS group showed a higher proportion of males, the longest diagnostic delays and mainly motor symptoms at onset. Median EDSS scores were higher in the LOMS group compared to AOMS and POMS groups (4.5 vs 2.5 vs 1.5) ($p< 0.001$). Relapsing-remitting MS was the most common course in POMS (97.06%) and AOMS (86.96%), while progressive courses were predominant in LOMS ($p<0.001$). LOMS patients experienced the longest durations on first-line therapies and lowest rates of switching to second-line agents ($p= 0.001$).

Conclusions. Our study is the first to compare age-related differences in MS within the Polish population. The clinical presentation and management of MS vary significantly with the age of onset. Patients with LOMS face more advanced disability, higher rates of comorbidities, and greater challenges in treatment, underscoring the need for tailored management approaches.

THE PREVALENCE AND ANATOMY OF RECURRENT ARTERY OF HEUBNER: A META-ANALYSIS WITH NEUROSURGICAL CONSIDERATIONS

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Keywords. Neurosurgery; Anatomy; Circle of Willis; Recurrent artery of Heubner

Objectives. The recurrent artery of Heubner (RAH) is typically the largest medial lenticulostriate branch of the anterior cerebral artery (ACA). Neurosurgical procedures such as aneurysm treatment on the anterior part of the circle of Willis canresult in damage of the RAH leading to neurological deficits. The aim of this study was to identify the gaps and provide comprehensive data on the prevalence and anatomical characteristics of the RAH with neurosurgical considerations.

Materials and methods. The major electronic databases were thoroughly searched to identify the eligible studies. The information concerning study type, geographical origin, prevalence of the RAH, course and origin of the RAH, symmetry of origin andnumber of RAHs in each hemisphere, and morphometric data were extracted. The PRISMA guidelines were rigorouslyfollowed throughout the study. The AQUA tool was used to evaluate the reliability of included studies.

Results. A total of 34 studies (n = 3645 hemispheres) were included in the meta-analysis. The analysis revealed that theRAH was present in 97.5% (95%CI: 95.5–98.6) of the hemispheres, originating most frequently from the A2 segment(42.2%, 95%CI: 35.0–49.7) or the ACoA-ACA junction (41.6%, 95%CI: 34.0–49.6), and coursing anteriorly (47.6%, 95%CI:38.7–56.6) or superiorly (43.9%, 95%CI: 34.4–53.8) in relation to ACA. Almost a quarter of patients had more than oneRAH, which was on average 22.82 mm (SD: 1.35, 95%CI: 20.16–25.47; I2 = 99.1%, $p < 0.01$) long and reached 0.76 mm(SD: 0.05, 95%CI: 0.66–0.85; I2 = 99.4%, $p < 0.01$) in diameter.

Conclusions. As the RAH is present in the majority of the population, it is important to be aware of the wide variations in its anatomy. This will help to prevent postoperative neurological deficits by avoiding undesirable complications during surgeriesthat are performed in close proximity to the anterior segment of the circle of Willis.

CHANGING OF HEADACHES CHARACTERISTICS IN WOMEN DIAGNOSED WITH MIGRAINES DURING PREGNANCY

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Keywords. Migraine; Pregnancy; Women; Headache; Changes

Objectives. There is little understanding of how hormones impact headaches for women. Our goal is to assess the characteristics and changes in headaches in women during pregnancy.

Methods. The prospective study was conducted at the Lithuanian University of Health Sciences Hospital, Kaunas Clinics (LUHS KC). A questionnaire was created to assess changes in headaches experienced during pregnancy compared to headaches experienced before pregnancy. The impact of headaches on daily activities during pregnancy was assessed using the MIDAS questionnaire. The analysis was performed using MS Excel and SPSS 29 software. Results were considered statistically significant when $p < 0.05$.

Results. 13 of the surveyed women had a previously diagnosed migraine and experienced headaches both before and during pregnancy. For 8 of them (61,5%), the intensity of the headaches remained unchanged, while for 5 (38,5%) the intensity changed, usually decreasing in severity.
The duration of headaches remained unchanged for 9 (69,2%) patients, while 4 (30,8%) reported changes (2 experienced shorter durations, and 2 experienced longer durations). 5 (38,5%) patients reported no change in the location of their headaches due to pregnancy, while the remaining 8 (61,5%) reported various changes in headache location. The nature of the headache changed for 6 (46,2%) patients and left unchanged for 7 (53,8%).
Before pregnancy, all 13 women reported that headaches disrupted daily activities. During pregnancy, only 7 (53,8%) of these women continued to experience disruptions, while 6 (46,2%) reported no further impact on daily activities.

Conclusions. Pregnant women diagnosed with migraine reported the most significant changes in the location (61.5%) and nature (53.8 %) of their headaches during pregnancy compared to before pregnancy.
Almost half of the pregnant women diagnosed with migraine (46.2 %) experience less disruption to daily activities due to headaches during pregnancy than before pregnancy.

COMPARISON OF MANUAL AND AUTOMATED SLEEP SCORING IN PORTABLE POLYGRAPH FOR DIAGNOSING OBSTRUCTIVE SLEEP APNEA

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Keywords. Obstructive sleep apnea (OSA); Sleep scoring; Automation; Manual scoring; Polygraph

Objectives. The American Academy of Sleep Medicine notes that OSA is linked to increased morbidity and mortality. Neurocognitive impairment, cardiovascular and metabolic dysfunction, and higher mortality underscore the importance of diagnosing and treating OSA. It remains underdiagnosed due to factors like lack of routine screening in primary care and preoperative settings. Automated scoring algorithms for portable polygraphs could improve access to OSA diagnosis. This study aimed to evaluate the reliability and compatibility between automated and manual sleep assessment for OSA diagnosis.

Materials and methods. A retrospective dataset of 103 unidentified patients aged 18 to 85 years was used and subjected to polygraph analysis. Variables included apnea-hypopnea index (AHI), central apnea (CA) index, obstructive apnea (OA) index, and others. Automated scoring was performed using programmed algorithms, and manual scoring was performed by board-certified physicians. Statistical analyses, including nonparametric tests and correlation analysis, assessed agreement, differences, and demographic influences.

Results. Automated assessment showed statistically significant differences compared to manual assessment for the most important indices, such as AHI ($p < 0.05$), cA index ($p = 0.010$) and oA index ($p < 0.001$). Analysis of asymmetry showed a systematic bias in both methods with significant negative asymmetry in oxygen desaturation and positive asymmetry for apnea-related indices. No significant differences were found for T90% and apnea severity ($p > 0.05$). The association with demographic factors (e.g. BMI, age) was significant but weak.

Conclusions. Automated scoring techniques, while promising, show discrepancies compared to manual methods and require refinement for clinical reliability. Metrics like T90% indicate potential equivalence, whereas other indices highlight the need for algorithm improvements. Enhancing automated methods could reduce the burden of undiagnosed OSA and improve diagnostic accessibility.

ASSESSMENT OF THE VISUAL PERCEPTION AS A TOOL FOR EARLY DETECTION OF COGNITIVE IMPAIRMENT IN MULTIPLE SCLEROSIS PATIENTS

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Keywords. Visual perception; Multiple sclerosis; SDMT; MoCA.

Objectives. Multiple sclerosis (MS) represents the most common chronic, progressive neurological disease due to demyelinating of the central nervous system (CNS). As MS affect diferent neural pathways, it could significantly impact sensory and cognitive function, including visual perception. This study aims to determine whether changes in visual perception could be used in clinical practice to detect early cognitive impairment in patients with MS, alongside tests already widely used in clinical practice, such as the Symbol Digit Modalities Test (SDMT) and Montreal Cognitive Assessmen test (Moca).

Methods. This cross-sectional study included 43 MS patients treated at Riga East University Hospital and 48 healthy controls, matched for age and gender. MS diagnosis was based on the 2017 McDonald criteria. Visual perception was assessed using two mental rotation tests: Test No. 1 (three-dimensional figure rotation) and Test No. 2 (Angle Perception Test).These tests evaluate spatial processing and mental transformation, both potentially affected in MS. Cognitive function in the MS group was assessed with SDMT and MoCA. Data were analyzed in SPSS using appropriate statistical tests.

Results. The average age of respondents in both groups was 35 ± 2 years, with an equal gender distribution (30 females).
The statistical analysis revealed no significant correlation between SDMT and the test results. For *Test No. 1 (r=0.077, p=0.623)* and for *Test No. 2 (r=0.173, p=0.266*). Similarly, no significant correlation were found between MoCa and *Test No.1 (r=-0.16, p=0.305),* and *Test No. 2 (r= 0.082, p=0.601).* No significant differences were found in test results between the MS patient group *(p=0.17)* and the control group *(p=0.37),* indicating limited clinical applicability.

Conclusions. Both mental rotation tests may have potential utility. However, their weak correlation with SDMT and MoCA suggests limited applicability. Further research is needed to clarify their role in clinical practice.

PERIPHERAL VS CENTRAL DEMYELINATION: CAN NEUROFILAMENT LIGHT CHAIN SERVE AS A BIOMARKER FOR DIFFERENTIATION

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Keywords. Neurofilament light chain; Biomarker; Peripheral demyelination; Central demyelination

Objectives. Neurofilament light chain (NfL) is a recognised biomarker for axonal damage and neurodegeneration. This study aimed to compare plasma NfL levels among patients with autoimmune demyelinating neuropathies and multiple sclerosis (MS) to evaluate its potential for distinguishing between central and peripheral demyelination.

Materials and Methods. The study included 45 participants: 23 with autoimmune neuropathy, 24 with MS (diagnosed per McDonald's criteria), and 25 age- and gender-matched healthy controls. Blood samples were collected in EDTA tubes, processed within 1 hour by centrifugation, and stored at -20°C. Plasma NfL levels were measured using Single Molecule Array (Simoa) technology on the HD-X instrument (Quanterix, Billerica, MA). Kruskal-Wallis H test was conducted to compare NfL level between research groups.

Results. The autoimmune neuropathy group included 16 with chronic inflammatory demyelinating polyneuropathy (CIDP) and 7 with multifocal motor neuropathy (MMN) (mean age: 53 ± 19.4 years). The MS group (mean age: 53.8 ± 6.11 years) and control group (mean age: 52.9 ± 12.1 years) were similarly balanced. Plasma NfL levels were 14.43 ± 12.38 pg/mL in autoimmune neuropathy, 13.50 ± 4.85 pg/mL in MS, and 6.49 ± 2.31 pg/mL in controls. Statistical analysis showed significantly higher NfL levels in autoimmune neuropathy and MS groups compared to controls ($p < 0.001$ for both) but no significant difference between autoimmune neuropathy and MS ($p = 0.398$).

Conclusions. Plasma NfL levels were significantly elevated in autoimmune neuropathies and MS compared to healthy controls, reflecting axonal damage in peripheral and central demyelinating diseases. However, the absence of a significant difference between autoimmune neuropathies and MS suggests NfL functions as a general neurodegeneration marker rather than a specific biomarker for distinguishing central from peripheral demyelination.

SERUM NEUROFILAMENT AND GLIAL FIBRILLARY ALFA PROTEIN CONCENTRATION AS POTENTIAL BIOMARKERS IN SEROPOSITIVE (ACHR) MYASTHENIA GRAVIS PATIENTS

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Keywords. Myasthenia Gravis; Biomarkers; NfL; GFAP

Objectives. Myasthenia Gravis (MG) is the most common autoimmune disease affecting the neuromuscular junction, characterized by muscle weakness. Currently, there are no effective biomarkers correlating with MG disease severity; therefore, new biomarkers to assess disease severity and treatment effectiveness are needed. This study aims to investigate plasma neurofilament light chain (NfL) and plasma glial fibrillary acidic protein (GFAP) concentrations in the MG patient group and compare them to the control group.

Materials and methods. The study included 76 patients diagnosed with seropositive (AchR) MG and 40 healthy controls. The clinical classification of the disease was based on the MGFA classification. Blood samples from both groups were taken during outpatient visits in 2024 and measured using a Single Molecule Array (Simoa) assay. Mann-Whitney U-test and Kruskal-Wallis test were performed for statistical analysis using SPSS.

Results. The MG patient group consisted of 33 males and 43 females with a mean age of 56.8(SD±15.3) years and a mean disease duration of 94.0(SD±106.3) months. The control group consisted of 11 males and 29 females with a mean age of 41.5(SD±11.1) years. Median sNfL concentration was 10.1 pg/mL(SD=± 8.5 pg/mL), and sGFAP 122.5 pg/mL (SD=±102.2 pg/mL) in the MG patient group. In the control group, sNfL and GFAP median concentrations were 6.1 pg/mL(IQR=4.0) and 87.5 pg/mL(IQR=48.5), respectively. Both NfL and sGFAP levels in MG patients were significantly higher than in controls (NfL:U=734.000, $p<0.001$; GFAP:U=965.500, $p=0.002$). Analyzing the association between sNfL (H=3.722, p=0.811), sGFAP (H=3.309, p=0.885), and severity score (MGFA), no correlations were found.

Conclusion. Both sNfL and sGFAP levels are higher in the MG patient group, but they do not correlate with the severity of the disease. Therefore, while these potential biomarkers can aid in diagnostics, they are not effective for evaluating disease severity or treatment outcomes.

EVALUATING THE EFFICACY AND SAFETY OF RITUXIMAB IN ACETYLCHOLINE RECEPTOR ANTIBODY-POSITIVE REFRACTORY MYASTHENIA GRAVIS: A SINGLE-CENTER EXPERIENCE

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Keywords. Refractory myasthenia gravis; Acetylcholine receptor antibodies; Rituximab

Objective. An estimated 10-20% of myasthenia gravis patients do not achieve an adequate response or are intolerant to conventional treatment. Fortunately, the spectrum of available treatment agents is expanding and involves various monoclonal antibodies. This study aims to evaluate the efficacy and safety of Rituximab in treating refractory myasthenia gravis (MG) patients seropositive for acetylcholine receptor (AChR) antibodies through a single-centre experience.

Materials and methods. This prospective cohort study was carried out at Pauls Stradiņš Clinical University Hospital from November 2022 to March 2024. Nine patients with generalized refractory MG were classified using MGFA criteria, and only AChR-positive patients were included in this analysis. All patients received a single low dose of Rituximab (500 mg or 1000 mg based on BMI). Clinical evaluation was performed using the Myasthenia Gravis Composite Score (MGCS), Myasthenia Gravis Activities of Daily Living (MG-ADL), and Myasthenia Gravis Quality of Life (MG-QoL) scales at baseline and monthly for six months. Glucocorticosteroid doses were recorded at each visit. Statistical analysis involved paired t-tests, with significance set at $p < 0.05$.

Results. Six months after Rituximab treatment, the MGCS in AChR-positive patients decreased from 10.6 ± 5.8 to 7.1 ± 3.0; however, this change did not reach statistical significance ($p = 0.072$). MG-ADL scores showed a reduction from 5.7 ± 3.7 to 4.3 ± 2.2 ($p = 0.349$), whereas MG-QoL scores decreased slightly from 28.6 ± 9.4 to 25.4 ± 8.1. The mean corticosteroid dose was significantly reduced from 16.2 ± 9.0 mg to 7.7 ± 5.1 mg ($p = 0.036$).

Conclusion. Rituximab exhibited a promising steroid-sparing effect and modest clinical improvements in AChR-positive refractory MG patients. Despite its manageable safety profile, further research is necessary to optimize patient selection and dosing strategies for this challenging subset of MG patients.

EMERGENCY MEDICINE, ANAESTHESIOLOGY, REANIMATOLOGY

COMPARISON OF THE EFFICACY OF PERICAPSULAR NERVE GROUP (PENG) BLOCK AND CONSERVATIVE THERAPY IN THE FIRST 24 HOURS AFTER TOTAL HIP ARTHROPLASTY

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Keywords. PENG block; Analgesia; Postoperative pain management; Total hip arthroplasty

Objectives. The pericapsular nerve group (PENG) block is gaining increasing attention in research due to its benefits compared to other methods. The aim of this study is to evaluate the efficacy of combined conservative therapy and PENG in the early postoperative period after total hip arthroplasty (THA). We hypothesize that PENG in combination with conservative therapy is more effective in reducing early postoperative pain in patients undergoing THA than conservative therapy alone.

Materials and methods. A prospective randomized observational study was conducted at a secondary care hospital specializing in orthopedics. Using research randomization tools, the participants were divided into two observational groups. The first group received conservative (pharmacological) therapy based on our clinic's postoperative pain relief guidelines, the second group - combined therapy (conservative and PENG). The demographic characteristics were analyzed for each group. The outcome was measured as pain intensity, using a numerical rating scale (NRS) with scores ranging from 0 to 10, assessed at 6,12 and 24 hours post-surgery. Data was analyzed using IBM SPSS 29.0.

Results. A total of 31 patients with a mean age of 66,4 ± 10,33 were included in the study. 38,7 % (n=12) of them were males, 61,3 % (n=19) were females. After randomization, patients were assigned to either the conservative group (n=16) or the combined group (n=15). We found statistically significant differences in the NRS at all measured times at 6, 12 and 24 hours after the surgical intervention. The combined group experienced lower pain intensity compared to the conservative group - 6 hours ($p = 0.037$), 12 hours ($p = 0. 002$) and 24 hours ($p = 0.045$) after THA.

EXPLORING THE IMPACT OF INTRAVENOUS LIDOCAINE ON CHRONIC PAIN: A SAFETY AND EFFECTIVENESS STUDY

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Keywords. Chronic Pain; Lidocaine; Symptom Relief; Safety Profile

Objectives. Chronic pain harms daily activities and productivity. This forms the basis for investigating intravenous (i.v.) lidocaine, a common anesthetic with promising implications for chronic pain management. This study aims to assess the efficacy of i.v. lidocaine in terms of safety, symptom relief, and hemodynamic stability in an outpatient setting.

Materials and methods. A retrospective study of 50 patients (58% men; mean age 44 years) receiving i.v. lidocaine (1 mg/kg) for chronic pain. Data on pain intensity, symptom change, and hemodynamic parameters were collected during one of the patients' visits (1st to 5th treatment). Evaluated metrics included patient-reported outcomes, such as pain relief, sleep quality, and activity improvements. Statistical analyses included paired t-tests and chi-square tests.

Results. Pain scores decreased from 9.20 to 5.90, a 35.9% reduction ($p < 0.01$). Stabbing pain (54%, $n = 27$) was the most common, followed by burning (31%) and locking (15%). Improvement was 61% ($p < 0.01$) for upper back/neck pain and 32% ($p < 0.01$) for lower back pain. Before treatment, 81% had sleep problems, 66% reduced activity, and 54% experienced distress. Post-treatment improvements included sleep quality (62%, $p < 0.01$), emotional well-being (37%, $p < 0.01$), and physical activity (29%, $p < 0.01$). Systolic BP dropped by 11.1 mmHg ($p = 0.059$), diastolic BP by 7.3 mmHg ($p = 0.073$), and heart rate by 7.4 bpm ($p = 0.068$), remaining clinically insignificant. Adverse events were rare, with <4% ($n = 2$) reporting mild dizziness and no severe events.

Conclusions. I.V. lidocaine (1 mg/kg) significantly reduces pain and improves symptoms, particularly in upper back and neck pain. Minimal side effects and a stable hemodynamic response validate its safety and effectiveness. Further studies are recommended to confirm these findings and explore long-term safety.

EVALUATION OF INTRAVENOUS KETAMINE AS A THERAPEUTIC OPTION FOR CHRONIC PAIN

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Keywords. Chronic Pain; Ketamine; Symptom Relief; Safety Profile

Objectives. Chronic pain casts a significant shadow on daily life and well-being. The anesthetic agent ketamine, given intravenously (i.v.), shows promise as a treatment modality for chronic pain but requires further exploration of its effects on pain, symptoms, and safety. This study aims to establish the efficacy of i.v. ketamine for pain reduction, symptom improvement, and safety through hemodynamic monitoring.

Materials and methods. A retrospective study included 50 patients (63.7% male; mean age 65.8 years) with chronic pain and co-morbidities who underwent i.v. ketamine (0.15 mg/kg) treatment. Pain intensity, changes in symptoms, and cardiovascular parameters were recorded to monitor developmPain scores reduced significantly from 9.42 to 4.52, representing a 52.1% improvement ($p < 0.001$). Stabbing pain was the most common type (74%, $n = 37$), with 32% ($n = 16$) reporting radiating pain. Ketamine showed the greatest efficacy for lower back pain (53%, $p < 0.01$), while other regions also improved (44%, $p < 0.01$). Before treatment, 62% ($n = 31$) of patients reported sleep disturbances, 52% ($n = 26$) had restricted activity, and 46% ($n = 23$) experienced mental distress. Post-treatment improvements were significant in sleep quality (58%, $n = 29$, $p < 0.01$), emotional well-being (52%, $n = 26$, $p < 0.01$), and physical activity (46%, $n = 23$, $p < 0.01$). Systolic and diastolic blood pressure dropped by 7.8 mmHg ($p = 0.061$) and 5.9 mmHg ($p = 0.073$). Heart rate decreased by 3.9 bpm ($p = 0.078$). Adverse effects were minimal, with 6% of patients experiencing mild dizziness and no serious adverse events.

Conclusions. Intravenous ketamine (0.15 mg/kg) was highly effective for pain relief and symptom improvement, particularly for lower back pain. Its safety and stable hemodynamic profile make it a promising treatment for chronic pain.

SIGNIFICANCE OF FEMORAL ARTERY HEMORRHAGE CONTROL IN CASUALTY CARE

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Keywords. Femoral artery; Casualty care; Combat trauma

Introduction. Traumatic lower extremity injuries with femoral artery damage are widespread in military conflicts. Comprehension of femoral region topography and hemorrhage control skills are essential for casualty care.

Objectives. The aim of this thesis is to examine the topography of the femoral artery through dissection, examine literature on femoral artery injuries and assess the significance of hemorrhage control skills by questionnaire.

Materials and methods. Dissection of a human cadaver provided by the Laboratory of Anatomy of the department of Morphology. Relevant literature analysis. Questionnaire about the significance of hemorrhage control skills filled by 2'nd year students of the Faculty of Medicine (n=70).

Results. Lessons learned from conflict in Ukraine revealed that throughout 2022-2024 medical units of the Southern Operational Command received 2,496 patients of which 84,4% were with lower extremity trauma that required tourniquet application (Samarskiy et al, 2024). In Yatsun's (2024) analysis of 69 cases, only 24.6% of tourniquet applications were appropriate. Improper or prolonged tourniquet application elevates risk of necrosis, amputation and acute kidney trauma (Butler, et al 2024). Limited and delayed casualty evacuation increases these risks. Dissection work revealed vital anatomical insights into the femoral artery and surrounding structures in the inguinal region, critical for managing upper femoral injuries, and canalis vastoadductorius, essential for middle femoral region trauma. A questionnaire on the significance of hemorrhage control skills among the respondents (n=70) revealed that 48,6% required reinforcement of theoretical knowledge, while 52.3% needed a review of their hemorrhage control skills.

Conclusions. Analysis of literature revealed that vascular trauma of the femoral region in military conflicts is widespread. Anatomical and topographical aspects of the femoral artery are essential to realize lifesaving activities in case of damaged femoral artery. Proper hemorrhage control skills and theoretical knowledge need reviewing and reinforcement.

PAIN AFTER SPINAL SURGERY: DIFFERENCES IN PATIENT-REPORTED OUTCOMES COMPARED WITH A PROCEDURE-SPECIFIC INTERNATIONAL PAIN OUT DATABASE PATIENT COHORT

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Keywords. PAIN-OUT; Perioperative care; Analgesia; Spinal surgery

Objectives. To compare the reported pain outcomes and perioperative pain management data of spinal surgery patients at the Traumatology and Orthopedics Hospital (TOS) with international patient cohort from the PAIN OUT database.

Materials and methods. Using the PAIN OUT methodology, spinal surgery patient-reported pain outcomes and perioperative pain management data were collected. An 11-point numerical rating scale assessed patient-reported outcomes. Data on intraoperative and postoperative opioid and non-opioid analgesic prescriptions were obtained. Data were divided into three groups: transpedicular fixation (TPF), anterior lumbar interbody fusion (ALIF) and discectomy, analyzed separately comparing with a procedure-specific patient cohort from the PAIN OUT database using parametric independent sample comparison tests.

Results. 42 patients (16 TPF, 11 ALIF, 15 discectomy) provided first postoperative day data. Compared to PAIN OUT database, statistically significant differences were found in 4 of 13 patient-reported outcomes: least pain (TPF 1.8 (±1.4) vs. 3.5), proportion of patients out of bed (TPF 75 vs 42%, ALIF 73 vs 50%, discectomy 87 vs. 40%), wish for more treatment (TPF 19 vs. 44%, discectomy 15 vs. 27%) and receiving information about pain treatment options (TPF 62 vs 75%, ALIF 64 vs. 84%). TOS patients received opioids less frequently postoperatively (45.8 vs. 71.2%), but non-opioid analgesics more frequently preoperatively (100 vs. 18.4%), intraoperatively (100 vs. 50.6%), and postoperatively (100 vs 47.9%).

Conclusions. TOS spine surgery patients reported better outcomes in several areas compared to the international PAIN OUT cohort, including less severe pain, higher mobility, and lower desire for additional treatment. However, they received less information about pain management options. TOS patients were prescribed opioids less frequently postoperatively but received non-opioid analgesics more consistently throughout all perioperative stages. The findings highlight the effectiveness of TOS perioperative pain management approach, emphasizing the potential benefits of prioritizing non-opioid analgesics.

EARLY VERSUS LATE INITIATION OF CONTINUOUS RENAL REPLACEMENT THERAPY IN CRITICALLY ILL PATIENTS WITH GRAM- SEPTIC SHOCK

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Keywords. Continuous renal replacement therapy (CRRT); Oxiris®

Objectives. Septic shock is frequently complicated by acute kidney injury, necessitating the initiation of CRRT. The Oxiris® hemofilter has the ability to reduce inflammatory mediators, providing an alternate potential indication for CRRT. However, the optimal timing for initiation remains unclear, as existing literature presents conflicting results.

Materials and methods. A single-center, retrospective study included 17 patients who received CRRT with Oxiris® for at least 24 hours in the intensive care unit (ICU). Patients were divided into two groups: early group (n=8; CRRT initiated within 24 hours of septic shock diagnosis with the primary aim of eliminating inflammatory mediators) and late group (n=9; CRRT initiated based on absolute indications). Analysis was performed using IBM SPSS.

Results. After 24 hours of treatment the early group showed a median SOFA score decrease from 10 (Minimum; Maximum- 7; 13) at baseline to 8 (5; 13), while the late group exhibited a reduction from 10 (8; 14) to 9 (7; 12). Although markable reductions in SOFA score, norepinephrine dosage, potassium, lactate, inflammatory marker levels were observed in the early group, the changes were not statistically significant ($p>0.05$). In the late group, significant reductions were noted in SOFA score ($Z=-2.530$; $p=0.011$) and potassium levels ($Z=-2.670$; $p=0.008$). Intrahospital mortality was 50.0% in the early group, 66.7% in the late group. No significant differences were observed between the two groups in ICU or overall hospital length of stay.

Conclusions. Early initiation of CRRT with Oxiris® may provide clinical benefits by reducing vasoactive drug dosages, inflammatory marker levels compared to late initiation. The late group demonstrated higher mortality rates, suggesting that early initiation may contribute to better survival outcomes. The small sample size in this study likely contributed to the lack of statistical significance, highlighting the need for larger studies to validate these findings.

PREVENTING POSTOPERATIVE DELIRIUM IN OLDER ADULTS WITH HIP FRACTURE: A RANDOMIZED CONTROLLED TRIAL OF A REORIENTATION INTERVENTION

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Keywords. Postoperative delirium; Reorientation intervention; MOCA; CAM-ICU test

Introduction. Postoperative delirium is a common complication of hip fracture surgery in geriatric population, affecting up to 40% of patients, increasing the 30-day postoperative mortality, and healthcare expenditures. Nonetheless nonpharmacological strategies to prevent delirium remain underexplored.

Objectives. This study aimed to assess the effectiveness of early postoperative reorientation interventions in reducing the incidence and duration of postoperative delirium.

Materials and methods. This randomized controlled trial enrolled 62 patients aged ≥75 undergoing hip fracture surgery. Participants were randomized to a control group (n=32) and an intervention group (n=30). Prior to surgery, all patients underwent cognitive assessment using the Montreal Cognitive Assessment (MOCA), as well as delirium screening using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU). Both groups were evaluated daily using CAM-ICU for 7 postoperative days.
The intervention group received structured daily orientation sessions, including reorientation to time, place, identity, recovery updates, follow-up examinations, and hydration encouragement (150-200 ml of water). Additionally, patients received a daily five-minute news briefing.

Results. Among 62 participants (79% women, mean age 82 ± 6 years), preoperative cognitive impairment was present in 61.7 % of patients. Delirium incidence was similar between groups: 20% in the intervention group vs. 25% in controls (p=0.638). However, delirium duration was significantly shorter in the intervention group (4 vs. 6 days, p=0.009). Preoperative cognitive impairment was associated with delirium incidence (p=0.021), while age, gender and education level were not (p>0.05). Intervention group patients were four times more likely to experience delirium resolution (RR: 4.34, 95% CI: 1.31–14.37, p=0.016).

Conclusions. Reorientation intervention strategy used in the research resulted in significant reduction in the duration of delirium in patients undergoing hip fracture surgery, while not affecting the overall incidence of postoperative delirium.

INFLUENCE OF LOCAL ANESTHETIC TYPE, DOSE, AND PATIENT CHARACTERISTICS ON SPINAL ANESTHESIA MOTOR AND SENSORY BLOCK DURATIONS

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Keywords. Spinal anesthesia; Low-dose; Prilocaine; Chloroprocaine; Motor block duration; Sensory block duration

Objectives. This study aims to evaluate the impact of local anesthetic type and dose on the duration of motor and sensory blocks, while also examining the influence of patient characteristics (age, height, weight, gender) and ASA score.

Materials and methods. In this prospective cohort study, 42 patients undergoing ambulatory surgery received low-dose spinal anesthesia. One group was administered 40 mg of hyperbaric prilocaine, and the other 20 mg of isobaric chloroprocaine. Motor block was assessed using the Bromage scale, and sensory block duration was evaluated with the ice test across different dermatomes.

Results. Of the 42 patients (22 males, 20 females) with a median age of 42 (IQR=21), 41 successfully completed surgery; one patient in the chloroprocaine group required conversion to general anesthesia. Median motor block duration was significantly longer in the prilocaine group (60 minutes, IQR=53) compared to the chloroprocaine group (48 minutes, IQR=14, p=0.018). Median sensory block duration was also significantly longer in the prilocaine group (155 minutes, IQR=38) compared to the chloroprocaine group (110 minutes, IQR=53, p=0.003). Sensory block height was higher in the prilocaine group, with 47.7% of patients reaching T10 or higher, compared to 5% in the chloroprocaine group (p=0.004). Similarly, 71.4% of prilocaine patients achieved a Bromage score of 2 or higher, compared to 30% in the chloroprocaine group (p=0.004). No significant effects of patient characteristics (age, height, weight, gender, or ASA score) on block duration were found.

Conclusions. Both low-dose prilocaine and ultra-low-dose chloroprocaine were effective for spinal anesthesia. However, chloroprocaine resulted in significantly shorter motor and sensory block durations compared to prilocaine, which provided more dense blocks and higher sensory block levels. Patient characteristics and ASA scores did not significantly affect block duration in either group.

INVESTIGATING THE RELATIONSHIP BETWEEN RESCUER ANTHROPOMETRIC CHARACTERISTICS, CHEST COMPRESSION DEPTH, AND THE IMPACT OF FEEDBACK DEVICES

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Keywords. Cardiopulmonary Resuscitation (CPR); Chest Compression Depth; CPR Feedback Devices; Anthropometric Characteristics; Resuscitation Training

Objectives. The quality of chest compressions directly impacts survival in cardiopulmonary resuscitation (CPR). This study aimed to investigate the relationship between rescuers anthropometric characteristics (height, weight, BMI) and chest compression depth, as well as to evaluate the effect of CPR feedback devices on improving compression quality.

Materials and methods. Twenty-five final-year medical students trained in CPR performed two separate two-minute chest compression sessions on a Laerdal Anne QCPR manikin. In the first session, no feedback was provided, while the second session included real-time visual feedback. Participants rested between sessions and provided self-reported anthropometric data. Compression quality was analyzed using Laerdal QCPR software, and statistical analysis was performed using R (v4.3.1).

Results. Participants included 8 men and 17 women (mean age 25.4 years). Without feedback, BMI positively correlated with compression depth ($rK = 0.30$, $p = 0.04$), but the correlation was not significant with feedback ($rK = 0.11$, $p = 0.44$). Height showed no significant correlation with compression depth without feedback ($rK = 0.20$, $p = 0.15$), but a significant positive correlation emerged with feedback ($rK = 0.33$, $p = 0.02$). Weight correlated significantly with compression depth in both conditions ($rK = 0.38$, $p = 0.01$ without feedback; $rK = 0.30$, $p = 0.04$ with feedback). While the feedback device did not significantly improve average compression depth ($p = 0.32$), it reduced variation in compression quality ($p = 0.001$).

Conclusions. Anthropometric factors influence chest compression depth, and CPR feedback devices effectively reduce variability in compression quality. While average performance improvement was not significant, feedback devices minimized outliers, enhancing consistency. Further studies involving healthcare professionals and first responders are recommended to explore the utility of feedback devices in clinical and prehospital settings.

BASIC & PRECLINICAL SCIENCE (MORPHOLOGY, PATHOLOGY, GENETICS)

PULMONARY ARTERIAL HYPERTENSION (PAH) MARKERS IN HEALTHY HUMAN LUNGS AND SUCH OF CARDIAC PATIENTS IN THE ONTOGENETIC ASPECT

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Keywords. Pulmonary arterial hypertension; Lung tissue ontogeny; Gremlin-1; VEGF

Objectives. PAH is a condition of an increased blood pressure in pulmonary arterial system that causes a variety of remodelative and adaptive reactions in pulmonary parenchyma, bronchial and lung vascular tissue. The aim of research was to perform the analysis of angiogenetic and lung protective tissue factor expression to reveal the possible presence of PAH in different age patients.

Materials and methods. The lung tissue was obtained from the archive of RSU Institute of Anatomy and Anthropology and included examples from 5 young patients (18-30 years), 5 old patients (60-80 years) and 5 patients with ischemic heart disease. The immunohistochemistry was used to detect VEGF, CD163, BMP2/4, gremlin-1 and IL-10 followed by semi-quantitative evaluation and non-parametric statistics.

Results. Number of VEGF positive cells was dominated significantly only in bronchial epithelium of elderly, and in macrophages of those compared to young patients. Number of IL-10 cells was significantly higher in young patients' bronchial epithelium, and connective tissue, moreover, it was higher in bronchi of cardiac patients compared to elderly and in alveolary epithelium of young patients. The number of BMP2/4 positive cells in old people compared to both cardiac patients and young patients was established to be significantly higher in bronchial epithelium, but lower in bronchial muscles, while it was higher in the cardiac patients' blood vessels compared to other two groups. CD163 macrophages was noted to be significantly higher in lung of young people compared to the old ones. Gremlin-1 was observed dispersedly in lung macrophages and alveolocytes of participants in each study group.

Conclusions. Increase of VEGF positive cells sugests the vasculogenesis intensification in elderly. Lungs of young people and cardiac subjects display the intensified anti-inflammatory response proved by elevation of IL-10 cells and M2. The increased BMP2/4 and limited gremlin-1 appearance don't exclude individual PAH condition.

CHARACTERIZATION OF DIFFERENT TISSUE FACTORS IN GALLBLADDERS OF CHILDREN WITH CALCULOUS CHOLECYSTITIS

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Keywords. IL-12; IL-13; IL-1β; SHH; NFkBp65; HSP60; Cholecystitis

Objectives. Rising incidence of gallstones requiring cholecystectomy in children highlights the need to clarify the mechanisms underlying pediatric chronic calculous cholecystitis. Currently the role of complex tissue factor influence is unclear, therefore, this study aimed to assess the expression of different tissue markers: interleukin-12 (IL-12), interleukin-13 (IL-13), interleukin-1β (IL-1β), sonic hedgehog protein (SHH), nuclear factor kappa-B p65 subunit (NFkBp65), heat shock protein 60 (HSP60) in gallbladder wall of patients and controls.

Materials and methods. Eleven gallbladder samples were obtained from children with chronic calculous cholecystitis during cholecystectomy. Five healthy gallbladder samples were used for controls. IL-12, IL-13, IL-1β, SHH, NFkBp65 and HSP60 were detected by immunohistochemistry. The number of positive structures in gallbladder epithelium, vasculature and inflammatory infiltrate was counted semi-quantitatively by microscopy. Mann-Whitney U test and Spearman's rank-order correlation coefficient was calculated.

Results. SHH, NFkBp65, and HSP60 were predominantly expressed in epithelium of patient samples, while interleukins were moderately present in both - epitheliocytes and vasculature. Inflammatory infiltrate showed positivity for interleukins, NFkBp65, and HSP60. Controls exhibited a higher number of IL-1β-positive epitheliocytes than patients. Significant differences between patients and controls were observed in IL-1β, SHH, and NFkBp65 expression in epithelium, and IL-12, SHH, and HSP60 in vasculature. Very strong positive correlation was seen between expression of IL-1β and SHH in inflammatory infiltrate ($r_s=0.921$, $p < 0.001$). Strong positive correlations ($r_s=0.7$-0.9) were detected between IL-13 and other markers - SHH, HSP60, IL-1β and NFkBp65. Strong positive correlations were also seen between NFkBp65 and markers IL-12, IL-1β, SHH.

Conclusions. Elevated expression of NFkBp65, IL-12 suggests a significant role of inflammation on the basis of increased cellular activity (HSP60). Notable SHH expression in patient tissue implies its involvement in tissue regeneration. Strong correlations between studied markers reveal their mutual involvement in morphopathogenesis of calculous cholecystitis.

CHARACTERIZATION OF TISSUE IMMUNITY AND ANGIOGNESIS FACTORS IN PRIMARY DENTITION CHILDREN WITH BILATERAL CLEFT LIP PALATE

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Keywords. Cleft palate; VEGF; TGF-β1; M2; Macrophage

Objectives. Bilateral cleft lip and palate (BCLP) is a severe orofacial birth defect, characterized by insufficient fusion of facial parts and orofacial malfunction. Immunity and angiogenesis factors modulate immune response, inflammation, and healing; therefore, they are vital in the patient's immunological assessment and in the understanding of morphopathogenesis of BCLP. Our aim was to assess the distribution of vascular endothelial growth factor (VEGF), transforming growth factor beta 1 (TGF- β1), common macrophages pool and their subtype M2 in BCLP-affected tissue of primary dentition age children.

Materials and methods. Tissues were obtained from 15 patients during cheiloplasty. 5 controls were used for comparison of data. Immunohistochemistry, light microscopy, semi-quantitative evaluation (from 0 to ++++) and statistics (Mann-Whitney U-test and Spearman's rank correlation) were used to evaluate the data, their statistically significant differences and correlations between the groups.

Results. Epithelium of CLP tissue presented with statistically significant increase of VEGF positive epitheliocytes, intraepithelial M2 and common macrophages pool. The subepithelium presented with significant increase of VEGF and common macrophages pool. The number of VEGF positive cells varied from occasional to numerous. Blood vessels showed a notable increase of M2 positive macrophages in their wall and also variable – from occasional to numerous positive - endotheliocytes. TGF-β1 persisted in connective tissue and was less distinct in epithelium and blood vessels. Factor showed no differences when compared to the controls. The common macrophages pool was notably bigger than the M2 subpool.

Conclusions. Increase of VEGF and M2 positive cells points to mechanism of faster inflammation resolution through amplified angiogenesis. The increase of common macrophages pool shows signs of increased immune and inflammatory reactions. No changes in TGF-β1 suggest lack of connective tissue involvement in the tissue processes of BCLP. Mutually strong correlations between the factors show synergistic mechanisms of action.

DISCOVERY OF NOVEL MICRO-RNAs ASSOCIATED WITH LUMBAR INTERVERTEBRAL DISC DEGENERATION DISCOVERED WITH NEXT-GENERATION SEQUENCING

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Keywords. Lumbar disc degeneratio; miRNA; Lumbago

Objectives. Intervertebral disc degeneration (IDD) of the lumbar spine is a chronic and expensive musculoskeletal condition that can cause radicular or unspecified back pain and may even lead to disability. While the precise etiology of IDD remains unclear, several risk factors, such as aging, genetic predisposition, mechanical load, and nutritional deficiencies, have been identified. A number of miRNAs and their functions have been investigated in intervertebral disc tissue, providing some insight into the underlying biological processes; however, the ultimate set of miRNAs involved in IDD remains unknown. Therefore, the aim of this study was to explore potential new miRNA markers of IDD.

Materials and methods. Thirty intervertabral discs were obtained operatively and included in the analysis. Discs were divided into two groups based on the degree of their degeneration, which was assessed with the modified MRI Pfirrmann scale (grades 1–8). Pfirrmann grades 1-3 were contrasted to Pfirrmann grades 4–8. miRNA-seq libraries were created using the TruSeqTM Small RNA Library Prep Kit, and then next- generation sequencing (NGS) was conducted with the Illumina NovaSeq 6000 device using the NovaSeq 6000 SP Reagent Kit v1.5 reagents. Eventually, miRNA mapping and bioinformatic analysis of the results were performed.

Results. Fourteen discs were included in the experimental group (Pfirrmann 4-8); eleven discs served as controls (Pfirrmann 1-3); and five discs were excluded from the analysis because of their poor quality. NGS, miRNA mapping, and bioinformatic analysis revealed differences in miRNA expression between the samples. A statistically significant ($p<0.05$) fold change (FC) was observed for three miRNA types: miR-451a (FC = 31.1), miR-486-5p (FC = 16.5), and miR-16-5p (FC = 8.1). All these miRNAs had a higher expression in the more degenerated experimental group.

Conclusions. Our study identified novel miRNAs that were not previously described in intervertebral disc disease.

THE RELATIONSHIP BETWEEN WAIST-TO-HIP RATIO AND HIGH BODY MASS INDEX OF THE LATVIAN RESIDENTS IN PIEBALGA

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Keywords. Waist-to-hip ratio; Body mass index; Cardiometabolic health; Age; Gender

Objectives. In recent studies, the waist-to-hip ratio (WHR) has been described as a better reflector of fat distribution and abdominal obesity; however, body mass index (BMI) remains the main measure of overall cardiometabolic health risk. This study aimed to evaluate the relationship between increased WHR and high BMI.

Materials and methods. This study enrolled 572 adult participants from the "Jēkabs Prīmanis anthropological research project on the population of Latvia. Piebalga" conducted in July and August of 2024 during a two-week period. The key anthropometric measurements included weight (kg), height, waist and hip circumferences, all measured in centimetres. WHR was calculated by dividing waist circumference by hip circumference. Participants were divided into two groups according to the WHR value: the non-risk group (225 participants; 39,2%) with normal WHR and the risk group (347 participants; 60,7%) with increased WHR. The median and interquartile range (IQR) were used to describe non-normally distributed data. Data analysis was performed using IBM SPSS Statistics 29.0.

Results. The median age was 59 years (IQR: 49-67) in the risk group; 44 years (IQR: 32-56) in the non-risk group. The median BMI was 29,2 kg/m2 (IQR: 26,3-32,6) in the risk group; 24,1 kg/m2 (IQR: 22,0-26,5) in the non-risk group. The Mann-Whitney U test revealed that the distribution of age ($z=9,690$, $p<0,001$) and BMI ($z=12,146$, $p<0,001$) was not the same across categories of WHR groups. Increased WHR was associated with the male gender more than with the female gender ($p<0,001$).

Conclusions. Increased WHR is related to advancing age and higher BMI, indicating a greater cardiometabolic health risk for these participants. The results of this study highlight the importance of monitoring BMI in middle-aged and older patients, but male WHR is of particular clinical significance.

THE ROLE OF MACROPHAGE MIGRATION INHIBITORY FACTOR IN INFLAMMATION ON THIOACETAMIDE-INDUCED CHRONIC LIVER INJURY

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Keywords. MIF; Thioacetamide; Chronic hepatitis

Objectives. Chronic damage to the liver leads to inflammation as a protective reaction that aims to limit the action of harmful nox and enable tissue regeneration. Macrophage migration inhibitory factor (MIF) is a pro-inflammatory cytokine released in acute stress and inflammation, when it leads to the secretion of pro-inflammatory cytokines. MIF participates in tissue repair as a growth factor, stimulating the proliferation of fibroblasts, endothelial and epithelial cells. The aim is to examine the role of MIF in inflammation in thioacetamide (TAA)-induced chronic liver injury in mice.

Materials and methods. Animals (n=24) were divided into the following groups (6 per group): 1. Control group; 2. MIF-/- group: MIF-/- mice; 3. TAA group: mice treated with thioacetamide (200mg/kg/3 times a week, i.p.); 4. MIF-/- + TAA group: MIF-/- mice treated with TAA. After 8 weeks of treatment, serum and liver samples were taken for analysis. In the serum, the concentration of C-reactive protein (CRP) was determined by the turbidimetric method; in the liver, interleukin (IL)-1 and tumor necrosis factor (TNF)-α were determined by the ELISA test.

Results. In the model of chronic hepatitis, TAA caused a significant increase in the serum concentration of CRP compared to the control ($p<0.01$), while in the MIF-/- + TAA group, the concentration of CRP was significantly lower compared to the TAA group ($p< 0.01$). In the TAA group, the concentration of pro-inflammatory cytokines IL1 and TNF-α was significantly increased compared to the control ($p<0.01$). Deletion of the MIF gene contributed to a significant decrease in the concentrations of inflammatory markers in the liver compared to the TAA group ($p<0.01$).

Conclusions. Based on the results in our study, we can conclude that MIF plays a significant role in the development of inflammation through the modulation of pro-inflammatory cytokines IL-1 and TNF-α.

MANAGEMENT OF COMPLEX ELBOW FRACTURE THROUGH OSTEOSYNTHESIS WITH ANTERIOR TRANSPOSITION OF THE ULNAR NERVE

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Keywords. Medial epicondyle fracture; Osteosynthesis; Anterior transposition

Objectives. Fractures of the olecranon and medial epicondyle of the humerus can lead to compression of the ulnar nerve, causing its neuritis, neuropathy, and difficulty with finger abduction, resulting in claw hand. To prevent complications, it is necessary to protect the nerve. The primary objectives of this study are to evaluate the effectiveness of anterior transposition of the ulnar nerve during osteosynthesis in preventing ulnar nerve complications, and to ensure optimal functional recovery of the affected limb.

Materials and methods. Fractures of the olecranon and medial epicondyle were simulated, and the human embalmed cadaveric study was conducted under controlled laboratory conditions to ensure accuracy and reproducibility. The ulnar nerve dissection and anterior transposition procedures were meticulously documented, and the osteosynthesis technique was standardized using precontoured titanium plates and bicortical locking screws (diameters 2.7 mm and 3.5 mm) were chosen based on the anatomical requirements of the olecranon and medial epicondyle.

Results. Osteosynthesis was managed on simulated fractures of the olecranon and medial epicondyle. To ensure maximum fixation of both fractures, six fixation points were created in each bone fragment using screws. After osteosynthesis, the ulnar nerve was overly stretched and interfered with the metal plate, confirming the need for anterior transposition. The results demonstrated that this procedure was vital in preventing nerve compression and subsequent neuropathy. The fixation points provided robust stabilization, and the anatomical repositioning of the nerve minimized the risk of post-procedure complications.

Conclusions. Plating a complex elbow fracture can alter the anatomical position of the ulnar nerve. Depending on whether the metal plate or bone fragment interferes with the ulnar nerve, it may be necessary to perform anterior transposition that protects the nerve from external physical influences. Future studies are recommended to validate these findings and to develop standardized protocols for nerve protection in surgical procedures.

BETAINE SUPPLEMENTATION AMELIORATES SOCIAL INTERACTION DEFICITS IN A RAT MODEL OF CHRONIC FATIGUE SYNDROME

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Keywords. Chronic fatigue syndrome; Betaine; Social interaction; Rats

Objectives. Chronic fatigue syndrome (CFS) is a complex, multisystem disorder characterized by persistent, unexplained fatigue and long-term disability in social and personal activities. Although its ethiopathogenesis remains unclear, neuroinflammation and oxidative stress are reported as major contributing factors for depression and reduced socialization development. Betaine, a non-essential amino acid, acts as an osmoprotectant and methyl-group donor, exhibiting notable antioxidant and anti-inflammatory properties. This study assessed betaine's impact on social interaction in a rat model of CFS.

Materials and methods. Male Wistar albino rats were randomly divided into three groups (n=8 per group): a control group, a CFS group, and a CFS+Betaine (CFS+BET) group receiving betaine (3% w/v) in drinking water. Daily water intake was measured. CFS was induced by subjecting rats to a daily forced swim protocol with an external load equivalent to 10±2% of their body weight for 28 consecutive days. Post-swim fatigue (PSF), used to verify CFS induction, was measured weekly. On day 29, social interaction was assessed by placing each rat in testing arena with an unfamiliar conspecific for 10 minutes. The number of direct contacts (NDC) and time spent in the interaction zone (TIZ) were recorded.

Results. The CFS group exhibited significantly higher PSF compared to control confirming CFS-like behavior. Additionally, CFS caused decreased NDC, and a shorter TIZ vs. control. In contrast, rats in the CFS+BET group showed markedly improved outcomes, displaying significantly shorter PSF, increased NDC, and extended TIZ relative to the CFS group. Notably, PSF and TIZ were fully restored to control levels, whereas NDC showed substantial, though partial, recovery.

Conclusions. Betaine supplementation mitigated fatigue-related behavioral deficits and improved social interaction in rats with induced CFS. These findings underscore betaine's potential as a therapeutic agent for alleviating social impairments associated with CFS, warranting further clinical investigation.

LIPOCALIN-2 EXPRESSION IN ADULT RENAL CELL TUMORS

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Keywords. Lipocalin-2; RCC; Oncocytoma; ccRCC

Objectives. Renal cell carcinoma (RCC) is a growing health concern with increasing incidence and challenging diagnostics. Lipocalin-2 (LCN2), expressed in various tissues, plays roles in biological processes, but its involvement in RCC progression, invasion, and metastasis has not been sufficiently examined. This study aimed to analyze LCN2 expression in adult kidney tumors and evaluate its potential as a diagnostic and prognostic marker.

Materials and methods. The study included 206 patients who underwent nephrectomy at the Urology Clinic, Clinical Center of Serbia. Patient data, tumor size, and survival information were extracted from medical records. Tissue microarrays were constructed and stained for LCN2. Staining evaluation and statistical analyses, including descriptive statistics, chi-square test and Kaplan-Meier curve, were performed.

Results. In healthy kidney tissue, moderate cytoplasmic expression of LCN2 was observed in tubular cells. Among RCC types (renal oncocytoma (RO), clear cell RCC (ccRCC), chromophobe RCC and papillary RCC), a statistically significant association was found between tumor histology and LCN2 expression. High expression was noted in RO, while clear cell RCC ccRCC showed heterogeneous expression. Notably, the high expression in benign RO could provide a reference point for understanding the heterogeneous expression in ccRCC, which may reflect biological behaviors of the tumor. LCN2 was not identified as a prognostic marker. However, its presence across all RCC types suggests potential involvement in tumor progression.

Conclusions. LCN2 expression varies significantly among RCC subtypes, with the highest levels in RO and notable heterogeneity in ccRCC. Although it did not demonstrate prognostic value, its consistent presence in all RCC types indicates a potential role in tumor pathogenesis. Further research, including Western blot analysis, is needed to confirm the obtained results and also clarify the function of LCN2 in RCC development and its potential as a diagnostic biomarker.

FABELLA: FUNCTION, PREVALENCE & ANATOMY

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Keywords. Fabella; Anatomy; Orthopedics; Knee anatomy

Objectives. Fabella is a predominately asymptomatic sesamoid bone that can be found between the muscle fibers of the gastrocnemius muscle, posteriorly to the lateral femoral epicondyle. However, sometimes it can be accompanied by pain and therefore be a cause of „fabella syndrome". The aim of this study, regarding the low awareness of fabella's existence, is to assess the prevalence and anatomy of fabella to provide assistance in differential diagnosis for clinicians treating patients with knee pain.

Materials and methods. A retrospective analysis was conducted using the CareStream program. A total of 500 radiographs of 383 patients suffering from knee pain were investigated. Data regarding fabellae (and patellae – for comparison) presence, anatomy, and anatomical location was acquired. Statistical analysis was carried out using the student t-test and the Mann-Whitney U test.

Results. Fabella was present in 31 females (14.76%) and 29 males (25.66%). When comparing knees, fabella was found in 40 (12.82%) and 39 (20.74%) knees in women and men, respectively. The mean length of fabella was 8.85 mm (SD = 2.59) and the mean thickness was 5.63 mm (SD = 1.88), with no statistically significant differences between sexes ($p > 0.05$). Distances from the fabella to the lateral femoral epicondyle and the apex of the fibula's head were 7.16 mm (SD = 5.47) and 24.16 mm (SD = 6.87), respectively, with no statistically significant differences between men and women ($p > 0.05$). No correlation between fabella and patella sizes was found.

Conclusions. Fabella is a frequent anatomic variant in the population of central Europe; fabella's presence was reported in every sixth woman and every fourth man. Detailed fabella's anatomy, accompanied by the reported increase in its prevalence in older populations, may help clinicians correctly diagnose and treat patients suffering from knee pain of unknown origin.

ANGIOGENESIS AND LOCAL IMMUNITY TISSUE MARKERS IN PATIENTS WITH CORONARY HEART DISEASE AND AORTIC STENOSIS

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Keywords.

Objectives. In cases of coronary heart disease and aortic stenosis the effective treatment and prognosis can be achieved with analysis of different tissue markers of cardiac tissue, in particularly looking at the blood vessels endothelium and local resistance of cardiomyocytes to the pathological process. Despite numerous tissue markers being considered for diagnosis already, cardiomyopathies can still occur with normal biomarker levels. This study aims to investigate additional biomarkers (CD34, galectin-10, ICAM-1 and VCAM-1) in cardiac tissue of patients with coronary heart disease and aortic stenosis.

Materials and methods. Tissue samples were obtained from left auricula during ten cardiac valve surgeries; five were children's controls – the material of archive from Institute of Anatomy and Anthropology of RSU. Besides the routine staining VCAM-1, CD34, ICAM-1, Gal-10 were detected immunohistochemically and evaluated semi-quantitatively with following Spearman rank test detection.

Results. Patients' cardiomyocytes demonstrated pyknosis of the nuclei, vacuolization of the cells and ingrowth of connective tissue in cardiac tissue. An occasional number of VCAM-1 positive endothelial cells were marked in control cardiac blood vessels, while patients marked few such cells in this location. ICAM-1 marked moderate number of endothelial cells in the control cardiac blood vessels, while the patients showed variable their number – from occasional to moderate. CD34 positive cells were detected dominantly in the controls (numerous number) in comparison to the patient variable – from occasional to moderate numbers. Gal-10 marked numerous endotheliocytes in controls, but moderate in the patients.

Conclusions. VCAM-1 positive endotheliocytes slight decrease in the patients' cardiac blood vessels suggest the intensification of the angiogenesis, while the ICAM variable number endotheliocytes proves this factor as more unstable demonstrating the specific individual resistance of blood vessel changes in each subject. CD34 variations more correlate to the ICAM changes on the slightly decreased local immunity basis proved by the Gal-10 cardiomyocytes decrease in the patients.

GENE PROTEINS, GROWTH FACTORS/THEIR RECEPTORS IN THE WALL OF ANOMALIES-AFFECTED GALLBLADDER CHILDREN: A PILOT STUDY

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Keywords. Gene proteins; Growth factors/their receptors; Immunohistochemistry; Folded gallbladder; Cystic duct cysts

Objectives. Folded gallbladder and cystic duct cysts are rare congenital deformations connected to chronic inflammation. Gallbladder anomalies occur with an incidence of 0,15% in fetuses; and 1% in adults. Morphopathogenesis is unclear and possibly involves genes, gene proteins, and growth factors. Therefore, the aim of the study is to discover the appearance, distribution, and interactions of gene proteins SHH, IHH, HOXB3, and growth factors/their receptors HGF, IGF1, IGF1R in the wall of the anomalies-affected gallbladder in children.

Materials and methods. Six gallbladder samples were obtained through cholecystectomies from children aged 6-18. As a control, five regular gallbladders were collected from car accident-perished children. Tissues were immunohistochemically stained for SHH, IHH, HGF, IGF1, IGF1R, and HOXB3 to evaluate the number of positive cells semi-quantitatively. Mann-Whitney U and Spearman's tests were used to determine statistically significant results and correlations.

Results. A decreased appearance of SHH, IHH, IGF1R, and an increased number of HOXB3 positive cells in patient material compared to controls was detected. A statistically significant difference between the patient and control gallbladder was observed: in the epithelium and connective tissue for SHH positive cells; for all tissues of IHH; for epithelium, blood vessels and smooth myocytes of IGF1R; for smooth myocytes of HOXB3 positive cells. Additionally, strong positive correlations were found between epithelial IHH, SHH, IGF1R and between epithelial IGF1R and blood vessels.

Conclusions. A decreased number of the main endodermal gene proteins SHH/IHH and the diminished IGFR1 suggest their possible involvement in developing gallbladder anomalies. However, the increase of HOXB3 in these conditions suggests its possible role in the stimulated growth properties, while the HGF and IGF1 seem not to be the key factors in the development of folded gallbladder and cystic duct cysts.

AN ANTHROPOMETRIC STUDY OF THE CORRELATION BETWEEN LOWER LIMB LENGTH AND FOOT LENGTH IN RELATION TO SEX AND AGE

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Keywords. Anthropometry; Lower limb length; Foot length

Objectives. Studies have shown that there are significant correlations within the lower limb parts. However, there is a paucity of data regarding the relationship between the length of the lower limb and foot length that could evaluate demographically specific variations to enhance understanding of body proportions. This study aimed to examine the relationship between lower limb length and foot length with respect to such demographic factors as sex and age.

Materials and methods. Investigation was conducted in Latvia, with periodic data collection occurring from July 22nd to October 24th, 2024. The sample population comprised 690 individuals, with 275 males and 405 females aged 1-99 years old. Measurements were done using anthropometers in units of milimeters. Data of 678 participants was divided into eight groups based on sex and age. Study was approved by the Research Ethics Committee.

Results. All eight groups demonstrated statistically significant correlations ($p < 0,001$). Both males and females showed the strongest correlations (respectively, r=0,961, r=0,902) in the <15 years age group. For both sexes, correlation weakened in the group of age 15–40 years (males r=0,534, females r=0,684). Correlation is the weakest for both sexes in the 40–65 years age group, with males showing r=0,529 and females r=0,638. In the 65+ years age group, correlation coefficients were r=0,674 for males and r=0,666 for females.

Conclusions. Strongest correlation in the youngest age group (<15 years) for both sexes might reflect proportional growth patterns during development. In midlife, the correlation weakens, possibly due to variations in body proportions that are influenced by lifestyle and/or environmental factors. In older age as growth stabilizes and aging-related changes occur, the relationship between lower limb length and foot length becomes more consistent. Study should be continued for further exploration of the factors influencing correlation.

FOCUSING ON ASYMMETRY AND SKELETAL PAIN: A COMPARISON OF FOOT AND LEG LENGTHS

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Keywords. Asymmetry differences; Pain; No-pain; Foot; Leg length

Objectives. This study aimed to identify and evaluate the differences in the lengths of the right, left foot and leg by categorizing participants into groups based on the presence or absence of skeletal pain and comparing these variabilities between sexes.

Materials and methods. In 2024, a study was conducted involving 690 participants from the Piebalga region of Latvia, aged 1 to 99 years. Measurements of both the right and left foot and leg lengths were collected. Descriptive analysis was employed to calculate the mean and standard deviation (SD), while the median and interquartile range (IQR) were used to describe not normally distributed data. For qualitative data, counts and percentages were calculated. The absolute differences between the right, left sides for both foot and leg lengths were determined and categorized into two groups: individuals with and those without skeletal pain. Data analysis was performed using IBM SPSS Statistics version 29.0.

Results. The average absolute difference in foot lengths was recorded at 3.20 ± 4.56 mm in the pain group and 2.96 ± 5.55 mm in the no-pain group. Concerning leg lengths, the mean absolute differences were 0.69 ± 0.98 cm for the pain group and 0.62 ± 3.16 cm for the no-pain group. Notably, the distribution of absolute differences in foot lengths was comparable between the two groups ($p = 0.379$) and exhibited consistency across various sexes ($p = 0.626$). Additionally, there was no significant correlation observed between the absolute differences in foot and leg lengths ($p = 0.667$).

Conclusions. No significant differences in foot length asymmetry were observed between individuals with pain and those without, nor were any disparities found between the sexes. This research can inform future studies by revealing intricate asymmetry patterns and encouraging the investigation of various supplementary factors.

EPOXY RESIN MASTERY: CRAFTING EDUCATIONAL MODELS WITH PRECISION

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Keywords. Epoxy resin; Vacuum; Organ preservation

Objectives. The study aims to review methods and associated challenges in achieving successful organ preservation using epoxy resin, as well as to establish a relationship between the volume of air in the organs and the required maximum quantity of epoxy resin for effective preservation.

Materials and methods. Specimens were rinsed under cold running water and immersed in a 95% ethanol solution for up to 30 days to disinfect and remove excess fat, ensuring no interference with epoxy resin hardening. Before casting in epoxy resin, the specimens were impregnated with glycerol under vacuum for an hour, followed by a 10-minute immersion in 95% ethanol to eliminate any residual glycerol. The epoxy resin was applied in multiple thin layers, with each being cured under vacuum to prevent air bubble formation and cracking. This meticulous layering process ensured a smooth and clear finish. After scaffold placement and epoxy resin pouring, the specimens were sanded and polished to ensure durability and optical clarity.

Results. The accepted theory posited that a significant amount of air was present within the organs. Additionally, it was crucial to properly remove fat tissue and excess glycerol to avoid leaving visible traces in the epoxy resin or causing it to soften. The use of vacuum techniques ensured that the epoxy resin penetrated deeply into the different tissues, providing structural integrity and preserving fine anatomical details. The final preserved specimens exhibited excellent optical clarity and durability, making them suitable for educational purposes. The method also allowed for the preservation of various organ sizes and types, demonstrating its versatility and effectiveness.

Conclusions. The varying air content in several specimens requires careful consideration of the appropriate volume of epoxy resin for each layer when creating educational models. Utilizing vacuum techniques and material refinement is essential to achieve high-quality results.

AGE-RELATED VARIATIONS IN THE ARM SPAN-TO-HEIGHT RATIO: A STATISTICAL ANALYSIS OF THE ACCORDANCE WITH THE 1:1 PROPORTION IN INDIVIDUALS AGED 60 TO 99 YEARS

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Keywords. Arm span-to-height ratio; Arm span; Height; Age

Objectives. Based on previous anthropological studies, the arm span-to-height ratio is used as an alternative when direct height measurement is not possible. However, studies indicate that the 1:1 ratio is not universally applicable. Evidence suggests that height decreases progressively with age, while arm span remains relatively stable, leading to an increasing disparity. Establishing statistical proof of this discrepancy is crucial for accurate height estimation in clinical settings, particularly for elderly individuals with conditions such as osteoporosis or spinal deformities. Understanding these changes is essential for forensic identification, nutritional assessments, and designing age-appropriate medical equipment and assistive devices. This study aimed to analyze the validity of the 1:1 arm span-to-height proportion in individuals aged 60 to 99.

Materials and methods. This study enrolled a total of 690 participants, including 205 adults aged 60 to 99 from an anthropological study of the Latvian population in Piebalga. Anthropometric measurements, including height (cm) and arm span (cm), were recorded in July and August 2024 using calibrated, professional-grade measuring instruments to ensure accuracy and reproducibility. Specifically, height and arm span were measured with a calibrated anthropometer. Data analysis was conducted in IBM SPSS software to evaluate the associations between variables.

Results. A statistically significant association was found using Spearman's correlation, indicating a weak positive correlation between age and the difference between arm span and height, $r_s(205)=.149$, $p < .033$. On average, arm span exceeded height by 5.53 cm (SD = 4.50 cm).

Conclusions. The results indicate a statistically significant trend showing that arm span tends to be longer than height in individuals aged 60 to 99. However, the relationship is not uniform across all cases, indicating interindividual variability in the degree of this disparity, despite an overall trend.

ASYMMETRY OF THE INFERIOR ANGLE OF THE SCAPULA AND SHOULDER HEIGHTS IN RELATION TO PAIN BY SEX

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Keywords. Inferior angle of the scapula height; Shoulder height; Asymmetry; Pain

Objectives. This study aimed to 1) assess the differences in the right and left inferior angles of the scapula and shoulder heights between sexes across various pain groups and 2) examine the correlation between the inferior angle of the scapula and shoulder heights.

Materials and methods. In July and August 2024, an anthropology expedition was conducted in Piebalga, Latvia, where anthropometric measurements were taken from 690 participants aged 1 to 99. Participants were divided into two groups based on their reported experience of upper-body skeletal pain: those who experienced pain and those who did not, for both sexes. Measurements were recorded using an anthropometer from the Swiss company "Siber-Hegner and Co." The data were analyzed using IBM SPSS Statistics version 29.0, and the Mann-Whitney U test was employed to identify differences between the two pain groups.

Results. Pain in the upper body was reported by 26.87% of individuals, while 73.13% experienced no pain. For men without pain, the average difference in the inferior angle of the scapula height was 0.80 ± 1.06 cm, compared to 0.92 ± 0.82 cm for those with pain. Among women who reported no pain, the average difference in the inferior angle of the scapula height was 0.69 ± 0.89 cm, whereas it was 0.66 ± 0.75 cm for those with pain. The differences in the inferior angles of the scapula height were not statistically significantly different between those with and without pain ($p=0.082$ for men and $p=0.271$ for women). Similar findings were observed for the shoulder height difference, with p-values of 0.221 for men and 0.380 for women.

Conclusions. Across pain groups, neither sex exhibited significant asymmetry in the inferior scapular angle and shoulder heights, irrespective of discomfort levels.

ANTHROPOMETRIC INVESTIGATION OF THE CORRELATION BETWEEN SPIROMETRY TEST RESULTS AND MEASUREMENTS OF THE PECTORAL GIRDLE REGION

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Keywords. Tiffeneau-Pinelli index; FEV1; FVC; Spirometry; Anthropometry

Objectives. The Tiffeneau-Pinelli index (FEV1/FVC) is determined by a spirometry test used to measure pulmonary function and aids in diagnosing obstructive pulmonary diseases. Body symmetry and size can affect pulmonary functioning, however obstructive lung diseases themselves can impact body position and structure as well. This study aims to determine and analyze the correlations between spirometry results and height, circumference, and symmetry measurements of body structures in the pectoral girdle region.

Materials and methods. A study with 667 participants aged 4 to 92 years old, was conducted in the span of two weeks, gathering data of each participant during a single day. Measurements of the pectoral girdle and chest region were taken, using an anthropometer and measuring tape. Spirometry was performed to determine forced expiratory volume (FEV1) and forced vital capacity (FVC).

Results. Data of 270 male and 397 female participants was analyzed. Factors significantly correlating ($p<0,001$) with a lower Tiffeneau-Pinelli index were age ($r=-0,436$; $p<0,001$), chest circumference ($r=-0,279$), shoulder ($r=-0,250$) and scapular ($r=-0,249$) height, shoulder circumference ($r=-0,240$), and height of the body ($r=-0,230$). Scapular elevation ($r=-0,122$; $p=0,002$) also showed a negative correlation with the Tiffeneau-Pinelli index. However, significant positive correlations ($p<0,001$) manifested between FEV1 and height ($r=0,775$), scapular elevation ($r=0,755$), shoulder ($r=0,740$) and scapular height ($r=0,719$), shoulder ($r=0,448$) and chest circumference ($r=0,366$). Similarly, significant positive correlations ($p<0,001$) presented between body ($r=0,801$) and shoulder height ($r=0,770$), scapular elevation ($r=0,761$) and height ($r=0,750$), shoulder ($r=0,491$) and chest circumference ($r=0,420$). A low negative correlation was determined between age and FEV1 ($r=-0,138$; $p<0,001$). No significant correlation presented between scapular or shoulder asymmetry with spirometry results.

Conclusions. There are significant correlations between body height, lung region circumference measurements and pulmonary functionality. However, spirometry test results also correlate with other factors, therefore more studies are needed to prove causality.

DETAILED ANALYSIS OF COURSE AND BRANCHING PATTERNS OF THE HUMAN AXILLARY ARTERY

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Keywords. Dissection; Axillary artery; Course; Branching patterns

Objectives. The objectives of this study were to determine the course of the human axillary artery and to provide a detailed description of the morphometric variations in the branches.

Materials and methods. During the dissection, human cadaveric specimens were prepared by making a longitudinal incision along the anterior aspect of the axilla. The skin, subcutaneous tissue, and fascia were carefully reflected to reveal the underlying structures. The axillary artery (AA) was identified and isolated from the surrounding tissues, tracing it from its origin to its termination. The branching patterns of the AA were categorized into three main types: Type I, characterized by the early division of the AA into its primary branches; Type II, characterized by a delayed division of the AA; and Type III, characterized by an atypical branching pattern. Additionally, key details were identified and documented at each stage of the dissection. The collected data were analyzed to determine the frequency and distribution of the different branching patterns and morphometric variations.

Results. The axillary artery originated from the subclavian artery at the lateral border of the first rib and extended to the inferior border of the teres major muscle, where it transited into the brachial artery. Throughout its course, the AA was divided into three parts by the pectoralis minor muscle. During the dissection of cadaveric axillae, several variations in the branches and patterns of the AA were noted. In some cases, the artery exhibited standard trunks, where two or more branches originated from a single trunk rather than separately. The origins of the branches varied, with some arising from unusual locations, differing in size and distribution.

Conclusions. The origins of the branches varied, and these findings provide a comprehensive understanding of the morphometric variations, which could have significant implications for surgical procedures involving the axillary region.

THE IMPACT OF SEDENTARY LIFESTYLE ON YOUTH WELL-BEING AND POSTURE. INCREASING PHYSICAL ACTIVITY AS A PREVENTION METHOD

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Keywords. Diary; Physical Activities; Well-being; Sedentary Lifestyle; 10000-Steps Challenge; Posture; Healthy Lifestyle

Objectives. A sedentary lifestyle is prevalent among young people today, driven by the use of technology in studies, work, and leisure. Prolonged sitting negatively affects health, causing back pain, posture disorders, fatigue, and stress. Research has shown that physical activity is one way to counteract these issues. Therefore, it is important to explore how physical activity can mitigate the negative effects of a sedentary lifestyle and improve young people's well-being. To investigate the impact of a sedentary lifestyle on the health and posture of youth.

Materials and methods. A survey (diary) was conducted to assess young people's time spent sitting, daily physical activity, and well-being. Their posture was evaluated in both the sagittal and frontal planes. Postural symmetry measurements were conducted at the Institute of Anatomy and Anthropology using certified instruments – an anthropometer for longitudinal parameters and a measuring tape for the back rhombus. A 10000-Steps Challenge was implemented for two weeks to assess its impact on well-being. The study involved 30 students (15 females, 15 males) from Riga Stradiņš University's Rehabilitation Faculty, aged 18-25. The reasearch took place from November to December 2024.

Results. 12 out of 30 participants showed moderate posture asymmetry in the frontal plane. 9 females and 4 males had symmetrical posture, while 1 female and 3 males exhibited asymmetry. In the sagittal plane, 19 participants had a rounded concave posture, 3 males had a rounded posture, 4 females had a concave posture, and 3 participants had normal posture. After the 10000-Step Challenge, 70% of participants reported improved well-being.

Conclusions. Postural measurements indicate that a sedentary lifestyle negatively affects young people's posture. Most participants had a rounded concave posture, suggesting prolonged sitting habits. Physical activities, such as the 10000-Step Challenge, can help improve well-being.

GENDER DIFFERENCES IN FOOT ANTHROPOMETRY: VARIATIONS IN LENGTH AND BREADTH

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Keywords. Anthropometry; Foot length; Foot breadth

Objectives. Foot anthropometry can vary significantly between men and women due to genetic and environmental factors. The study aimed to investigate the morphological differences in foot length and breadth between genders.

Materials and methods. Data was collected from July to August 2024 in Jaunpiebalga and Vecpiebalga Latvian regions as a part of a Repeated anthropological expedition in Piebalga. Measuring instruments – The Brannock Device (accuracy 0.1 mm) and small spreading caliper (accuracy 0.05 mm). Measurements: right-left foot length and breadth. Foot measurements were taken for barefoot subjects standing with weight equally distributed.

The median and interquartile range (IQR) were used to describe non-normally distributed data. Data analysis was performed using IBM SPSS Statistics 29.0.

Results. The study included women aged 1–99 years (n = 405, 59.65%) and men 2 – 91 years (n=274, 40.35%). The correct foot dimensions of the male participants were as follows: the length median was 270.00 mm (IQR 256.00-282.00), and the breadth median 103.00 mm (IQR 98.00-109.00). The left foot length median 270.00 mm (IQR 255.75-281.25), breadth median 103.50 mm (IQR 98.00-108.00). The right foot length median for females median 247.00 mm (IQR 238.00-255.00), breadth median 97.00 mm (IQR 92.00-102.00). The left foot length median 247.00 mm (IQR 238.00-255.00), breadth median 97.00 mm (IQR 92.00-101.00).

The difference in foot breadth (right vs. left): men showed more significant variability in foot breadth differences (mean 0.49 mm, SD 5.22) than women (mean 0.39 mm, SD 4.15), with maximum differences of 40.00 mm and 29.00 mm, respectively.

Conclusions. These findings suggest that men tend to have a slightly wider right foot, while women exhibit more symmetrical foot widths. These results underscore the biological differences in foot morphology between genders, which have important implications for ergonomic design, footwear development, and orthotic applications.

THE CORRELATION BETWEEN BRUGSCH INDEX, FEV1 AND CHRONIC LUNG DISEASE IN PIEBALGAS MUNCIPILITY POPULATION AGE GROUP 40 TO 60 YEARS OLD

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Keywords. Brugsch Index; Chronic lung disease; Forced Expiratory volume

Objectives. The Brugsch Index (BI) and Forced Expiratory Volume (FEV1) is used to assess potential health issues. This research aims to assess the correlation between BI, FEV1 and chronic lung diseases among the population of Piebalga municipality in the age group 40-60 years old.

Materials and methods. A cross-sectional study was carried out to identify correlation between BI, chronic lung diseases and FEV1 results among population of Piebalgas municipality. The study was conducted from July to August 2024 in Vecpiebalga and Jaunpiebalga, Latvia. The participants signed a consent form prior to participating in the study. The participants answered a survey, body measurments were collected by using anthropometry and spirometer. The BI was calculated by dividing chest circumference (cm) by body length (cm) and multiplying by 100. The data gathered were analyzed using IBM SPSS 29.0.

Results. The study evaluated 690 residents of Piebalga municipality. In age group 40-60 were 35,51% (245) participants, from which 63,27% (155) were women and 37.5% (90) men. Mean age was 51.70 (range 40-60 years). 29,40% (12) have had chronic pulmanory disease in their lifetime at the time of study. FEV1 in participants with pulmonary disease and without is not significantly different ($t(253)=0,71$, $p=0,24$). BI in the same groups is not significantly different ($t(253)=-1,08$, $p=0,30$). There is moderate positive correlation between FEV1 and BI $r(243)=0,41$; $p=<0,001$.

Conclusions. There is a positive correlation between FEV1 and BI. There is not statisticly signifficant difference in FEV1 and BI between group with chronic pulmonary disease and without in residents of Piebalgas municipality. The impact of chronic pulmonary disease should be determined with larger sample size of group with chronic pulmonary disease.

ANALYSIS OF POST-TRANSCRIPTIONAL MODIFICATIONS OF GNAS GENE IN A PATIENT WITH GNAS GENE VUS AND ITS ASSOCIATION WITH PHENOTYPE

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Keywords. GNAS gene; Variant of uncertain significance; Dystonia; Post-transcriptional modifications; Phenotype; Imprinting; Protein analysis

Objectives. The GNAS gene is a complex locus involved in multiple physiological processes through its various transcripts and imprinting effects. It encodes proteins such as the Gsα subunit, crucial for G protein-coupled signalling pathways. Variants of uncertain significance (VUS) in the GNAS gene can result in diverse phenotypic presentations, posing diagnostic challenges. The patient first experienced short episodes of dystonia 3 to 4 times a day at 8 months old. Eventually, whole exome sequencing (WES) proved VUS in the GNAS gene. This study aimed to explore the pathogenic mechanism of a specific GNAS gene VUS and assess its potential impact on the patient's phenotype.

Materials and methods. From genetic testing, the proband underwent WES using next-generation sequencing technology. Familial genetic testing was performed to trace inheritance patterns and understand the segregation of variants in the family. Other tests included physical examination and neurological assessment, and the patient underwent imaging studies, including electroencephalography and magnetic resonance imaging, to exclude epilepsy and identify structural brain anomalies.

Results. The patient exhibited dystonia episodes and delayed development milestones. A GNAS gene variant, NM_080425.4:c.158del p.(Pro53ArgfsTer637), was identified and inherited from the asymptomatic father. Protein analysis revealed altered post-transcriptional modifications affecting the stability and function of the GNAS-encoded proteins. Literature review indicated this gene's association with pseudopseudohypoparathyroidism and other imprinting-related disorders, but the variant's significance is uncertain.

Conclusions. This case highlights the complexity of diagnosing and understanding GNAS gene VUS. The protein analysis findings reinforce the importance of post-transcriptional modifications in GNAS-related disorders. Further research is essential to elucidate the clinical significance of this variant and to guide individualized patient management strategies. Genetic methylation testing and functional research should be done, along with regular patient monitoring and follow-ups.

INCIDENCE AND PROGNOSTIC PARAMETERS OF COLORECTAL CANCER

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Keywords. Colorectal carcinoma; Metastasis; pT3 stage; Colon; Rectum

Objectives. Colorectal carcinoma (CRC) represents a malignant tumor that arises from the epithelial cells of the colon mucosa, manifesting a complex clinical, histological, and molecular heterogeneity that complicates its prognosis and treatment. The current gold standard for diagnosing CRC is the pathohistological examination of colon and rectum samples. The aim of this study is to determine the association between histological types of CRC and tumor localization, the relationship between pathological T3 stage and patient age, as well as nodal status. The difference in the incidence of metastatic forms of this tumor in the period from 2021 to 2023 was also examined.

Materials and methods. The study included all adult patients who were diagnosed with colorectal carcinoma by pathohistological examination during the period from 2021 to 2023.

Results. Data on 280 adult patients were processed. NOS adenocarcinomas were significantly more present in the sigmoid colon and rectum, while mucinous were significantly more prevalent in the cecum and transverse colon. No significant difference was found in the incidence of pT3 stage between younger and older patients in the examined cohort, nor an association between pT3 stage and nodal status. The incidence of metastatic changes in patients with CRC did not significantly differ in the examined years.

Conclusions. In this study, the lack of association between the degree of infiltration and extent of the tumor leads us to conclude that the pathophysiology of colorectal carcinoma still remains unknown, and it is presumed that immunological factors play a significant role.

CASE REPORTS, CASE REPORT SERIES

NEUROLOGY, PSYCHIATRY, PSYCHOTHERAPY, PSYCHOSOMATICS

STIFF PERSON SYNDROME - CASE REPORT

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Keywords. Stiff-person syndrome; Anti-GAD antibodies; Intravenous immunoglobulin; Muscle relaxants

Introduction. Stiff-person syndrome (SPS) is a rare autoimmune disorder, which occurs in only one or two cases per million. It is characterized by simultaneous muscle contraction, resulting in stiffness. Currently, for patients with SPS, who experience persistent symptoms despite conventional treatment with muscle relaxants, the preferred treatment is intravenous immunoglobulin (IVIG).

Case description. A 29-year-old woman has had progressive leg and trunk spasticity with sudden backward falls without loss of consciousness since 2009. A 2009 CT scan and 2011 MRI showed no brain or cervical spine pathology. On 2011.04.05, anti-GAD antibodies were found to be elevated at 86.6 kU/l (normal range 0-1 kU/l). The patient received outpatient and inpatient treatment at the Neurology Department of LSMUL KK. After diagnosing SPS, the patient was prescribed diazepam, alprazolam, baclofen, carbamazepine, and mirtazapine, but the symptoms kept progressing. She underwent several courses of plasmapheresis and high-dose methylprednisolone pulse therapy with little to no effect. Since 2016, she has been treated with intravenous immunoglobulin and oral medications, with ongoing adjustments to the dosage and frequency over the past 8 years based on her condition. A marked reduction in spasticity was noted with more frequent IVIG administration in 2024. This allowed the patient to walk independently with occasional support.

Summary. This case presents the therapeutic benefits of IVIG for SPS treatment, especially in patients for whom the conventional treatment methods are ineffective. IVIG therapy led to significant improvements in muscle spasticity, emphasizing the potential of IVIG as a primary treatment for severe SPS cases.

Conclusion. There is an increasing need for an individualized approach to SPS, and the IVIG is a promising therapeutic strategy for treatment-resistant SPS.

PERIMESENCEPHALIC SUBARACHNOID HEMORRHAGE: AN UNUSUAL PRESENTATION WITH SELF-LIMITED BLEEDING AND NEGATIVE ANGIOGRAPHY

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Keywords. Subarachnoid hemorrhage; Perimesencephalic SAH; DSA-negative bleeding; Severe headache; Non-aneurysmal hemorrhage

Introduction. Perimesencephalic subarachnoid hemorrhage (PMSAH) is a rare subtype of SAH characterized by venous bleeding localized around the midbrain. It presents distinct clinical and radiological features, differing from aneurysmal SAH, and is usually self-limiting.

Case Description. A middle-aged female presented to the emergency department with a characteristic thunderclap headache in occipital area which radiated to the back of the neck - uncharacteristic location to conventional SAH. Neurological examination revealed severe nuchal rigidity and horizontal left-sided nystagmus. A non-contrast computed tomography (CT) scan revealed subarachnoid hemorrhage localized to the perimesencephalic cisterns. Despite suspicion of vascular pathology, digital subtraction angiography (DSA) showed no evidence of active bleeding or aneurysm. The patient remained hemodynamically stable throughout hospitalization with no additional neurological deficits. The patient was discharged in good condition and Subsequent imaging after 2 months showed resolution of hemorrhage and no radiological signs of others pathologies following this incident

Summary. This case highlights the uncommon occurrence of perimesencephalic SAH with atypical presentation and no detectable vascular lesion. The condition likely resulted from transient venous bleeding, which self-terminated, aligning with the benign prognosis associated with PMSAH.

Conclusions. Perimesencephalic SAH should be recognized as a distinct clinical entity. Although it may present with alarming symptoms, the absence of aneurysm and spontaneous resolution differentiates it from classic SAH, reducing the need for invasive interventions. Proper diagnosis and management ensure favorable outcomes.

ENCEPHALODUROARTERIOSYNANGIOSIS (EDAS) FOR THE TREATMENT OF CHILDHOOD MOYAMOYA DISEASE: A CASE REPORT

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Keywords. Encephaloduroarteriosynangiosis; Indirect revascularization; Middle cerebral arteries; Rare cerebrovascular disorder; Moyamoya disease

Introduction. Moyamoya disease is a rare cerebrovascular disorder of unknown etiology characterized by progressive stenosis of the distal internal carotid arteries and their proximal branches within the circle of Willis. This vaso-occlusive condition leads to the development of fragile collateral networks to compensate for impaired cerebral perfusion.

Case description. A 7-year-old patient presented with a 1-1.5 week history of clumsiness, tremors, and involuntary movements affecting the right arm and leg, accompanied by limping and diminished use of the right hand. Morning headaches, localized bilaterally to the forehead, had been present for a month. Neurological examination showed choreoathetosis-type movements in the right extremities. MRI indicated non-specific foci in the temporal lobe, with suspicion of bilaterally cytotoxic edema in the mesencephalon. MR angiography demonstrated significant stenosis in the M1 segments of the middle cerebral arteries bilaterally, replaced by collateral networks, and supraclinoid narrowing of the internal carotid arteries. According to MRA findings, Moyamoya disease was diagnosed. The patient underwent indirect surgical revascularization via encephaloduroarteriosynangiosis on the right hemisphere. Postoperative period was uneventful, and surgery for the contralateral hemisphere was planned.

Summary. This case highlights the clinical presentation, imaging findings, and management of Moyamoya disease in a pediatric patient diagnosed through MRI and MRA. Indirect surgical intervention was initiated, with long term expectation of enhanced or stable neurological function.

Conclusion. Moyamoya disease is a rare and potentially misdiagnosed condition that mimics other disorders such as migraine, vasculitis, or multiple sclerosis. The main diagnostic method for Moyamoya disease is cerebral angiography. The disease is incurable, surgical revascularization is an effective treatment to reduce morbidity and improve outcomes.

MYELIN OLIGODENDROCYTE GLYCOPROTEIN ANTIBODY-ASSOCIATED DISEASE MIMICKING NEUROMYELITIS OPTICA: A CASE REPORT

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Keywords. Neuroimmunology; CNS demyelinating diseases; MOG-IgG; MOGAD; Neuromyelitis optica

Introduction. Myelin oligodendrocyte glycoprotein-associated disease (MOGAD) is a new entity among autoimmune demyelinating diseases of the central nervous system (CNS). The disease encompasses a wide variety of clinical phenotypes, most commonly including optic neuritis, transverse myelitis, acute demyelinating encephalomyelitis, and cortical encephalitis. Diagnostic criteria were proposed in 2023 by the MOGAD International Panel, combining assessment of common clinical phenotypes, laboratory analysis, and MRI imaging.

Case description. A 61-year-old man with bilateral optic neuritis with MOG-IgG antibodies and a demyelinating lesion in the cervical spine was admitted for continuation of intravenous immunoglobulin (IVIG) therapy under the national health program. Symptoms began in 2019 with binocular visual disturbances including decreasing visual acuity in the left eye and worsening deterioration of vision quality in the right eye. Initially, the patient was classified as having neuromyelitis optica spectrum disorder (NMOSD) due to the lack of established diagnostic criteria for MOGAD. Despite initial improvement with corticosteroids, attempts to taper treatment led to worsening symptoms. Since initiating IVIG therapy in 2021, his neurological status has remained stable. MRI of the brain revealed extensive, confluent T2-weighted and FLAIR hyperintense lesions in the periventricular and juxtacortical white matter, without contrast enhancement. Cervical spine MRI showed a longitudinal demyelinating plaque at the C3-C5 levels, without enhancement. Serologic testing confirmed the presence of anti-MOG antibodies and oligoclonal bands, while anti-AQP4 antibodies were absent. Comorbidities included monoclonal IgG kappa gammopathy, restless legs syndrome, diabetes, and hypertension.

Summary. Given the clinical presentation, MOG-IgG antibodies, MRI features, and excluding other possible explanations, the patient was diagnosed with MOGAD, based on the recently proposed 2023 diagnostic criteria.

Conclusions. MOGAD shares similar clinical and MRI features with other demyelinating disorders, highlighting the importance of diagnostic vigilance and serologic testing for MOG-IgG antibodies.

FINEGOLDIA MAGNA AS A CAUSATIVE AGENT OF AN INTRASPINAL SUBDURAL ABSCESS IN A PEDIATRIC PATIENT

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Keywords. Clinical case report; Intraspinal subdural abscess; Dermal sinus; Subdural empyema; Infection; Pediatrics; *F.magna*

Introduction. Spinal subdural abscess (SSA) is a rare pathology in both adults and children. The most frequently described localization of SSA is the region of the thoraco-lumbar spine between the *dura* and the *arachnoid* mater. Most commonly, the infection responsible for SSA is caused by *S.aureus.* Spinal subdural abscess caused by *Finegoldia magna* in a child has not been previously described in the literature.

Case description. A 15 – month - old girl was taken to the Children's Clinical University Hospital with complaints of a fever lasting 10 days. Over the three days preceding the hospital visit, parents had the impression that the child had discomfort in the lumbar region of spine. During the objective examination, an erythema with a point – like skin defect was observed, localized to the lumbar – sacral region. Laboratory tests showed leukocytosis and elevated C-reactive protein levels. Ultrasonography showed a local accumulation of subdural fluid at the L1 – S1 level. MRI findings suggested abscess along the sinus, intradural empyema, and leptomeningitis. A smear from the liquor pus identified *Finegoldia magna.* The patient underwent resection of the dermal sinus, revision and started empiric therapy with Ceftriaxone, which was changed to Metronidazole in response to the smear results. The total duration of antibacterial therapy was 6 weeks.

Summary. SSA is a rare and treatable disease, but late treatment increases mortality risk. While *S. aureus* is the most common pathogen, this case shows that the causative agent might differ. Surgical drainage and targeted antibacterial therapy are crucial for a favourable outcome.

Conclusions. Patient's non-specific complaints can make the diagnosing of SSA difficult, therefore a combination of imaging and culture-based approaches is essential to begin appropriate therapy early and prevent irreversible pathological outcomes.

SUCCESSFUL ANTI-NMDA RECEPTOR ENCEPHALITIS TREATMENT WITH RITUXIMAB: CASE REPORT

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Keywords. Rituximab; Autoimmune encephalitis

Introduction. Autoimmune anti-N-methyl-D-aspartate (NMDA) receptor encephalitis is a rare progressive encephalopathy, caused by antibodies against NMDA receptors in neurons. The main pathogenetic treatment is immunotherapy. First-line medications include corticosteroids, intravenous immunoglobulin, and plasmapheresis. If response is inadequate, second-line treatment is needed. Rituximab, a chimeric monoclonal antibody targeting CD20+ B-cells, induces B-cell depletion and is used as the off-label second-line immunotherapy for anti-NMDAR encephalitis.

Case description. A 59-year-old woman presented with speech and memory impairment. Her contrast-enhanced MRI revealed leptomeningeal enhancement. In CSF, pleocytosis was seen (WBC 420 cells/mm^3). The presence of anti-NMDAR antibodies in CSF confirmed diagnosis of anti-NMDAR encephalitis. Intravenous high dose methylprednisolone was initiated. After 3 days, her condition deteriorated: she experienced focal seizure and was admitted to the ICU with GCS score 10 (E4V1M5), signs of catatonia, mutism, and autonomic dysfunction. In EEG, delta with overriding beta activity was detected. She received 10 plasma exchanges and high dose prednisolone orally daily. After a month, her condition remained severe with no changes in instrumental tests. It was decided to start second-line treatment with Rituximab. After the first dose of 1000 mg, her mental state slightly improved, she began to obey simple commands and speak. After the second dose, she was discharged from the hospital. In several months, her speech gradually recovered, she began to take care of herself and her social life. After a year, she had no neurological deficits and was not getting any medication.

Summary. This case demonstrates the effect of Rituximab in severe anti-NMDAR encephalitis with catatonia, mutism, and autonomic dysfunction.

Conclusions. Despite being off-label, Rituximab should be considered for patients with severe autoimmune encephalitis, who are resistant to high dose corticosteroids or plasmapheresis. It is especially effective in encephalitis associated with antibodies to neuronal cell surface antigens, such as anti-NMDAR.

A RARE CASE OF NEUROFIBROMATOSIS TYPE 2 ASSOCIATED MENINGIOMA: CASE REPORT

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Keywords. Neurofibromatosis; Atypical meningioma; Intracranial tumor

Introduction. Neurofibromatosis (NF) is a neurocutaneous syndrome characterized by tumor development in the central and peripheral nervous systems, along with involvement of the skin, bones, and visceral organs. The main subtypes are NF1 (~96% of cases), NF2 (~3%), and schwannomatosis (<1%). NF2, caused by mutations in the NF2 gene on chromosome 22, leads to merlin protein dysfunction. Merlin acts as a tumor suppressor gene, which is found in the Schwann cells. It is marked by bilateral vestibular schwannomas and predisposition to other tumors, including meningiomas and ependymomas. Clinical features include hearing loss, tinnitus, balance disturbances, and neuropathies. The symptoms of NF vary in severity, with some individuals remaining almost asymptomatic.

Case description. A 5-year-old male patient presented with a convulsive seizure and a history of frequent nausea over the past year. Family history revealed maternal neurofibromatosis. Emergency CT of the brain demonstrated significant mass effect, with subsequent MRI of the brain identifying an extra-axial tumor resembling a meningioma. The patient underwent subtotal resection and histopathological evaluation confirmed an atypical meningioma (WHO Grade II). Five months postoperatively, the patient experienced a second seizure episode. Imaging revealed residual tumor without progression, and he underwent a second craniotomy for complete resection. Postoperative MRI confirmed complete tumor removal. The patient recovered without complications.

Summary. This case underscores the radiological findings in a pediatric patient with a meningioma associated with NF2. The patient initially underwent a subtotal resection of the meningioma, followed by a complete resection of the residual tumor tissue.

Conclusions. The patient's presentation highlights the importance of considering underlying neoplastic conditions in cases of first-time seizures, particularly with a relevant family history. Since NF2 can present with multiple tumors over time, radiologic follow-up is vital for detecting recurrent or de novo tumor formations, enabling timely interventions.

CLINICAL APPLICATION OF ESTABLISHED ALGORITHMS FOR THE RECOGNITION AND MANAGEMENT OF TREATMENT-RESISTANT SCHIZOPHRENIA IN LATVIA: 20-MONTH PROGRESSION FROM INITIAL PSYCHIATRIC EVALUATION TO ELECTROCONVULSIVE THERAPY

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Keywords. Treatment-resistant schizophrenia; Early intervention; ECT

Introduction. Approximately 30% of schizophrenia patients fail to respond sufficiently to antipsychotic therapy, with 7% showing no improvement. Treatment-resistant schizophrenia (TRS) is marked by insufficient response, particularly to positive symptoms, evaluated using severity scales such as CGI-S and CGI-I. Effective treatment entails 20% baseline improvement.

Case description. A 37-year-old male was admitted to NPVC for the first time after being found naked on the street, unable to explain his behavior. Acute somatic pathology and substance use were ruled out. The patient exhibited disorganized thinking, diminished critical capacity, impaired logic, and focus on irrelevant signs. The untreated illness is estimated to last 4 years. Diagnosed with acute polymorphic psychotic disorder with schizophrenia symptoms, he was discharged with haloperidol, valproate, and clozapine therapy.

Five months later, the patient was readmitted, reporting commanding voices interfering with daily activities and urging suicide, culminating in a high-speed car collision. He was diagnosed with paranoid schizophrenia.

The patient received multidisciplinary care involving a psychiatrist, occupational therapist, clinical psychologist, dietitian, and art therapist, along with psychoeducation sessions. Despite ongoing treatment, including risperidone and clozapine therapy, his condition worsened. The patient reported persistent hallucinatory voices compelling him to pray, kneel, and refrain from eating or leaving the house. The voices issued threats of punishment, impairing functioning.

The patient completed an early intervention program, with a CGI-I score of 5, indicating worsening of his condition. As pharmacological treatment failed to yield progress, a medical council recommended modified electroconvulsive therapy.

Summary. The patient completed stages of the treatment algorithm for TRS, including psychoeducation, psychosocial interventions, pharmacological therapy. Despite clozapine therapy and augmentation strategies, his condition worsened, leading to the recommendation of mECT.

Conclusions. This case demonstrates clinical application of Latvia's standardized and regulated treatment algorithm for TRS, ensuring a systematic, evidence-based approach to patient management.

NEUROSYPHILIS: A DIAGNOSTIC JOURNEY THROUGH AN UNEXPECTED CASE

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Keywords. Neurosyphilis; Amyotrophic lateral sclerosis; Diagnostic challenge; Motor neuron disease; Syphilis

Introduction. Syphilis, caused by Treponema pallidum, can advance to neurosyphilis, which presents diverse central nervous system symptoms. Known as "the great imitator," neurosyphilis mimics many neurological disorders, complicating diagnosis. Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease marked by motor neuron degeneration, leading to muscle weakness and atrophy. The overlapping symptoms of neurosyphilis and ALS make differential diagnosis challenging, emphasizing the need for accurate identification.

Case description. A 46-year-old male with hypertension, diabetes mellitus, and spinal osteoarthritis presented with six months of progressive muscle weakness and gait disturbances. Comprehensive evaluations included a neurological examination, serological tests for syphilis (VDRL and TPHA), cerebrospinal fluid (CSF) analysis, neuroimaging (MRI of the brain and cervical spine, cranial CT scan), and electrophysiological studies (EMG and nerve conduction tests). Serological tests confirmed neurosyphilis, and the patient received intravenous penicillin G. Despite appropriate antibiotic therapy, he continued to experience persistent upper limb weakness, especially in the left arm, and developed dysphagia. Neuroimaging showed minor cortical atrophy and degenerative spinal changes without a structural cause for his symptoms. Electrophysiological studies revealed neurogenic changes consistent with motor neuron disease, including fasciculations and impaired nerve conduction in the upper limbs. These findings indicated that neurosyphilis was masking a concurrent diagnosis of ALS.

Summary. This case underscores the diagnostic difficulties when neurosyphilis coexists with other neurological conditions like ALS. Persistent and evolving symptoms despite syphilis treatment prompted further investigation, leading to the ALS diagnosis.

Conclusions. Clinicians should remain vigilant for additional or alternative diagnoses in patients with neurosyphilis, especially when atypical features are present or responses to treatment are inadequate. While clinical and serological tests can indicate complex neurological disorders, effective management relies on neuroimaging and electrophysiological studies. A multidisciplinary approach enhances diagnostic accuracy and improves patient outcomes.

A RAPID COGNITIVE AND MOTOR DECLINE: A CASE REPORT OF CREUTZFELDT-JAKOB DISEASE

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Keywords. Creutzfeldt-Jakob Disease; Prion disease; Neurodegeneration; MRI findings

Introduction. Creutzfeldt-Jakob Disease (CJD) is a rare, universally fatal neurodegenerative disorder caused by misfolded prion proteins. Sporadic CJD (sCJD), the most common form, presents with rapidly progressive dementia, motor dysfunction, and cerebellar ataxia. Currently, no effective treatment exists, and the average survival is approximately one year following symptom onset. This case underscores the diagnostic complexity and rapid progression of sCJD.

Case description. A 59-year-old male was admitted with a two-month history of progressive gait disturbances, dizziness, urinary incontinence, and cognitive changes, including slowed thinking, drowsiness, and speech disturbances. Neurological examination revealed myoclonus, ataxia, dysarthria and hyperreflexia. CSF analysis revealed elevated protein (0.69 g/L), with subsequent testing detecting 14-3-3 protein and Tau protein, strongly indicative of prion disease. Electroencephalography (EEG) demonstrated periodic sharp wave complexes. The brain MRI revealed restricted diffusion with low ADC values and hyperintensities on FLAIR sequences in the putamen, thalamus and caudate nucleus - classic sites of involvement in CJD. In comparison with an MRI obtained two weeks earlier, progression of cortical atrophy and deep gray matter involvement was evident. Additionally, widening of the cerebral sulci and ventriculomegaly were observed. The patient's neurological status deteriorated rapidly, with worsening cognitive function, verbal communication, and motor deficits despite supportive care, including parenteral nutrition, physiotherapy, and symptomatic treatment. Despite supportive care, the patient's condition deteriorated rapidly, leading to death within one month.

Summary. This case demonstrates the characteristic presentation and progression of CJD, including rapidly worsening cognitive and motor deficits. Diagnostic confirmation relied on MRI, CSF biomarkers, and EEG.

Conclusions. CJD remains a diagnostic challenge due to its rarity and varied presentation. Early recognition and diagnosis are crucial for effective patient care and family counseling. Ongoing research is needed to develop effective treatments for prion diseases.

CLINICAL PRESENTATION OF CONGENITAL CNS TUMOR IN A NEONATE: A CASE REPORT

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Keywords. Paediatric diffuse high-grade glioma

Introduction. Paediatric diffuse high-grade glioma (PDHGG) is a rare, aggressive central nervous system (CNS) tumor, commonly affecting the brainstem or cerebellum, leading to severe neurological deficits. Median overall survival varies from 14 to 44 months, depending on glioma subtype.

Case description. We report the case of a neonate girl born to a mother with long QT syndrome at 34 weeks of gestation. The pregnancy was complicated by antenatal polyhydramnios, hydropericardium, polyserositis, and ventriculomegaly, all diagnosed in the final week of gestation. After birth, severe apnoea and irregular breathing required mechanical ventilation. Neurosonography revealed a mass in the cerebellum, and MRI showed obstructive hydrocephalus with intraventricular – intracerebellar hemorrhage and brainstem herniation. The patient underwent two neurosurgical interventions, including ventriculostomy, ventricular access device implantation, and evacuation of an intracerebellar hematoma. Follow-up MRI revealed a diffuse brainstem lesion with extensive hemorrhage affecting the cerebellar peduncles. Infections and inherited coagulopathies were excluded. Clinically, the patient's condition remained critical, with progression of neurological deficits. She continued to experience episodes of desaturation and bradycardia, and passed away at 25 days of age. Post-mortem brain biopsy revealed PDHGG, RTK1 subtype, affecting the central and left sides of the cerebellum. Additionally, a potentially pathogenic heterozygous variant of the KCNH2 gene was identified, confirming a molecular diagnosis of long QT syndrome type 2.

Summary. This case describes a neonate with a rare PDHGG, diagnosed post-mortem and most likely classified as CNS WHO grade 4. Genetic testing revealed a potentially pathogenic KCNH2 gene variant.

Conclusions. Given the hereditary nature of the tumor and its complex presentation in a neonate, this case highlights diagnostic challenges and emphasizes the importance of a multidisciplinary approach. Understanding the clinical presentation of congenital CNS tumors may shorten diagnostic delays and ensure the provision of appropriate care for affected patients.

PROGRESSIVE SUPRANUCLEAR PALSY: A CHALLENGING DIFFERENTIAL DIAGNOSIS IN A CASE INITIALLY MISDIAGNOSED AS PARKINSON'S DISEASE

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Keywords. Progressive supranuclear palsy; Neurodegeneration; Tauopathy; Parkinsonism; Neurology

Introduction. Progressive supranuclear palsy (PSP) is a rare form of an atypical parkinsonism that affects movement, gait, balance, speech, swallowing, vision, ocular movements, mood, behaviour, and cognition. Due to its similarity to Parkinson's disease (PD), PSP frequently misdiagnosed, leading to delays in appropriate treatment.

Case description. 73-year-old women presented with progressive symptoms of balance disturbances, memory impairment, and depression, which began three years ago. 1,5 year later patient was diagnosed with PD, she initially was treated with Levodopa-Bensarazine, Amantadine, Sertraline. Neurological examination revealed bradylalia, hypomimia, bradykinesia, postural instability, and severe difficulty rising from a chair. Ocular findings included vertical gaze palsy, limited horizontal saccades, and the bilateral ''Round the Houses'' sign. Cranial MRI showed midbrain atrophy with a reduced midbrain-pontine ratio (''hummingbird'' sign) and the ''Mickey Mouse'' sign, confirming PSP. Dopaminergic transporter imaging with ^{123}I-DaTSCAN revealed asymmetric tracer uptake in the caudate nuclei, around striatum and no uptake in the putamen, further supporting the diagnosis of PSP over PD.

Summary. This case highlights a patient initially misdiagnosed with PD, disease progression and additional diagnostic findings led to a PSP diagnosis. Key features such as vertical gaze palsy, horizontal saccadic limitation, midbrain atrophy (''hummingbird'' and ''Mickey Mouse'' signs), and dopaminergic imaging abnormalities were supportive in distinguishing PSP from PD.

Conclusions. PSP and PD share overlapping symptoms like bradykinesia and gait disturbances, but PSP is characterized by prominent axial rigidity, vertical gaze palsy, and early postural instability. Accurate recognition of characteristic clinical signs and neuroimaging findings, including midbrain atrophy, can improve diagnostic accuracy and patient outcomes.

RARE CASE OF COMPLICATED INTRACRANIAL DERMOID CYST WITH ATYPICAL RADIOLOGIC FINDINGS

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Keywords. Intracranial dermoid cyst; Dermoid cyst rupture; Magnetic resonance imaging

Introduction. Intracranial dermoid cysts are very rare congenital benign cystic formations. The incidence of intracranial dermoid cysts is reported to be 0.04–0.7% of all intracranial tumours. When a cyst ruptures, its contents spread throughout the brain's subarachnoid and ventricular spaces. The presence of fat droplets in the subarachnoid space, brain sulci, and ventricles is the most reliable radiologic diagnostic sign of dermoid cyst rupture.

Case description. We report the case of a 32-year-old Caucasian male who presented to the hospital with a one-year history of headaches and visual impairment. A brain magnetic resonance imaging (MRI) revealed a ruptured intracranial dermoid cyst in the anterior fossa, resembling an epidermoid cyst. There were also fat droplets dispersed in the subarachnoid space and ventricular system, which is characteristic of a cyst rupture. Cyst dimensions were 4.6 × 4.0 × 2.5 cm. The patient underwent a subtotal surgical cyst resection. Postoperatively, there were no complications, and the patient's vision improved. The patient was monitored for two years after surgery, with MRIs performed at 4 months, 1 year, and 2 years of follow-up. All follow-up MRIs revealed residual tissue and fat-containing lesions, but no progression was seen.

Summary. This clinical case demonstrates the symptoms of an intracranial dermoid cyst rupture in the anterior fossa, which are characteristic of many other neurological diseases. MRI plays a crucial role in diagnosing this rare disease. Repeated MRI examinations over a prolonged period reveal persistent fat inclusions in the subarachnoid space.

Conclusions. Magnetic resonance imaging is essential for diagnosing intracranial dermoid cysts and selecting surgical strategies. Our MRI images demonstrate findings of dermoid cyst rupture, as well as variances. This case will add to the experience in radiological recognition of intracranial dermoid cysts.

BELL'S PALSY AFTER COVID-19 VACCINATION IN AN ELDERLY PATIENT: A CASE REPORT

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Keywords. Bell's Palsy; Covid-19; Covid-19 Vaccine

Introduction. Bell's palsy is a neuropathy of the cranial nerve that causes paresis or paralysis of the facial muscles. It results from inflammation or trauma to the 7th cranial nerve. Correct diagnosis and treatment are crucial, as Bell's palsy can lead to psychological and physical complications. The etiology is often unknown and considered idiopathic.

Case description. A 74-year-old woman presented to the ER complaining of throat, left cheek, ear (with deafness) and neck pain (VAS - 6), left-sided facial edema, ptosis, dizziness, and subfebrile fever. Two weeks earlier, she had received the second Pfizer COVID-19 vaccine and noticed facial swelling with transient left axillary lymphadenopathy. She had no history of trauma but had laryngopharyngitis and stomatitis treated with antibiotics 1 week prior. Nine months ago, she experienced several tick bites but was not tested for Lyme disease. Neurological examination revealed incomplete left eye closure, inability to fully raise the left eyebrow, and a smoothed nasolabial fold. Head CT and blood tests showed no acute pathology. She was diagnosed with left facial nerve neuropathy and treated with Prednisolone, Pentoxifylline, B vitamins, and NSAIDs. The ENT doctor diagnosed left cochlear neuritis, neurosensory impairment, and Bell's palsy. Despite treatment, the patient experienced irreversible hearing and balance impairments.

Summary. This case reports a rare side effect of the Covid-19 vaccine—Bell's palsy—which health professionals should be aware of. It underscores the importance of differential diagnosis and emphasizes the poor prognosis for full recovery from this condition.

Conclusions. Although Bell's palsy diagnosis is challenging and can only be confirmed after excluding other causes, identifying risk factors and potential causes is essential. It is also important to note that the symptoms are similar to those of a stroke, so stroke risk must first be excluded.

LISTERIA MONOCYTOGENES-INDUCED MENINGOENCEPHALOMYELITIS WITH "WORM-LIKE" BRAIN ABSCESS FOLLOWING DENTAL EXTRACTION: A CASE REPORT

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Keywords. Neurolisteriosis; Brain abscess; Meningoencephalomyelitis; Listeria Monocytogenes

Introduction. *Listeria monocytogenes*-induced brain abscess is a rare but critical medical condition, characterized by a high mortality rate if not promptly identified and managed. Neurolisteriosis primarily manifest as meningitis, while encephalitis and brain abscesses are rare, comprising 1–10% of cases.

Case description. A 52-year-old female was admitted to the emergency department with progressive dizziness, nausea, dysphagia, left-sided facial pain and numbness, impaired balance and coordination. Her clinical history revealed a dental extraction three weeks prior, during which antibiotic prophylaxis was declined. Patient's history includes Hodgkin's lymphoma in remission, immune-mediated necrotizing myopathy managed with azathioprine and methylprednisolone (causing immunosuppression), coronary artery disease with a prior myocardial infarction. Initial head and neck CT and angiography revealed no abnormalities. A subsequent head MRI revealed signal abnormalities in the midbrain, pons, left cerebellar hemisphere, medulla oblongata, left trigeminal nerve region, multiple foci with diffusion restriction and contrast ring enhancement - signs of rhombencephalitis with multiple small abscesses. Cerebrospinal fluid molecular analysis detected *Listeria monocytogenes*. These findings confirmed the diagnosis of Listeria monocytogenes-induced meningoencephalomyelitis with brain abscesses.

Summary. The case highlights that neurolisteriosis often presents with nonspecific clinical manifestations, posing challenges for early diagnosis. Distinctive MRI findings, including irregular, branching, worm-like tubular patterns with contrast ring enhancement, played a crucial role in guiding the diagnostic process.

Conclusions. Neurolisteriosis is frequently misdiagnosed due to its nonspecific clinical manifestations, such as confusion, headache, hemiparesis, and ataxia. Prompt imaging and the consideration of atypical pathogens in the differential diagnosis are essential for accurately diagnosing *Listeria monocytogenes* brain abscesses and improving patient outcomes. Acknowledging *Listeria monocytogenes* infection in individuals with compromised cell-mediated immunity is critical, as defense against *Listeria monocytogenes* relies mainly on cellular immunity. Furthermore, corticosteroid therapy should be considered a predisposing factor for the development of *Listeria monocytogenes* abscesses.

REFRACTORY AUTOIMMUNE ENCEPHALITIS ASSOCIATED WITH ANTI-AMPHIPHYSIN ANTIBODIES: A CASE REPORT

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Keywords. Anti-amphiphysin antibodies; Encephalitis; Autoimmune disorder

Introduction. Anti-amphiphysin antibody-associated encephalitis, a rare autoimmune disorder, is caused by an immune response against amphiphysin, a presynaptic intracellular protein. It is often linked to paraneoplastic syndromes, typically associated with an underlying malignancy with a poor prognosis.

Case Description. A 51-year-old woman presented with a two-month history of headaches and tinnitus. Three weeks before hospitalisation, she developed progressive behavioural changes, including speech disturbances, apathy, and disorientation, and six months before, she showed symptoms of depression, weight loss, and auditory hallucinations. Initial CSF analysis ruled out infectious causes, revealed mild protein elevation, and tested negative for autoimmune encephalitis antibodies. MRI revealed widespread lesions in the brainstem and cerebral hemispheres compatible with meningoencephalitis. Extensive additional tests were performed, which excluded infectious and neoplastic causes. Initial treatment with methylprednisolone and intravenous immunoglobulin resulted in short-term improvement. During hospitalization, she developed cervical dystonia and temporal epileptic discharges in EEG and experienced multiple complications - aspiration pneumonia, pulmonary embolisms, soft tissue infections, and critical illness polyneuropathy. Repeated CSF tests confirmed the presence of anti-amphiphysin antibodies, therefore rituximab treatment was added. The patient's condition deteriorated, and a follow-up brain MRI showed an increase in the number and size of infratentorial lesions. After four months of intensive treatment, being in critical condition she was transferred to palliative care. A follow-up visit after five months showed significant improvement - the patient was ambulant with cognitive improvement.

Summary. A 51-year-old woman with anti-amphiphysin autoimmune encephalitis experienced progressive disease and significant complications despite aggressive immunotherapy but showed clinical improvement in the long term despite poor prognosis.

Conclusions. This case underscores the importance of a multidisciplinary approach in managing severe complications of autoimmune encephalitis, particularly when no antibodies and malignancy are present. It also highlights the challenges of diagnosing and managing this condition.

MANAGEMENT OF ARTERIAL INJURY DURING MENINGIOMA RESECTION: A CASE REPORT

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Keywords. Meningioma; Shunt; External carotid artery

Introduction. Meningioma is the most common benign intracranial tumor, accounting for 13%–36% of all primary central nervous system neoplasms. The 90% of sphenoid wing meningiomas are classified as WHO grade 1 (benign), with less than 10% being grade 2 (atypical) or grade 3 (malignant). Surgical challenges are particularly pronounced in large or giant tumors, as they frequently involve or encase critical neurovascular structures.

Case description. A 65-year-old woman was admitted for a planned surgical resection of a right sphenoid wing meningioma. During the procedure, the right middle cerebral artery was injured due to the tumor's invasion of vascular structures. To restore cerebral blood flow, an anastomosis was performed between the right external carotid artery and the right middle cerebral artery. A segment of the right radial artery was utilized as a graft for the high-flow bypass. Following the surgery, thrombosis of the cervical carotid artery shunt occurred in the intensive care unit, leading to cerebral vasospasm. To restore blood flow, thrombectomy and stenting were performed.

Summary. This case highlights the need for careful surgical planning when addressing tumors near critical vascular structures. Rare complications, such as vascular injury, can occur unexpectedly, emphasizing the importance of prompt management and preparation.

Conclusions. Sphenoid wing meningiomas, although benign, pose significant surgical challenges due to their proximity to critical neurovascular structures. Even with gross total resection, recurrence rates remain high, with up to 60% in long-term follow-up, especially in tumors involving the cavernous sinus. Vascular encasement is common and many tumors are too attached to the vessels to separate safely. In such cases, the tumor should be shaved off, leaving a thin sheath to protect the vessel and minimize the risk of vascular injury, which can occur in up to 20% of cases.

A CASE REPORT OF PSYCHOSIS AS A MANIFESTATION OF LATE NEUROSYPHILIS WITH NEGATIVE RPR

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Keywords. Neurosyphilis; Psychosis; Cognitive impairment; Negative RPR

Introduction. Neurosyphilis is a severe complication of untreated syphilis, which is known for its ability to mimic psychiatric disorders and often complicating diagnosis. In the absence of classic symptoms or positive screening tests, the condition can progress undetected and can lead to irreversible damage.

Case Description. A 35-year-old woman presented with acute psychosis, which was characterized by paranoia, repetitive and confused speech, irritability, and social withdrawal. She used cryptic phrases, expressed unfounded fears, and showed erratic, protective behavior toward her children. Initially, diagnostic tests, including blood panels, RPR serology, and a head CT, showed no abnormalities. Despite treatment with antipsychotics, her symptoms progressed, with the emergence of cognitive impairment (MMSE score:15), confusion, fecal and urinary incontinence. The persistence of symptoms prompted further evaluation. Despite difficulties in obtaining a third MRI due to agitation, sedated imaging revealed cortical atrophy, predominantly in the frontal and temporal regions, along with leptomeningeal enhancement and white matter changes. These findings suggested the possibility of an underlying inflammatory or infectious process. It was decided to perform a lumbar puncture. Results showed elevated protein levels, pleocytosis, and positive VDRL test in the cerebrospinal fluid, which confirmed neurosyphilis diagnosis.

Summary. The patient was treated with intravenous penicillin G, which addressed the underlying infection, however, residual cognitive and behavioral deficits persisted. This report highlighted the diagnostic challenges associated with neurosyphilis, especially when initial tests fail to reveal abnormalities.

Conclusions. This case shows the importance to considerate organic causes in patients with unusual psychiatric symptoms that do not respond to standard therapies. A systematic approach which includes advanced imaging and CSF analysis is important to uncover hidden etiologies. Differentiation of psychiatric conditions in such cases requires caution because interventions, which are performed on time, can alter outcomes even if full recovery remains elusive.

REFRACTORY EPILEPSY WITH VNS-INDUCED COMPLICATIONS: BALANCING EFFICACY AND SAFETY IN NEUROMODULATION THERAPY - A CASE REPORT

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Keywords. Refractory epilepsy; Vagal nerve stimulation; Laryngeal electromyography

Introduction. Despite effective anti-epileptic drug (AED) therapy, roughly a third of epileptic patients endure refractory epilepsy (RE). Vagal Nerve Stimulation (VNS) to-date, remains to be the mainstay treatment for RE, as majority of RE patients aren't eligible for surgery and prefer less invasive interventions which pose a low likelihood of permanent neurological damage and mortality.

Case description. 24-year-old female presented with refractory focal idiopathic epilepsy with frequent epileptic seizures impaired consciousness and motor phenomena predominantly in the left limbs with transition to bilateral synchronous tonic-clonic seizures for 12 years. Despite treatment with Lamotrigine, Levetiracetam, Topiramate, Carbamazepine, Brivaracetam, seizures persist of similar frequency and intensity alongside AED-associated side effects of depression, insomnia, anorexia.
In April 2023, she became one of the first adult epilepsy patients in Latvia with a left-sided state-funded VNS device and subsequently her seizures became milder. VNS parameters were increased gradually from Normal 0.25mA, Autostimulation 0.25mA to Normal 0.25mA, Autostimulation 0.375mA inducing complications of dyspnea and voice alteration. Laryngeal electromyography (LEMG) revealed left-sided vocal cord paresis and synkinesis on the right side with increasing VNS stimulation parameters. The device was set back to low stimulation which is ineffective in seizure control. She underwent operative therapy stabilizing her left shoulder joint due to seizure-related recurrent shoulder joint dislocations and is currently on Clobazam and Levetiracetam for seizure control in the postoperative period. It's planned to start Epidiolex and discuss Deep Brain Stimulation.

Summary. This case demonstrates the challenges of managing RE, seizure-related complications and counterbalancing VNS efficacy and side effects of dyspnea and voice alteration assessed objectively using LEMG.

Conclusions. This case proposes adding surface LEMG to routine investigations in patients undergoing VNS to monitor side effects and educating patients about the challenges and possible adverse outcomes of novel advanced techniques.

A CASE OF EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS AND COL4A1 MUTATION

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Keywords. Eosinophilic Granulomatosis with Polyangiitis (EGPA); COL4A1 mutation; Eosinophilia; Young stroke

Introduction. Eosinophilic granulomatosis with polyangiitis (EGPA) is a vasculitis affecting small and medium-sized arteries, characterized by asthma, rhinitis, nasal polyps, and prominent eosinophilia. While peripheral nervous system involvement is common, central nervous system manifestations are rare. COL4A-associated brain small vessel disease is a rare genetic disorder characterized by fragile intracerebral vasculature. We present a case of EGPA in a patient with a pathogenic COL4A1 mutation.

Case description. A 47-year-old male presented with a month-long history of painful sensory disturbances in the legs and a progressive lower limb weakness, leading to severe leg paraparesis. The patient had 7 hospitalizations since the age of 16 due to recurrent focal neurological signs, including sensorimotor aphasia and hemiparesis. He also had a history of asthma, recurrent sinusitis, multiple nasal polyps surgeries, sensorineural hearing loss, and aphakia. A complete blood count revealed significant eosinophilia (40%). Spinal MRI showed no spinal cord pathology. Electroneurography revealed sensorimotor demyelinating polyneuropathy in the legs, subsequently spreading to the arms. A lumbar puncture showed no cytosis but an elevated protein level (0,776 g/l). Chest CT demonstrated mild bronchial inflammation, and nasal mucosa biopsy revealed inflammatory polyps with eosinophilic infiltration. Secondary causes of eosinophilia were excluded, confirming EGPA diagnosis. Head MRI revealed severe diffuse leukoencephalopathy, lacunar infarctions, and T2 hyperintense signal foci consistent with prior hemorrhages. Whole-exome sequencing identified a heterozygous pathogenic COL4A1 variant (NM_001845.6:c.2086G>A; p.Gly696Ser), leading to the diagnosis of COL4A1-associated small vessel disease.

Summary. This case highlights a possible overlap between EGPA and COL4A1-related ischemic and hemorrhagic brain lesions. It also underlines the diagnostic challenge of EGPA, particularly in the presence of a COL4A1 mutation.

Conclusions. A multidisciplinary approach is essential when managing patients with multi-organ involvement to enable the earlier diagnosis of rare diseases.

DELAYED SLEEP-WAKE PHASE DISORDER AND SOMNAMBULISM IN A YOUNG MALE PATIENT – CLINICAL CASE REPORT

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Keywords. Delayed sleep-wake phase disorder; Somnambulism; Sleepwalking; Insomnia; Polysomnography

Introduction. Delayed sleep-wake phase disorder (DSWPD) is the most common circadian rhythm disorder. Somnambulism, or sleepwalking is mostly benign sleep disorder where an individual walks during deep sleep. Inadequate treatment of one condition may worsen the other. These disorders are challenging to diagnose and manage, especially in combination.

Case description. A 24-year-old male presented with a lifelong history of insomnia and severe sleepwalking episodes. Symptoms improved temporarily during adolescence but worsened in his 20s. During his childhood, melatonin was administered shortly with no record of effectiveness. The patient reported difficulty falling asleep before 3:00 a.m., persistent fatigue despite adequate sleep duration (7-8 h), frequent episodes of sleepwalking (2-3 weekly). Patient had been consulted by multiple health-care professionals including psychiatrists and neurologists. Polysomnography (PSG) was recommended and performed at the age of 18, revealing fragmented sleep, microawakening index 10.1/hour, increased REM latency (122.5 min), reduced REM sleep (18.4%). Sleep efficiency was 91.46%. Light snoring was detected. No obstructive sleep apnea was noted. Sleep hygiene and cognitive behavioural therapy was encouraged. Due to an overwhelming university schedule and ineffectiveness of non-pharmacological approach, trazodone and zolpidem were initiated. The severity of insomnia slightly improved with trazodone, but somnambulism persisted. Sleep hygiene combined with pharmacological agents yielded limited improvement.

Summary. DSWPD and somnambulism are two distinct sleep disorders. This case report demonstrates young male patient with insomnia, sleepwalking, and limited improvement. Zolpidem may help with falling asleep, but may worsen somnambulism. In DSWPD, melatonin is the treatmen of choice. Accurate diagnostics are crucial for the best long-term outcome.

Conclusions. DSWD and somnambulism are challenging to diagnose and manage, especially in combination. Education about sleep disorders and accurate diagnostics are warranted for the best long-term outcome for the patient.

PREDICTORS OF POOR OUTCOME FOR PATIENTS WITH EUROPEAN SUBTYPE OF TICK-BORNE MENINGOENCEPHALITIS

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Keywords. Tick-borne meningoencephalitis; Cerebral edema; mRS

Introduction. Tick-borne encephalitis (TBE) is a viral infection caused by a flavivirus transmitted through tick bites. It typically follows a biphasic course, with the second phase manifesting as meningitis in 50%, meningoencephalitis in 40%, or meningoencephalomyelitis in 10%. Identifying prognostic factors in TBE meningoencephalitis is essential for improving clinical management and predicting outcomes.

Case Description. A retrospective study at Riga East Clinical University Hospital identified 12 meningoencephalitis cases from a cohort of 110 TBE patients (2019–2023). Clinical, laboratory, and radiological data were collected. Neurological status was assessed using the modified Rankin Scale (mRS) at discharge. Prognostic factors were analyzed using Spearman correlation and the Mann-Whitney U test ($p<0.05$ was significant).

Meningoencephalitis accounted for 11% of TBE cases. Patients ranged from 32 to 77-years-old (mean:50); 25% were female. At discharge, 8 patients had mRS 0-1, 2 had mRS 2, and 2 had mRS 3. Both mRS 3 patients had cerebral edema, one with immunodeficiency, and both had unstable gait at discharge. MRI showed encephalitic changes in 25% of cases. The highest CRP was 105mg/L (median: 20mg/L). Hyponatremia was found in 8 patients. CSF pleocytosis averaged 187cells/mm³. The mean hospitalization duration was 16 days, with 4 ICU admissions. No fatalities occurred. Cerebral edema was significantly associated with poor outcomes ($p=0.036$), while others variables did not approach significance, but higher CRP and glucose levels were closest to significance with $p=0.08$.

Summary. Among 110 TBE cases, meningoencephalitis was observed in 11%. The mean age was 50-years-old. No fatalities occurred. Cerebral edema was significantly associated with worse outcomes ($p=0.036$).

Conclusions. Meningoencephalitis is a severe form of TBE, occurring in 11% of cases. Cerebral edema was the only factor significantly linked to poor outcomes, suggesting its role as a prognostic marker. Identifying high-risk patients early may improve management and outcomes.

SUPRASELLAR ANEURYSM PRESENTING AS CAVERNOUS HEMANGIOMA CAUSED VISION IMPAIRMENT: A CASE REPORT

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Keywords. Suprasellar aneurysm; Thrombosis; Neuroimaging

Introduction. Large and thrombosed aneurysms can often be mistaken for a solid mass. Thrombotic intracranial aneurysms are related to worse prognosis and complicated treatment due to massive intra-aneurysmal thrombi and calcifications.

Case description. A 10-year-old child presented with progressive visual impairment that worsened over several months. Initially, the patient experienced blurred vision, especially in the peripheral visual field, and later developed headaches, usually localized to the forehead, which worsened during physical activity. The patient also endured episodic nausea and transient loss of consciousness.

Neurological examination revealed bitemporal hemianopsia but no other significant neurological deficits. Blood pressure and other vital signs were within normal limits.

An initial CT scan revealed a suprasellar mass with calcifications and hemorrhage. CT angiography was performed urgently and the mass did not show significant enhancement, no clear connection with adjacent arteries. In MRI (TW1, T2W FLAIR), a mass with signs of hemorrhage was detected. In MRA (3D TOF) and Digital subtraction angiography – no significant abnormalities were confirmed, however, the MRA result suggested an aneurysm or flow artifacts. As the mass affected the chiasm, the patient was hospitalized for further examination and surgical removal of the mass. It macroscopically resembled an AVM (cavernous hemangioma), but the pathological examination revealed that it was a thrombosed aneurysm compressing the surrounding structures.

After surgery, the patient's vision began to improve, although some impairment remained due to prolonged compression of the optic nerve junction.

Summary. We present a case of a thrombosed aneurysm resembling a tumor mass.

Conclusions. Early diagnosis is essential to detect aneurysms and thrombosis on time. Instrumental examinations allow accurate assessment of cerebral blood flow, and timely surgical intervention remains vital, as the complications related to pressure on the structures of the brain may be irreversible if the pressure lasts too long.

MYSTERIES OF THE BRAIN: TYPE III TUMEFACTIVE PERIVASCULAR SPACES AND THEIR CLINICAL IMPLICATIONS- A CASE SERIES

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Keywords. Perivascular spaces; Virchow-Robin spaces; Tumefactive perivascular spaces; Pulsatile tinnitus; Magnetic resonance imaging; Herpes zoster ophthalmicus

Introduction. Perivascular spaces (PVS) are small, fluid-filled cavities around small cerebral blood vessels. When PVS massively enlarge they are referred to as tumefactive PVS. Tumefactive PVS are rare findings in radiology, with only a few reported cases and they can mimic many other cystic-like pathologies in the brain, such as lacunar infarcts, neoplastic processes, benign cysts, multiple sclerosis, and parasitic infections.

Case description. We report two patients with multiple non-enhanching cerebrospinal fluid (CSF) intensity cystic lesions detected on magnetic resonance imaging (MRI) in the brain, without diffusion restriction, mass effect, CSF retention disorders or gliosis- a 46-year-old female with right-sided pulsatile tinnitus and lesions located in right thalamus and brain stem, and a 69-year-old female presenting with herpes zoster ophthalmicus and lesions in right thalamus. Given the localization and non-enhancement of the lesions, type III PVS (tumefactive PVS) are highly suspected. This type at a certain size can be symptomatic, thus dynamic control and repeated MRI are required, and neurosurgical treatment for these lesions is not indicated.

Summary. This case highlights that both- a 46-year-old female patient with pulsatile tinnitus and 69-year-old female patient with herpes zoster ophthalmicus got diagnosed with type III (tumefactive) PVS on brain MRI incidentally, when they presented with their main disease symptoms, emphasizing that these lesions with correct diagnosis should be dynamically monitored, and other interventions typically are not necessary.

Conclusions. The connection between tumefactive PVS and presenting symptoms still remains uncertain. It is important to exclude cystic-like pathologies that could mimic this radiological finding, in order to accurately establish the correct diagnosis to avoid unnecessary workup and treatment. Further research is needed, as well as education for physicians, particularly neuroradiologists, on the management of perivascular spaces.

NEUROCYSTICERCOSIS: ASSOCIATION WITH NEUROPSYCHIATRIC MANIFESTATIONS

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Keywords: Neurocysticercosis; Neuropsychiatry; Taenia solium; Latvia; Epilepsy

Introduction. Neurocysticercosis, the most common CNS parasitic infection per the National Institute of Health, affects 2.5 to 8.3 million people annually. It occurs when *Taenia solium* larval cysts develop in the CNS, often causing headaches, epilepsy, and focal neurological deficits.

Case Description. The study covers two cases in Latvia: one patient with chronic neurocysticercosis, diagnosed in 2000 with recurrences & re-admittances in 2012, 2013, and 2020 (Latvian Centre of Infectious Diseases), and another diagnosed in 2017 with a neurocysticercosis mimic, identified as an unspecified slow viral CNS infection (Riga East Clinical University Hospital).

i) Patient 1: Episode 2012

Neurological assessment: paresthesia in the fingers, right-sided hypoesthesia, right-sided movement disorders, and relative motor weakness in the right hand in comparison to the left. The EEG showed potential risk of future seizures. No psychiatric symptoms were noted.

ii) Patient 1: Episode 2013

Neurological assessment: facial muscle spasms, asymmetry of mouth, tremor of palpebrae muscles, dysarthria due to right-sided facial convulsions—secondary epilepsy

MRI revealed foci in vesicular & calcified stages in the subfrontal cortex bilaterally.

No psychiatric symptoms were noted.

iii) Patient 1: Episode 2020

Neurological assessment: dysarthria, disorganised speech when questioned, and right-sided weakness.

No psychiatric symptoms were noted.

iv) Patient 2: 2017

Post-head injury, the patient showed no major symptoms. CT and MRI revealed cystic formations, AV malformation, and possible neurocysticercosis. Serology and fecal tests ruled out active infection but showed markedly elevated IgG levels.

Summary. Patient 1 only experienced neurological symptoms in all 3 years while displaying no notable psychiatric manifestations. Patient 2 had no neuropsychiatry-related symptoms.

Conclusion. In the context of neuropsychiatry, our study concludes that there is a causative link between the neurological symptoms and neurocysticercosis but no link to psychiatric manifestations.

EFFECTIVE REHABILITATION APPROACHES IN THE MANAGEMENT OF RADICULOPATHY: A CASE REPORT

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Keywords. Neurology; Radiculopathy; Rehabilitology

Introduction. Lumbosacral radiculopathy is a pain syndrome characterized by the compression or irritation of nerve roots in the lumbosacral region of the spine. Although it is one of the most common neurological conditions in the world, there is no consensus regarding rehabilitation interventions for this condition.

Case description. A 55-year-old woman arrived at the emergency department due to persistent lower back pain. Symptoms started a week ago, pain was radiating to lower limbs, intensity was 6-8 points according to VAS. NSAIDs were ineffective. Additionally, patients reported numbness of lower extremities. Neurological examination revealed radicular type sensory disorder at L5, Lasegue test was positive in the left leg at 25 degrees and in the right leg at 60 degrees, Patellar reflexes were equal bilaterally, Achilles reflex was stronger in left leg compered to right, tension in paravertebral muscles and weaker dorsiflexion of the first toe of the left foot were noted. Strength of left leg distal muscles was 3,5 points. Pelvic X-ray and CT showed disc herniation at L3-L4, L4-L5, spinal canal stenosis at L4-L5 and osteochondrosis L5-S1. Patient was diagnosed with L5 radiculopathy and L4-S1 lumbopathy. Pharmacological treatment consisted of Diclofenac, Gabapentin, Bromazepam and Sertraline. Initially physiotherapy focused on reducing pain through repeated lumbar movements and careful spinal load management. Later treatment was supplemented by core strengthening exercises and transcutaneous electrical nerve stimulation (TENS). The patient showed significant improvement after four weeks of physical therapy, reporting minimal low back pain and increased lumbar range of motion, strength, and mobility.

Summary. This case highlights the importance of proper rehabilitation for patients who suffer from lumbosacral radiculopathy.

Conclusions. Receiving a diagnosis of radiculopathy can be unsettling, yet a perfect balance of exercise, manual therapy, and the appropriate amount of rest can make a real difference in patients' recovery.

HEMIPLEGIC MIGRAINE MIMICKING STROKE IN 16-YEAR-OLD FEMALE. A DIAGNOSTIC CHALLENGE

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Keywords. Headache; Hemiplegic migraine; Stroke mimics; Neurology

Introduction. Hemiplegic migraine (HM) is a rare subtype of migraine with aura, characterized by temporary motor weakness, typically presenting as unilateral paralysis during the aura phase.

Case description. A 16-year-old female was admitted to the Emergency Department due to sudden onset of headaches and tingling on the right side of the body. Objectively, the patient had moderate sensory-motor aphasia, right-side weakness, increased deep tendon reflexes and positive Babinski sign on the right side.

Head computed tomography scan was performed immediately, because patient arrived within the acute stroke reperfusion window. It revealed no pathological findings. To rule out ischemic lesion, magnetic resonance (MRI) was performed; it showed no lesion. Relatives deny use of narcotics or allergies, but report a positive history of migraine episodes since 2016 - none were as severe as this one. Her father experienced similar episodes of tingling on one side of the body during childhood. Once cerebral stroke was ruled out, a lumbar puncture was performed; no inflammation was observed. Head MRI revealed signs associated with HM – pronounced superficial veins in the left frontal, parietal and temporal lobes. MRI findings, clinical presentation and anamnesis confirmed the diagnosis of HM.

Summary. Experiencing severe aura symptoms required hospitalization. Excluding acute stroke was important. Neuroimaging findings can vary depending on timing with most scans being normal; sometimes a few changes like cortical swelling, venous dilation, cortical and meningeal enhancements are seen in contralateral hemisphere to hemiparesis. After 2 days of receiving symptomatic treatment patient was discharged without complaints.

Conclusion. HM is often misdiagnosed as a stroke. A detailed history with correct order of symptoms can help to differentiate; HM has a gradual onset with aura and motor weakness precedes headache. HM is the third most common stroke mimic responsible for 18% of incorrect thrombolytic treatments.

A CASE REPORT OF SUCCESSFUL PLANNED PREGNANCY IN A PATIENT WITH LATE DIAGNOSED ALPHA-MANNOSIDOSIS

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Keywords. Alpha-mannosidosis; Enzyme deficiency; *MAN2B1*; lysosomal storage disease

Introduction. Alpha-mannosidosis (AM) is a rare lysosomal storage disorder caused by a deficiency of the enzyme alpha-D-mannosidase, with an estimated prevalence of 1/500,000–1/1,000,000 live births. AM is a multisystemic disease.

Case description. The patient, a Latvian woman born in 1992. She presented with early CNS damage, delayed neural and speech development, bilateral sensorineural hearing loss, and dysmorphic features. At the age of 19, the patient's urine analysis revealed an altered oligosaccharide spectrum. Molecular testing revealed 2 pathogenic variants in the *MAN2B1* gene, which confirms the diagnosis of AM.

The patient has a mild disease phenotype. At the age of 22, the patient planned and successfully delivered a daughter. At this moment the patient lives with her boyfriend, mother and daughter. She is able to care for herself and her family, although she has mild intellectual disability. AM is a lifelong progressive disease. Over time, she developed progressive muscle weakness, arthralgia, fatigue, and apathy, which is atypical for AM. Currently, the patient has no treatment option with enzyme replacement therapy because it will not cross the blood-brain barrier.

Summary. The case report presents one of the four known patients in Latvia with alpha-mannosidosis, diagnosed late at the age of 19. It also highlights a successful planned pregnancy, broadening the understanding of the disease's clinical spectrum.

Conclusions. A delayed diagnosis of alpha mannosidosis with a mild form of the disease shows that the same patient is able to build a family with planned offspring. But in general, this multisystemic disease with slow progression, as well as pregnancy on a background of mild intellectual disability, are high risks of failure.

PSAMMOMATOID OSSIFYING FIBROMA OF THE FRONTAL SINUS INVOLVING THE SKULL BASE: A CASE REPORT

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Keywords. Neurosurgery; Psammomatoid ossifying fibroma; Frontal sinus tumor; Skull base reconstruction; Microvascular free flap

Introduction. Psammomatoid ossifying fibroma is a rare, benign fibro-osseous lesion characterized by gradually expanding, hypercellular fibrous tissue interspersed with varying degrees of ossification. Although most commonly arising in the paranasal sinuses, it can extend to the skull base, causing osseous remodeling and local compression without overt cortical bone destruction.

Case Description. A 28-year-old male presented with persistent frontal headache and nasal obstruction. Computed tomography and magnetic resonance imaging revealed a vascular lesion measuring approximately 2.4 × 3.2 cm in the right frontal sinus, extending 2.8 cm cranio-caudally, abutting the dura mater and involving adjacent ethmoid air cells. Although bone remodeling was noted, there was no frank destruction. Surgical management involved bifrontal craniotomy and endoscopic-assisted tumor resection. Intraoperatively, the lesion was well-demarcated, comprising bony and fibrous components, and was removed en bloc along with involved bone margins. Subsequently, a free anterolateral thigh (ALT) flap was microsurgically anastomosed to the superficial temporal vasculature to restore the cranial base integrity and separate the frontal sinus from intracranial structures. The pathological examination confirmed psammomatoid ossifying fibroma with characteristic psammoma-like calcifications, low mitotic activity, and reactive changes in adjacent bone. Postoperative recovery was uneventful, with resolution of symptoms and no evidence of residual or recurrent disease on follow-up imaging eight months later.

Summary. This case highlights the clinical presentation, radiological features, and surgical complexity of a psammomatoid ossifying fibroma involving the anterior skull base, as well as the utility of microvascular free flap reconstruction.

Conclusions. Timely recognition and radical resection of psammomatoid ossifying fibroma are essential to prevent intracranial extension and recurrence. Advanced microsurgical reconstructive techniques are crucial to ensure an adequate barrier between the sinonasal region and intracranial cavity while preserving functional and aesthetic outcomes.

INCIDENTAL FINDING OF CRANIOPHARYNGIOMA IN A 5-YEAR-OLD PATIENT: A CASE REPORT

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Keywords. Craniopharyngioma; Supraorbital Craniotomy; Adamantinomatous; Endoscopy-Assisted Tumor Resection

Introduction. Craniopharyngioma is a benign brain tumor that typically is localized in the sellar and parasellar regions. It is a rare tumor, accounting for only 1,2% to 4,6% of all intracranial brain tumors. Craniopharyngioma exhibits bimodal age distribution, with one of the incidence peaks occurring in the age group of 5-14 years. This brain tumor is often diagnosed late when it has grown significantly and already causes clinical symptoms. Treatment of craniopharyngioma is complex due to its proximity to critical anatomical structures, making complete tumor resection risky.

Case description. A 5-year-old patient presenting with a history of developmental language disorder was urgently admitted to Children's Clinical University Hospital after an ambulatory MRI showed cystic mass containing calcinates in the sellar-suprasellar region with impact on the left visual pathway. Following examination, there are no signs of clinical hormonal dysfunction, the patient's parent denies excessive urination and pronounced thirst, and fluid intake does not exceed 1,5L. Neurological examination was normal. Visual field tests couldn't be measured because of patient's lack of compliance. A left-sided lateral supraorbital craniotomy and cystic mass endoscopy-assisted resection were performed. The postoperative period was uneventful, patient showed no signs of hormonal dysfunction and was discharged 5 days after surgery. The pathohistological analysis confirmed the presence of WHO grade 1 adamantinomatous craniopharyngioma.

Summary. Patient with a long-lasting language disorder underwent an MRI, which revealed an incidental finding of cystic calcinated sellar-suprasellar mass. The patient underwent a minimally invasive craniotomy and an endoscopically assisted resection through the same craniotomy.

Conclusions. This case highlights the importance of early diagnostics and multidisciplinary management of craniopharyngiomas. Minimally invasive approach is feasible for better perioperative comfort and faster discharge. Despite the benign nature of the brain tumor, its anatomical location presents significant therapeutic challenges.

CRANIOPLASTY TASK TRAINER – TECHNICAL REPORT

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Keywords. Cranioplasty; Task trainer; 3D printing; Surgical simulation; Neurosurgical education; Healthcare simulations

Introduction. Clinical simulation is vital for safe, effective medical training, enabling skill development without risking patient safety. Cranioplasty, a procedure to repair cranial defects, requires precision and specialized tools. Access to commercial task trainers for cranioplasty workshops is often limited by high costs and logistical challenges. This project developed a cost-effective, reusable, and realistic cranioplasty task trainer for use in simulated environments with basic or real surgical tools.

Case Description. The cranioplasty task trainer consists of:

1. 3D-Printed Skull Model: Created using a public CT scan in 3D Slicer. It features common cranial defect sites paired with matching fragments for realistic repair simulations.
2. Silicone Base: Molded with 3D-printed plastic molds and hardened silicone for stability during procedures.
3. Cranial Fixation Components: 3D-printed replicas of AESCULAP Neuro Plating System, with small metal screws (D:1.6mm) sourced from electronics stores to mimic cranial screws.

Designs were modeled using Meshmixer and Onshape. Test models were printed on Zortrax M300 Dual (PLA, 10% infill) and Zortrax Inkspire (resin) printers. Neurosurgeons and students evaluated the trainers, confirming their utility for hands-on training.

Summary. This trainer enables realistic, low-cost cranioplasty training, enhancing skill acquisition, procedural accuracy, and trainee confidence. It supports workshops in clinical simulation environments, improving patient safety and education quality.

Conclusions. The cranioplasty task trainer is an accessible, affordable, and effective tool for neurosurgical education, compatible with standard equipment. Future efforts will focus on testing its utility across diverse settings and publishing its open-source design to encourage widespread use.

AN UNCOMMON CLINICAL PRESENTATION OF MENINGORADICULITIS CAUSED BY VARICELLA ZOSTER VIRUS

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Keywords. Meningoradiculitis;Varicella-Zostervirus; Polymorphous rash; Dermatome; Type II diabetes

Introduction. Meningoradiculitis is an inflammatory process affecting both the meninges and the nerve roots. In most cases specifically, meningoradiculitis is caused by *Borrelia burgdorferi*, which is called "Bannwarth Syndrome" and affects lumbar nerve roots. It can also be caused by other bacterial, viral, or fungal infections, for example, *Treponema pallidum* (neurosyphilis), *Mycobacterium tuberculosis*, Herpes Simplex virus, or it can be related to less common etiology, such as autoimmune or toxic. However, we present a rare case of unilateral meningoradiculitis caused by Varicella Zoster virus.

Varicella Zoster is an exclusively human neurotropic alpha herpesvirus, that primarily causes varicella (chickenpox) and herpes zoster (shingles). The virus becomes latent when the primary infection resolves and stays in patients' nerve ganglions. The dormant virus can also reactivate during adulthood, especially in immunocompromised individuals, causing secondary shingles and leading to various possible neurological clinical manifestations.

Case description. A 69-year-old female with a history of multimorbidity, including type II diabetes mellitus was admitted to the emergency department complaining of severe headache, neck pain, and earache. Neurological examination revealed allodynia and polymorphous rash on C5-C6 dermatomal distribution. According to clinical manifestation and laboratory results (elevated serum inflammatory markers, pleocytosis and elevated protein level in CSF and positive CSF RT-PCR test for V. Zoster virus), the patient was diagnosed with meningoradiculitis caused by V. Zoster virus and received treatment with intravenous Acyclovir.

Summary. This case highlights a rare presentation of Varicella-Zoster meningoradiculitis in a diabetic patient, emphasizing the need to consider diabetes as a potential risk factor for reactivation.

Conclusions. A thorough further investigation for potential underlying immunosuppression was performed and resulted negatively. Considering this fact, diabetes is considered to be a main predisposing factor for the development of this uncommon clinical picture.

CASE REPORTS, CASE REPORT SERIES

ONCOLOGY, HEMATOLOGY

(NOT) THE LAST OF US: MUCORMYCOSIS IN LEUKEMIA PATIENT. A CASE REPORT

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Keywords. Leukemia; Mucormycosis; Allogeneic HSCT

Introduction. Mucormycosis is a rare, yet serious angioinvasive fungal infection affecting immunocompromised patients. Mucormycosis is life threatening and timely diagnosis is principal.

Case description. A 37-year-old woman experienced four respiratory tract infections between September 2022 and January 2023. January 2023, she was diagnosed with severe anemia (Hgb 52 g/l) and 50% blasts in the blood, leading to her being admitted to the Hematology department. Here bone marrow cytology was consistent with acute myeloid leukemia. Peroxidase reaction was positive in blasts, but FLT3 ITD, TKD mutations, and TP53 were negative, no identifiable cytogenic abnormalities were detected. The patient began 7+3 induction chemotherapy, which was discontinued after five days due to fever, agranulocytosis, and increased CRP. Prophylactic treatment with ciprofloxacin, fluconazole, and acyclovir was initiated. On January 23, 2023, she developed febrile neutropenia, dyspnea, and abdominal pain. CT scans indicated lung, liver, and spleen lesions. Bronchoalveolar lavage identified *Enterococcus faecium* and *Stenotrophomonas maltophilia*. On February 14, 2023, the patient developed left hemiplegia, a cerebral CT revealed a mass in the right parietal area, raising suspicion of mucormycosis.

Summary. Intensive treatment was initiated, including liposomal amphotericin B and isavuconazole for fungal infection. She was treated in the ICU for several complications, including hypokalemia, hypotension, and fever. On March 9, 2023, a biopsy confirmed mucormycosis, on March 29, 2023 patient recovered, hemiplegia resolved. After consolidation chemotherapy with AraC in April and July, 2023 the patient proceeded to undergo allogeneic HSCT, with no significant complications, CD34+ chimerism increased to 99% by March 14, 2024, the patient is currently in remission with a good functional recovery.

Conclusions. The patient's treatment journey highlights the complex management of leukemia complicated by Mucormycosis and the successful outcome of allogeneic HSCT. The case shows the importance of early detection of fungal infections in immunocompromised patients.

LONG-TERM REMISSION AND SUCCESSFUL TREATMENT WITH OLAPARIB IN A BRCA1-POSITIVE OVARIAN CANCER PATIENT: A CASE REPORT AFTER 8 YEARS OF THERAPY

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Keywords. Olaparib; BRCA1 mutation; Ovarian cancer; Remission; Breast cancer

Introduction. The BRCA1 gene mutation is strongly associated with hereditary breast and ovarian cancers, increasing the risk of these malignancies. This case presents a patient with a medical history of both cancers. The advent of targeted cancer drugs, particularly poly (ADP-ribose) polymerase (PARP) inhibitors, has created new opportunities for achieving remission and enhancing survival outcomes in cancer patients with BRCA mutations, as demonstrated in this case with olaparib.

Case description. A patient with a BRCA1 mutation was initially diagnosed with stage I breast cancer in 2010, for which she underwent a unilateral mastectomy with adjuvant chemotherapy. In 2011, stage III C serous papillary adenocarcinoma of both ovaries were diagnosed. The treatment included total hysterectomy with bilateral salpingo-oophorectomy and carboplatin/paclitaxel chemotherapy. Following a 4 year remission, a pelvic recurrence necessitated extensive surgery and additional chemotherapy cycles. Due to the mutation and platinum-sensitive disease, the patient was initiated on olaparib maintenance therapy in 2016. This led to a prolonged remission with excellent tolerance and no significant side effects. Regular imaging and tumour marker evaluations confirm ongoing disease control, resulting in an 8-year remission.

Summary. This case report describes a patient with a BRCA1 mutation, diagnosed with breast and ovarian cancer. After therapy the patient had a pelvic recurrence, requiring further surgery and chemotherapy. Maintenance therapy included olaparib, which resulted in ongoing remission for 8 years.

Conclusions. The patient's remarkable eight-year remission, despite advanced disease and recurrence, far exceeds the progression-free survival seen in trials, accentuating the benefit of extended olaparib therapy. This case shows the potential of olaparib and paves the way for future research to refine patient selection, treatment approaches, ensuring sustained benefits with minimal risks. It offers renewed hope for patients, emphasizing the transformative impact of tailored therapies on long-term outcomes.

A CASE REPORT OF EXTRANODAL MARGINAL ZONE LYMPHOMA OF MUCOSA ASSOCIATED LYMPHOID TISSUE

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Keywords. MALT; Lymphoma

Introduction. Extranodal marginal zone lymphoma of mucosa associated lymphoid tissue (MALT lymphoma) is a slow-growing type of non-Hodgkin lymphoma that develops in the lymphoid tissue outside the lymph nodes. The purpose of our report is to present a rare case of MALT lymphoma that caused slow growing mass with bilateral involvement of salivary glands for the patient.

Case description. A 68-year-old man with Sjogren's syndrome applied to the hospital of Kauno klinikos due to constant increasing of the parotid salivary glands since 2015. During the examination, bilateral 10 cm enlargement of parotid glands were visible, hard and mobile on palpation. For further investigation, it was decided to perform a core needle biopsy under ultrasound control of the salivary gland due to a possible lymphoproliferative disease. After examining the tissue histologically, it was found that there is a diffuse type of infiltration with small lymphocytes with sparse cytoplasm and relatively large, slightly angular nuclei, which react positively with immunomarkers CD20, Bcl-2, Ki-67. After all, MALT lymphoma was diagnosed based on these findings. The patient continued to be treated in the Hematology department, where VI courses of chemotherapy according to the R-CHOP scheme were prescribed. Also, to assess the effectiveness of chemotherapy, a PET/CT scan was prescribed before and after treatment. Before the treatment, a lymphoproliferative process of moderate metabolic activity was observed in the salivary glands. After the treatment, compared to the previous PET/CT, the dynamics are positive, metabolically active salivary glands are no longer visible.

Summary. This case report demonstrates how thoroughly the parotid gland enlargement must be differentiated and that it can be associated with a serious condition – MALT lymphoma.

Conclusions. MALT lymphoma is a rare subtype of non-Hodgkin lymphoma, which can affect the salivary glands. It grows very slowly – often doesn't cause noticeable symptoms.

ACHIEVING COMPLETE HEMATOLOGICAL REMISSION AND SIGNIFICANT CLINICAL IMPROVEMENT IN SYSTEMIC AL AMYLOIDOSIS FOLLOWING HIGH DOSE CHEMOTHERAPY - A CLINICAL CASE REVIEW

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Keywords. AL amyloidosis; Systemic amyloidosis; Immunoglobulin light chains

Introduction. Systemic amyloid light chain (AL) amyloidosis is a rare and potentially life-threatening disorder characterized by the deposition of misfolded immunoglobulin light chains in multiple organs, including the heart, kidneys, liver and nervous system. High dose chemotherapy targets the underlying plasma c[1]ell dyscrasia, reducing the synthesis of amyloidogenic light chains and preventing further deposition of amyloid fibrils in the affected organs.

Case description. The following case is about a 46-year-old male who initially presented with dizziness and progressively worsening shortness of breath, which significantly impacted his quality of life. Holter monitoring revealed nonsustained paroxysms of ventricular tachycardia, while cardiac magnetic resonance imaging (MRI) showed typical amyloid related changes. Further blood serum analysis identified an Immunoglobulin G (IgG) lambda paraprotein, suggesting AL amyloidosis, which was later confirmed histologically. After the initiation of high-dose chemotherapy, the patient achieved complete hematological remission after two years, resulting in substantial clinical improvement, reduced symptoms and a notable improvement in cardiac biomarkers.

Summary. Systemic AL amyloidosis can significantly impair the function of vital organs, particularly the heart, where cardiac involvement often leads to arrhythmias, restrictive cardiomyopathy and heart failure. High dose chemotherapy targeting plasma cell abnormalities offers a promising therapeutic approach.

Conclusions. High dose chemotherapy can lead to complete hematological remission and notable clinical improvement in systemic AL amyloidosis. Early diagnosis and prompt treatment are crucial for improving patient outcomes.

1

UNEXPECTED FIND: FNH DETECTED INCIDENTALLY IN A YOUNG WOMAN SEEKING TREATMENT FOR URINARY TRACT INFECTION

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Keywords. Focal nodular hyperplasia; Benign liver tumor; Hepatic lesion

Introduction. Focal nodular hyperplasia (FNH) is a benign liver tumor with hyperplastic hepatocytes surrounding a central stellate scar, affecting 0.9% to 3% of the population. FNH is more common in women aged 20 to 50, suggesting a hormonal link, particularly with higher estrogen levels.

Case description. A 24-year-old woman consulted a urologist due to urinary tract infection symptoms, reporting frequent and painful urination for a week. The urogenital ultrasound showed no abnormalities, but an upper abdominal ultrasound revealed a 6 x 8 cm hyperechoic lesion in the left liver lobe.

Further evaluation by an abdominal surgeon included blood tests, revealing normal tumor markers (CEA 2.10 µg/l, alpha-fetoprotein 1.90 kU/l) and normal liver function. Abdominal CT with contrast confirmed a 7.5 x 6.3 x 7.4 cm lesion with arterial phase enhancement and a central stellate scar, consistent with FNH.

After 4 months, an abdominal magnetic resonance angiography was performed: Liver ~14.9 cm (CRP), larger right lobe; in the left liver lobe (S2/3), a well-defined, liver capsule-deforming mass, measuring approximately 7.6 x 6.0 x 7.7 cm. The mass displaces surrounding organs, compresses the left hepatic vein and portal branch without invasion, and remains unchanged in size. Uneven contrast in the S4 lobe suggests perfusion abnormalities. Other organs are unaffected.

Active surveillance was recommended, with follow-up MRI planned in six months. Surgical excision would be considered if enlargement occurs.

Summary. A 24-year-old woman was diagnosed with FNH, incidentally discovered during urinary symptom evaluation. Imaging revealed a liver lesion requiring monitoring due to its size and structural impact.

Conclusions. Most FNHs remain stable or regress, with spontaneous ruptures being rare. Surgery is typically performed for symptoms or unclear diagnosis suggesting malignancy. As most cases are asymptomatic, treatment is rarely required.

A CASE OF EWING SARCOMA AND BLADDER CANCER IN A YOUNG MAN: CHALLENGES OF A RARE TUMOR COMBINATION

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Keywords. Ewing sarcoma; Bladder cancer; Dual diagnosis; Rare malignancies

Introduction. Ewing sarcoma, a rare and aggressive malignancy, constitutes approximately 1% of childhood cancers, with an incidence of about 200 cases annually in the United States. The co-existence of Ewing sarcoma and bladder cancer is exceedingly rare, posing unique diagnostic and therapeutic challenges. This case report presents an extraordinary example of this dual diagnosis, emphasizing the critical need for further research into such complex conditions.

Case Description. A 20-year-old male patient was hospitalized for a planned procedure after a year-long history of progressive lumbar pain. Imaging revealed a tumor mass in the right lumbar spine with extradural extension, compression of the dural sac, and involvement of adjacent intervertebral foramina. Partial tumor resection was performed, and histopathology confirmed Ewing sarcoma. Lung metastases were identified and histologically confirmed during subsequent investigations. Further imaging revealed residual spinal tumor tissue and multiple non-hypermetabolic lung metastases. The patient underwent multiple courses of VDC-IE chemotherapy The patient received targeted radiation therapy and supportive treatment with Zometa. As an incidental finding on a control CT scan, bladder wall thickening was observed. Consequently, the patient was referred for cystoscopy, which revealed urothelial carcinoma. The patient underwent a TURB procedure, confirming it to be non-muscle invasive, and therefore, no additional therapy was required.The therapy was well-tolerated, and the patient continues under follow-up care.

Summary. This rare case illustrates the clinical complexity of managing a young patient with combination of Ewing sarcoma and bladder cancer. Despite the challenges of simultaneous malignancies, individualized multimodal treatment yielded favorable tolerance and disease control.

Conclusion. This report underscores the rarity and clinical significance of concurrent Ewing sarcoma and bladder cancer, advocating for increased awareness, tailored therapeutic strategies, and further research into dual malignancies to optimize patient outcomes.

THE USE OF DAYLIGHT PHOTODYNAMIC THERAPY IN PATIENT WITH FIELD ACTINIC KERATOSIS: A CASE REPORT OF 83-YEAR-OLD MALE

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Keywords. Photodynamic therapy; Actinic keratosis

Introduction. Actinic keratosis is a dermal lesion considered to be precursor of cutaneous squamous cell cancer. It is caused by proliferation of atypical epidermal keratinocytes and commonly found on repeatedly sun exposed areas in elderly patients. Prevalence for people over 80 years reaches 14.57 %. (Yaldiz, 2019). Photodynamic therapy is particularly useful in patients with numerous actinic keratosis. Up to 93% of face and scalp actinic keratosis can be cleared with topical photodynamic therapy. (Tarstedtet al.,2005)

Case description. An 83-year-old man was admitted to an appointment with a dermatologist by his general practitioner. Upon inspection, patient presented multiple erythematous macular lesions with white scales on face, forehead and scalp, ranging in diameter from a few millimeters to over a centimeter, with indistinct borders. Dermoscopically-lesions presented a “strawberry pattern” with “rosette”- structures. Actinic keratosis was diagnosed through clinical evaluation. Patient has a history of prostate cancer, atrial fibrillation, and type II diabetes. Daylight photodynamic therapy was selected as treatment considering patients comorbidities and size of affected field. Photosensitizing substance was applied to lesions and centimeter perilesionally. The substance is absorbed by abnormal keratinocytes which, upon light activation experience direct cytotoxicity. Once applied, patient was guided outdoors and exposed to daylight. After 3 hours patient was transferred indoors, treated area was cleaned, and patient was discharged. Three months post-treatment, patients skin is practically clean, containing some red, two millimeter large lesions.

Summary. This case report presents photodynamic therapy as treatment of actinic keratosis for 83-year-old patient. Treatment was selected due to patients comorbidities and the size of the affected field. Three months after treatment patients skin is practically clean, containing only some red lesions.

Conclusions. Daylight photodynamic therapy has shown great success in treating actinic keratosis. In patients case, most of the lesions resolved completely, leaving skin practically clean.

CASE REPORT OF A PATIENT WITH LEPTOMENINGEAL CARCINOMATOSIS IN HIGH MALIGNANCY UROTHELIAL CARCINOMA OF URINE BLADDER

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Keywords. Leptomeningeal carcinomatosis; Urothelial carcinoma; Urological cancer; Neurooncology; Case report

Introduction. Leptomeningeal carcinomatosis (LMC) is a very rare complication of the cancer. The occurrence of LMC associated with the uroepithelial cancer is less than 0.03 percent of all cancer cases.

Case description. The male patient over 50 years of age, came to the hospital with a complaint of hematuria, and after further evaluation was diagnosed with urothelial carcinoma of the urinary bladder. The patient received neoadjuvant chemotherapy prior to the radical cystectomy. The post-operative period (3 days) was satisfactory until the patient observed a worsening weakness and fatigue. The patient started to have clinical signs of ileus, which were treated with insertion of the nasogastric tube. The inflammation markers decreased in dynamics, but the somatic state of the patient continued to worsen over the next 9 days – contact with the patient became unproductive, so an urgent relaparotomy was performed with separation of post-operative adhesions of the distal ileum. Two days after surgery the patient became apathetic, opening the eyes only to the painful stimulus, with no verbal and motor response (Glasgow coma scale 4). Urgent head CT scan showed communicating hydrocephalus, but lumbar puncture cytology discovered malignant epithelial cells in cerebrospinal fluid. Despite treatment the patient succumbed to the disease ten days later.

Summary. The patient with urothelial carcinoma after neoadjuvant chemotherapy and radical cystectomy with post-operative ileus, later deteriorated with signs of hydrocephalus, was diagnosed with leptomeningeal carcinomatosis, and succumbed to the disease despite treatment.

Conclusions. At the moment there is no specific treatment for LMC and its connection to uroepithelial cancer is not sufficiently researched. More research should be conducted, and the medical community should be more aware of this rare cancer complication to increase patients' survival rates and quality of life.

CHALLENGING CASE: AMELANOTIC METASTASIS OF MELANOMA IN THE PALATINE TONSIL

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Keywords. Melanoma; Metastasis; Palatine tonsil

Introduction. Metastasis of melanoma in palatine tonsil is extremely rare, with less than 30 cases reported in world literature. The tonsillar metastasis manifests about one year after excision of primary tumor, which may be close or distant to oral cavity. In most of the cases described in literature, tonsillar metastasis suggests late-detected widespread melanoma. We present a case of metastasis in palatine tonsil caused by primary melanoma on trunk.

Case description. A 53-year-old woman consulted her dermatologist after spotting a bleeding naevus on her back. Excision biopsy revealed a low CSD (chronic sun damage) type melanoma (Clark IV, Breslow 10 mm, pT4bN1cM0 L+V-Pn-). The genotype of *BRAF V600E/E2/D* was found, and PD-1 inhibitor therapy was initiated. One year later, right-side axillar lymphadenopathy started to progress. With levels of S-100 rising significantly, therapy was changed to BRAF/MEK inhibitor. Another year later, a recurrent right-side axillar lymphadenopathy was found on a PET/CT scan. After lymphadenectomy, histological findings showed no residual metastasis. Three months later, the patient complained about mass in the left submandibular region. Also, an unclear growth in the left palatine tonsil was discovered, and a biopsy was performed. Immunohistochemistry indicated metastasis of amelanotic melanoma with high mitotic activity. Meanwhile, MRI revealed necrotic lymph nodes on the left side of neck, and contrast enhancement in left palatine tonsil. Currently, PD-1 therapy is ongoing.

Summary. This case demonstrates an aggressive melanoma with delayed metastasis in palatine tonsil after successful excision and BRAF inhibitor therapy.

Conclusion. Amelanotic melanoma metastasis in palatine tonsil is an extremely rare condition. This type of metastasis is associated with aggressive course of the tumor, supported also by amelanotic conversion, high mitotic rate and recurrent metastatic spread despite treatment with BRAF and PD-1 inhibitor.

CO-OCCURRENCE OF CHOLANGIOCARCINOMA AND LOBULAR CARCINOMA OF THE BREAST: A CASE STUDY OF DUAL MALIGNANCIES IN A SINGLE PATIENT

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Keywords. Dual malignancies; Cholangiocarcinoma; Lobular carcinoma

Introduction. When a patient is diagnosed with more than one pathological mass, it is important to differentiate metastasis from multiple primary malignancies. The incidence of multiple primary tumors, synchronous or metachronous, is from 2,4-17 %, with a tendency to increase.

Case description. A 57-year-old female received an abdominal ultrasound after exacerbation of symptoms such as epigastric and right upper quadrant pain, nausea, vomiting and heartburn that had been present for approximately a month. A left kidney Bosniak 2F cyst was detected, which was described as benign in the following CT, but also a malignant mass in the liver`s right lobe and hilar lymphadenopathy were detected. The patient was hospitalized. MRI confirmed a 6,3x4,6 cm malignant neoplasm, most likely a cholangiocarcinoma, with metastatic foci in 8th segment and peripheral intrahepatic bile duct dilation. MRI also revealed a left breast mass. A mammogram and ultrasound-guided core biopsy followed, it turned out to be a 2,7x1,9 cm grade 2 infiltrative lobular breast carcinoma. A diagnostic surgical biopsy from the hepatoduodenal ligament and a simultaneous therapeutic sectoral resection of the breast were performed. The biopsy confirmed Bismuth IV, T4N2M1(hepar), stage IV cholangiocarcinoma. Postoperatively, the patient underwent percutaneous transhepatic drainage and stenting due to acute cholangitis. Chemotherapy with Cisplatin and Gemcitabin was indicated as the cholangiocarcinoma treatment. Hormonal therapy with Tamoxifen was also indicated for the T2N0M0G2, stage IIA breast cancer. Currently, the treatment shows positive effects.

Summary. This case presents a patient with incidental findings of synchronous primary malignancies in the liver and breast, initially presenting with upper gastrointestinal tract symptoms.

Conclusions. When a patient presents with a suspected malignancy, a thorough whole-body examination must be performed, not only for metastasis detection, but also to assess for multiple primary malignancies.

FROM CEREBELLITIS TO LYMPHOMA: A CASE REPORT OF AN ATYPICAL PRESENTATION

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Keywords. Diffuse large B-cell lymphoma; Cerebellar hemisphere resection

Introduction. Diffuse large B-cell lymphoma (DLBCL) is an aggressive type of B-cell lymphoma and the most common subtype of non-Hodgkin lymphoma (NHL), accounting for about one-third of cases. Secondary CNS lymphoma occurs when DLBCL spreads to the CNS or relapses there during or after treatment. CNS relapse is observed in about 5% of DLBCL cases, usually within the first year after diagnosis. The median time to CNS involvement is around 5 months and can occur with or without active systemic lymphoma.

Case description. A 56-year-old patient with diffuse large B-cell lymphoma presented with recurrent episodes of loss of consciousness and progressive neurological decline, characterized by dizziness, gait instability, nausea, and anorexia. CT scan revealed diffuse cerebellar enlargement and brainstem compression. MRI findings suggested infectious cerebellitis and leptomeningitis/ meningoencephalitis. Urgent surgical intervention was performed, including external ventricular drainage and cerebritis debridement with decompression. Cerebrospinal fluid analysis by flow cytometry revealed 79% aberrant B lymphoid cells with a phenotype consistent with a chronic B-cell lymphoproliferative disorder, supporting the diagnosis of diffuse large B-cell lymphoma. Infectious causes were ruled out, and antibiotic therapy was discontinued. The patient began chemotherapy alongside supportive care.

Summary. This case highlights the importance of considering central nervous system involvement in diffuse large B-cell lymphoma, as it can present with symptoms mimicking infections.

Conclusions. Central nervous system (CNS) relapse in diffuse large B-cell lymphoma (DLBCL) is a rare complication, often linked to overall survival under 6 months. Several clinical and biological factors increase the risk of secondary CNS lymphoma (SCNSL). Identifying high-risk patients has gained attention for targeting prophylactic treatments. Risk stratification divides patients into low-, intermediate-, and high-risk groups, with high-risk patients having a ≥10% chance of CNS relapse.

WHEN RECIST CRITERIA MISLEAD: THE POWER OF TUMOR MARKER TRENDS IN PANCREATIC ADENOCARCINOMA MANAGEMENT

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Keywords. Pancreatic adenocarcinoma; Tumour markers

Introduction. Pancreatic cancer is an aggressive malignancy characterized by poor survival outcomes. Current guidelines recommend assessing treatment efficacy every 8–12 weeks using clinical status, imaging, and tumour markers. However, infrequent monitoring may overlook critical dynamics, leading to wrong treatment decisions.

Case description. A 70-year-old man presented with epigastric pain and fatigue. Initial imaging on 3 August 2023 identified a lesion in the pancreatic head with liver metastases. Therapy with the PAXG (cisplatin, nab-paclitaxel, capecitabine and gemcitabine) regimen commenced on 6 September 2023, with increased baseline tumour markers (CEA: 16.6 ng/mL; CA-125: 123 IU/mL). Follow-up CT scan on 15 November, after two cycles of chemotherapy, suggested disease progression per RECIST criteria, with CEA rising to 38.5 ng/mL and CA-125 reaching 132 IU/mL. According to guidelines, this combination of imaging and tumour marker changes would indicate a lack of treatment efficacy, warranting a change in therapy. However, a closer analysis of the tumour marker dynamics revealed a critical insight. Although the tumour markers initially rose during therapy, by late October 2023, their trajectory began to decline (CA-125: 9.10.2023. - 196 IU/mL, 23.10.2023. - 188 IU/mL, 15.11.2023. - 132 IU/mL; CEA: 9.10.2023. – 51.9 ng/mL, 23.10.2023. – 52.5 ng/mL, 15.11.2023. - 38.5 ng/mL). Isolated data points could have masked this emerging trend, leading to premature therapy changes. The PAXG treatment was continued. After six cycles, CT imaging demonstrated a partial response per RECIST criteria. The patient remained progression-free as of early 2025.

Summary. This case demonstrates that infrequent tumour marker monitoring can result in premature therapy changes.

Conclusion. Current guidelines may inadequately address the dynamic nature of pancreatic cancer progression and therapy response. This case underscores the need for more frequent tumour marker surveillance, attention to imaging timelines, and a nuanced approach to RECIST criteria.

ACQUIRED HEMOPHILIA: A RARE BLEEDING DISORDER WITH COMPLEX DIAGNOSTIC CHALLENGES- A CASE REPORT

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Keywords. Acquired hemophilia; Factor VIII inhibitors; Spontaneous bleeding; NovoSeven; Rituximab; Cyclophosphamide; Immunosuppressive therapy

Introduction. This case report highlights the clinical challenges and therapeutic strategies in managing a rare case of acquired hemophilia in a 65-year-old female. Acquired hemophilia, characterized by autoantibodies against coagulation factors, leads to spontaneous bleeding episodes and poses significant diagnostic and therapeutic challenges.

Case description. The patient presented on 26th June 2024 with bilateral hydrothorax, hemoglobin of 7 g/dL, and uncontrollable bleeding from a thoracostoma. Despite initial management, bleeding persisted, including increasing hemothorax and bleeding at the radial artery puncture site. A central venous catheter was inserted into the right femoral vein on 5th July, followed by extensive hematomas. Coagulogram tests revealed critically low factor VIII activity (0.9%) and elevated factor VIII inhibitors (55 BU). Initial treatment with NovoSeven (90 mcg/kg) was ineffective by 22nd July. Cyclophosphamide (2 mg/kg) and Desmopressin (10 mcg x 2) were added, but factor VIII inhibitors increased to 89 BU by 1st August. On 30th August, CT showed hemorrhagic content in the renal pelvis and renal parenchymal swelling, prompting the addition of Rituximab. Continuous monitoring and therapy adjustments led to cessation of bleeding by November 2024.

Summary. Initial therapies with NovoSeven were ineffective, prompting a shift to combination therapy with cyclophosphamide, Desmopressin, and Rituximab. Despite transient increases in factor VIII inhibitors (up to 89 BU), bleeding episodes gradually subsided. By 6th November 2024, the patient stabilized, with no further bleeding, and was discharged in improved condition.

Conclusions. Acquired hemophilia is a rare condition that occurs when the body develops antibodies against its own coagulation factors, leading to spontaneous bleeding episodes. Its diagnosis is often delayed due to the nonspecific nature of the symptoms, making early detection challenging. Acquired hemophilia remains a difficult condition to manage, requiring careful monitoring and individualized therapeutic approaches.

DIAGNOSIS OF A LIVER LYMPHANGIOMA USING CONTRAST-ENHANCED ULTRASONOGRAPHY (CEUS): SINGLE CASE REPORT

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Keywords. Contrast-enhanced ultrasonography; Liver lymphangioma; Benign liver lesions

Introduction. Solitary liver lymphangiomas are rare benign tumors of the lymphatic system and can easily be misdiagnosed. It is important to cognize radiological signs of lymphangioma especially in situations where histological examination cannot verify the specific type of the lesion.

Case description. A 65-year-old male with a history of left nephro-adrenalectomy due to clear renal cell carcinoma underwent a routine computed tomography scan with contrast media, which revealed several hypervascular lesions up to 1.5 cm in the right liver lobe. 3 years later, a follow-up scan revealed that lesions had increased in size, and were now up to 1.7 cm, thus the patient reported periodic abdominal pain for 9 months. Multiple follow-up imaging, fibrogastroscopy, and colonoscopy were performed to exclude differential diagnoses, and no clinically significant findings were found. A contrast-enhanced ultrasound with liver core biopsy was done. During the procedure, hypervascular foci were visualized close to the portal vein and liver arteries. Pathohistological findings after multiple lesion biopsies and immunohistochemical results suggested that focal liver lesions correspond to lymphangiomas without malignant nature.

Summary. Due to its rare appearance, the diagnostic and therapeutic strategy in lymphangioma cases is individualized. Further therapy is based on the severity of the clinical symptoms and can include lesion excision, supervision, and repeated follow-up scans.

Conclusion. This case emphasizes the importance of a goal-oriented diagnostic method use, interdisciplinary cooperation, and the time spent to reach a correct diagnosis. Contrast-enhanced ultrasound is a valuable diagnostic method for focal liver lesions when there is no certain histological verification of the lesion or no certain conclusion can be drawn from other imaging methods. Contrast-enhanced ultrasonography not only offers real-time perfusion data but also can be used for patients with allergy to contrast media and for patients with end-stage renal disease.

DIFFERENTIAL DIAGNOSIS OF RECTAL BLEEDING IN A 22-YEAR-OLD WOMAN – IS FAMILY HISTORY IMPORTANT?

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Keywords. Lynch syndrome; Colorectal cancer; Genetic testing; Cancer prevention

Introduction. Colorectal cancer (CRC) is common, but early-onset cases, particularly linked to hereditary syndromes, are rare. Lynch syndrome, caused by mutations in DNA mismatch repair (MMR) genes like MLH1, significantly increases early-onset CRC risk.

Case description. In September 2023, a 22-year-old woman presented with a six-month history of intermittent rectal bleeding post-defecation and positive fecal occult blood test, without additional symptoms. Colonoscopy performed on September 7 identified a 5x4 cm malignant lesion in the rectosigmoid junction. Biopsy confirmed invasive moderately differentiated adenocarcinoma (grade 2). CT imaging of the chest and abdomen showed no metastases. She underwent laparoscopic tumor resection on September 14, followed by six cycles of adjuvant chemotherapy with Oxaliplatin (150 mg). The tumor was staged as pT2N0M0 G2 R0 Lv- V- Pn+, consistent with stage IIA.

Her 48-year-old mother, asymptomatic and with no prior history, underwent a screening colonoscopy on November 1, 2023, following the daughter's diagnosis. A 2.5x2.5 cm tumor was detected in the ascending colon. Histological analysis revealed invasive moderately differentiated adenocarcinoma (grade 2). She underwent laparoscopic right hemicolectomy and hysterectomy with bilateral salpingo-oophorectomy. Tumor was staged as pT2N0M0 R0 L+ V- Pn-, corresponding to stage IB.

Genetic testing of both patients identified a pathogenic heterozygous MLH1 mutation (NM_000249.4 C.677g>A p.R226Q) Her 16-year-old brother underwent colonoscopy and a genetic screening as well but no abnormalities and no mutation was detected.

As of their most recent follow-ups—January 2025 for the daughter and August 2024 for the mother—neither has evidence of recurrence.

Summary. This case illustrates the role of genetic testing in early-onset colorectal cancer. A 22-year-old with rectosigmoid adenocarcinoma was diagnosed with Lynch syndrome due to an *MLH1* mutation, shared by her mother.

Conclusions. Genetic testing for Lynch syndrome is crucial in early-onset colorectal cancer. Early diagnosis enables preventive measures and appropriate management, ensuring better outcomes for affected individuals and their families.

RARE CASE OF SPINAL CHORDOMA IN A 60-YEAR-OLD MALE: CASE REPORT

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Keywords. Conventional chordoma; Spinal biopsy; Spinal oncology

Introduction. Spinal chordomas are rare, slow-growing tumors originating from notochordal remnants in the spine. While most chordomas occur in the sacrococcygeal and cranial regions, they can also involve the spine, presenting diagnostic and therapeutic challenges. Few similar cases have been reported in the literature.

Case description. A 60-year-old male patient was referred for consultation by an oncologist regarding pathological tissue at the L1 vertebra, extending into the spinal canal and left side neural foramina at the Th12-L1 and L1-L2 levels. CT imaging showed no clear distinction between the pathological tissue and the psoas muscle, making infiltration of the m. psoas impossible to rule out, with no significant changes compared to the previous CT scan of the lumbar spine. There was no evidence of similar changes in other bones or other organs. The patient was scheduled for a percutaneous ultrasound and fluoroscopy-guided core biopsy. Histological examination revealed fragments of an infiltrative tumor, with epitheloid-like cells forming small nests and trabeculae. The tumor cells showed clear, eosinophilic cytoplasm and monomorphic nuclei. The stroma was partly myxoid. Immunohistochemistry demonstrated positivity for CK AE1/AE3 and EMA (strongly positive), and weak to moderate positivity for S100, confirming the diagnosis of conventional chordoma. Metastatic carcinoma remains possible, but S100 positivity suggests carcinoma is unlikely, further supporting chordoma.

Summary. This case presents a 60-year-old male with conventional chordoma at the L1 vertebra.A biopsy confirmed the diagnosis, and the patient was discharged in satisfactory condition with follow-up recommendations. Surgical treatment has been scheduled based on the medical council's decision.

Conclusions. Spinal chordomas are rare tumors that pose diagnostic challenges. Accurate biopsy and immunohistochemical analysis are critical for confirming the diagnosis and guiding treatment. Early identification and management are essential for optimizing patient outcomes, reducing complications, and improving long-term survival rates.

CLINICAL DIVERSITY OF GRAFT-VERSUS-HOST DISEASE AFTER HAPLOIDENTICAL ALLOGENEIC PERIPHERAL BLOOD STEM CELL TRANSPLANTATION: A CASE REPORT

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Keywords. Haploidentical allogeneic peripheral blood stem cell transplantation; Graft-versus-host disease (GVHD); Extracorporeal photopheresis

Introduction. Graft-versus-host disease is a major complication of allogeneic peripheral blood stem cell transplantation (PBSCT). A 21-year-old male developed GVHD after haploidentical allogeneic PBSCT in April 2023.

Case Description. The patient, diagnosed with acute T-cell lymphoblastic leukemia, achieved remission and underwent haploidentical PBSCT. GVHD prophylaxis with CyA (cyclosporine A) and MMF (mycophenolate mofetil) was insufficient, and he developed acute GVHD of the skin and gastrointestinal (GI) tract in May. Treatment included CyA, methylprednisolone, and budesonide, later escalated with Ruxolitinib, higher CyA doses, and Tocilizumab, resolving the skin and GI GVHD by August.

In October, due to low CyA levels, MMF was substituted. However, non-adherence led to hospitalization in November with skin and ocular GVHD, including skin peeling and conjunctivitis. Symptomatic care provided some improvement.

In early 2024, extracorporeal photopheresis was added to MMF-based therapy without significant benefit. By May, joint GVHD caused muscle weakness (3/5 strength) and limited mobility. Physiotherapy showed slight improvement by June.

In October, worsening skin GVHD presented with severe peeling, scleroderma, alopecia, and oral bullae. Intensive care improved symptoms modestly. In November, therapy switched to Ruxolitinib due to persistent active GVHD. The patient's condition, marked by severe skin damage, reduced strength, and restricted mobility, significantly impacted daily life and self-care abilities.

Summary. This case highlights the complexity and treatment resistance of GVHD following PBSCT. Despite prophylaxis and extensive therapies, the patient experienced both acute and chronic GVHD, affecting multiple organ systems and significantly impairing quality of life. Non-compliance with prescribed treatments worsened disease progression.

Conclusion. GVHD is a diverse and challenging condition that can resist medical therapies and progress despite treatment. Effective management requires strict patient adherence and a multidisciplinary approach involving hematologists, dermatologists, physiotherapists, and rehabilitation specialists to address its multisystem impact.

GIANT CELL TUMOUR OF BONE: A CASE REPORT

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Keywords. GCTB; Neoplasm; Pigmented villonodular synovitis

Introduction. Giant cell tumour bone (GCTB) – is a locally aggressive, yet rarely malignant or metastasising neoplasm that represents about 4-5% of all primary bone tumours.

Case description. A 21-year-old male presented to the family physician with a painful non-mobile 2.5 cm mass in the left knee joint area. An ultrasound revealed a 1.9 cm heterogeneous calcified structure between the bone and muscle. An MRI revealed a heterogeneous spindle-shaped structure in the left knee's supraretropatellar region, between the vastus medialis muscle and the proximal part of the tibia. The structure measured 1.8 x 4.5 x 8.5 cm predominantly showing T1 hypointense, and mixed T2 signals with non-homogeneous contrast enhancement. The structure partially encircles the tibial metaphysis with localised edema and contrast agent accumulation observed in the medial femoral condyle. Conclusion: possibly pigmented villonodular synovitis. The patient underwent surgery due to worsening symptoms; the mass was removed, a biopsy performed. Pathological histological examination identified bone tissue, formed by large bone trabeculae, containing a tumour composed of multinucleated giant cells and monomorphic mononuclear cells. Conclusion: Synovial bone metaplasia with a giant cell tumour. A follow-up MRI six months later showed no signs of tumour recurrence.

Summary. GCTB typically affects skeletally mature patients, often before age 20, and commonly arises in the distal femur or proximal tibia but can involve any tubular bone. It may rarely metastasise to the lungs, usually as single lesions, within a few years post-surgery, with a recurrence risk of 35%. Other complications such as osteoarthritis, stress fractures, limited movement, osteomyelitis, infection, and joint degeneration can occur, highlighting the importance of early diagnosis.

Conclusions. We present an interesting case of primary bone tumour, demonstrating how early recognition by a family physician can lead to timely diagnosis and management of GCTB, preventing further complications.

LONG-TERM SURVIVAL AFTER STEREOTACTIC RADIOTHERAPY COMBINED WITH IMMUNOTHERAPY IN A PATIENT WITH RECURRENT ORAL CANCER

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Keywords. Squamous cell carcinoma; Stereotactic radiotherapy; Immunotherapy; Head and neck cancer

Introduction. Recurrent oral squamous cell carcinoma (SCC) presents significant therapeutic challenges and demands a comprehensive treatment approach for effective management. Primary risk factors for oral squamous cell carcinoma include tobacco use, alcohol consumption, and HPV infection. The main treatment is surgical resection with clear margins, followed by radiotherapy (RT) or chemoradiotherapy (CRT) in advanced cases. For unresectable recurrence, palliative chemotherapy or immunotherapy with pembrolizumab or nivolumab is recommended. Adding stereotactic RT to immunotherapy after progression can be a valuable strategy for achieving long-term local control.

Case Description. We report the case of a 68-year-old patient with a history of keratinizing SCC of the mandibular gingiva, initially treated with surgical resection, adjuvant RT delivering a total of 60 Gy in 30 fractions, and 6 cycles of concurrent chemotherapy. After 6 years of follow-up, the patient developed a local late recurrence in clinical stage rT4N0M0, which was managed with 6 cycles of palliative chemotherapy (PF regimen). Due to disease progression, nivolumab-based immunotherapy was initiated. Following the 11th cycle of immunotherapy, high-dose re-irradiation (18 Gy in 3 fractions) was delivered due to further progression. The combination of stereotactic RT and immunotherapy allowed nivolumab to be continued until cycle 64, achieving prolonged disease stabilization with tolerable side effects. Subsequent palliative chemotherapy regimens included paclitaxel and methotrexate.

Summary. A 68-year-old patient with recurrent oral SCC of the mandibular gingiva was treated with a combination of palliative chemotherapy, nivolumab-based immunotherapy, and high-dose re-irradiation. The addition of stereotactic RT allowed for extended nivolumab treatment, resulting in long-term disease stabilization.

Conclusion. This case underscores the complexity of managing recurrent oral SCC, highlighting the effectiveness of combining stereotactic RT with nivolumab to extend immunotherapy administration and achieve long-term disease control.

SARCOIDOSIS IMITATING ADVANCED BREAST CANCER IN A BRCA1 MUTATION CARRIER: DIAGNOSTIC DILEMMA

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Keywords. Sarcoidosis; Breast cancer; Metastasis; Oncology

Introduction. Sarcoidosis is a rare, systemic granulomatous disease that can present with diverse clinical and radiological features, often mimicking malignancies. In some cases, it closely resembles breast cancer, leading to misdiagnosis and unnecessary surgical interventions. Initial imaging and clinical findings may strongly suggest malignancy; however, definitive histological analysis can reveal sarcoidosis as the true underlying condition. This underscores the diagnostic challenge of distinguishing sarcoidosis from cancer, particularly in atypical presentations.

Case description. A 32-year-old woman presented with palpable masses in the lateral quadrant of the left breast and a palpable left axillary lymph node. Mammography, ultrasound, and CT revealed a hypoechoic hypervascular breast mass, left axillary lymphadenopathy, and multiple pulmonary nodules (suggestive of metastases). A biopsy confirmed malignancy in the breast mass and lymph nod**e**, diagnosing cT2N1M1G3 ductal carcinoma (ER-, HER2-) with a BRCA1 pathogenic variant. She initially presented with pulmonary nodules detected on CT, further raising suspicion of metastatic disease. Neoadjuvant chemotherapy was initiated, followed by video-assisted thoracoscopic surgery (VATS). A pulmonary biopsy was performed (six months later), followed by a bone biopsy (eight months later), both revealing granulomatous inflammation consistent with sarcoidosis, ruling out malignancy. The patient subsequently underwent bilateral nipple-sparing mastectomy with reconstruction. Final histology showed no residual malignancy (ypT0N0MxR0L(-)V(-)Pn(-)).

Summary. This case highlights the complexities of differentiating sarcoidosis from malignancy, especially in patients with high-risk factors such as a BRCA1 mutation and a family history of breast cancer. Despite an initial diagnosis of advanced ductal carcinoma with suspected metastases, histopathological findings ultimately revealed sarcoidosis. A multidisciplinary approach—including chemotherapy, surgery, and extensive histological evaluation—ensured an accurate diagnosis and optimal management.

Conclusion. This case underscores the importance of histopathological confirmation in distinguishing malignancy from granulomatous diseases, preventing unnecessary interventions.

OSTEOMYELITIS AND HEMOPHAGOCYTIC SYNDROME SECONDARY TO AN OPEN RADIAL FRACTURE IN A CHILD – A CASE REPORT

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Keywords. Open fracture; Osteomyelitis; Hemophagocytic syndrome; Pediatric trauma; Infection

Introduction. Haemophagocytic lymphohistiocytosis (HLH), also known as haemophagocytic syndrome, is a rare yet life-threatening haematological disorder. It belongs to the group of 'cytokine storm' syndromes, characterized by excessive immune activation and massive cytokine release, potentially leading to multiorgan failure and death. Secondary HLH occurs due to autoimmune diseases, malignancies, medications, or infections. This paper presents a case of HLH and osteomyelitis secondary to an open radial fracture in a child.

Case description. A 9-year-old boy was urgently admitted with an open, contaminated fracture of the left radial shaft following a bicycle accident. Immediate fracture reduction and intramedullary fixation were performed. The patient was discharged home the next day. During follow-up, wound dehiscence and signs of infection were observed. Oral antibiotics were initiated, and cultures were positive for Enterococcus faecalis and Serratia marcescens. Multiple hospitalizations were required for wound debridement, negative pressure wound therapy, and intravenous antibiotics. One month post-reduction, an MRI revealed inflammatory changes in the radius and surrounding tissues. Three weeks later, necrotic bone tissue was excised, and the defect was filled with Stimulan containing gentamicin and vancomycin.

Due to persistent laboratory abnormalities, the patient was transferred to the Paediatric Haemato-Oncology Department, where infection-induced HLH was diagnosed. Treatment included intensive antibiotic therapy, intravenous hydration, and albumin supplementation. The cast splint was removed 11.5 weeks after reduction, and after clinical improvement, the child was discharged home.

Summary. This case highlights the complications of an open radial fracture, including osteomyelitis, bone necrosis, and secondary HLH, requiring a multidisciplinary approach.

Conclusions. Effective management of open fractures in children necessitates early surgical intervention, infection control, and comprehensive postoperative care. Collaboration between surgical and haematological specialists is essential to prevent serious complications and ensure successful recovery.

DECITABINE AND VENETOCLAX SEQUENTIALLY FOLLOWED BY FLAG-IDA AND VENETOCLAX WITH IMMEDIATE ALLOGENEIC STEM CELL TRANSPLANTATION IN NEWLY DIAGNOSED ACUTE MYELOID LEUKEMIA WITH CHROMOSOME 3 INVERSION/MECOM REARRANGEMENT

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Keywords. *MECOM*r AML; Sequential HSCT

Introduction. Acute Myeloid Leukemia (AML) with inversion of chromosome 3/*MECOM* rearrangement is a rare, although aggressive myeloid neoplasm with poor outcomes. The optimal treatment for this AML subtype remains unknown, and unfavorable outcomes of this disease suggest an urgent need to develop more treatment strategies. We will present 2 cases of young patients and their outcomes receiving up-front allogeneic HSCT as a potential curative option for this AML subtype.

Case description. No.1: A 23-year-old female. Her initial complaints were polydipsia, nausea and vomiting, and subfebrile fever (lasting 7 days). After the initial testing patient was diagnosed with *MECOM* rearrangement AML and started treatment with HMA+Ven (day 1-5) followed by FLAG-Ida+Ven (day 6-10) and haploidentical donor hematopoietic stem cell transplant (HSCT) on day 21. Pneumonia, sepsis, mucositis and the hand-foot syndrome were reported as Grade 3 adverse events during treatment. Complete remission (CR) with minimal residual disease (MRD) negativity was reached on day 31 post-transplantation.

No.2: A 32-year-old female was referred to VUL SK on November 2023 by a general practitioner after observing blastemia in a blood smear. Her main complaints at that time were subfebrile fever (lasting 3 weeks) and easy bruising. She was diagnosed with *MECOM*r AML and received the same treatment as the first patient. Matched-related donor HSCT was performed on day 19. Complications following her treatment were agranulocytic febrile neutropenia and mucositis. CR with negative minimal residual disease (MRD) was reached on day 30 following alloHSCT.

During follow-up both patients remain in CR.

Summary. Both patients received treatment with HMA+Ven followed by FLAG-Ida+Ven and HSCT and reached CR within first month of treatment. During long term follow-up both patients are in good health and show no signs of relapse.

Conclusion. Sequential HSCT may be potential curative treatment option for *MECOM*r AML.

RENAL CELL CARCINOMA IN ECTOPIC KIDNEY

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Introduction. An ectopic kidney is a rare congenital anomaly, and the occurrence of a tumor, particularly renal cell carcinoma, within it is even rarer, with only a few cases reported in the literature. Managing such cases is challenging due to atypical anatomy, complicating radiological evaluation, and surgical planning. This report highlights a rare case of clear cell carcinoma in a pelvic ectopic kidney.

Case Report. A 59-year-old patient was referred for further evaluation and treatment following the discovery of a kidney with a solid mass located in an atypical position. Detailed imaging using computed tomography revealed that the left kidney was situated in the pelvis and fused with the right kidney. A solid mass measuring 4.4×4.2×4.7cm with cystic inclusions was identified on the upper/anterior surface of the left kidney. After a multidisciplinary team discussion, it was decided to proceed with laparoscopic surgery, taking into account the atypical kidney position and unique vascular anatomy. During the surgery, no typical renal hilum was identified. Instead, three renal arteries, two renal veins, and one ureter running ventrally to the kidney were observed. The upper pole of the ectopic kidney was found to be tightly fused with the lower pole of the right kidney, making dissection challenging. All structures were carefully dissected, clipped, and the kidney was successfully removed. Histopathological examination confirmed the diagnosis of clear cell renal carcinoma, staged as pT1aN0R0G3.

Summary. This case report presents a rare instance of renal cell carcinoma in a pelvic ectopic kidney, emphasizing the diagnostic and surgical challenges involved.

Conclusions. This case highlights the rarity and complexity of managing renal cell carcinoma in an ectopic kidney. Despite the challenges posed by an ectopic kidney, thorough radiological assessment enables successful laparoscopic surgery. Multidisciplinary planning and a tailored approach remain key to achieving optimal outcomes.

CASE REPORTS, CASE REPORT SERIES

THORACIC & VASCULAR SURGERY

ARTERIAL AND NEUROGENIC THORACIC OUTLET SYNDROME: A CASE REPORT

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Keywords. Arterial; Thoracic Outlet Syndrome; Cervical rib

Introduction. Thoracic Outlet Syndrome (TOS) is divided into three main types: neurogenic, venous and arterial. Arterial TOS is the least common type, composes 1-2% of all TOS cases and it is caused by subclavian artery compression within the scalene triangle, which can lead to the development of occlusions or aneurysms. Neurogenic TOS is the most common among the types, caused by compression of the brachial plexus nerve roots.

Case description. A 17-year-old male with no history of chronic illnesses, while doing weightlifting noticed left arm turning blue. Patient was consulted by several doctors; tests and examination were done. Doppler ultrasound revealed a. subclavia sin. 70% stenosis. According to TOS protocol, CT angiography was done which showed a. subclavia sin and v. subclavia sin. 70% stenosis caused by an extra cervical rib. Electroneuromyography (ENMG) was done for both arm plexus brachialis and ulnar nerves that showed no significant changes. Based on the outcome of performed tests and examinations, the decision was to perform a surgery. It was intraoperatively found that a. subclavia is compressed by the musculus scalenus anterior and in the costaclavicular space. As well musculus pectoralis minor fascias are hard that has a possible effect on brachial plexus. Anterior scalene myotomy was done, extirpation of the cervical and first rib, splitting of the pectoralis minor muscle as well as neurolysis of the brachial plexus. The patient was discharged a few days after surgery without any complications.

Summary. The case presents arterial TOS - the least frequent type among the cases, caused by a cervical rib in a young male patient. Patient underwent successful surgery without any complications.

Conclusions. This case emphasizes the importance of early diagnosis which prevented from complications, ensuring a successful outcome.

CONCURRENT THORACIC OUTLET SYNDROME AND RADIAL NERVE COMPRESSION: A CASE REPORT

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Keywords. Thoracic outlet syndrome; Radial nerve compression; Double crush syndrome

Introduction. Coexisting thoracic outlet syndrome (TOS) and radial nerve compression is rarely discussed, yet may be more common than previously recognized. This case highlights their concurrent presentation, diagnosis, and management.

Case Description. A 43-year-old female presented with a four-year history of left-sided shoulder, neck, clavicular, and subclavicular pain, numbness, and reduced strength. Symptoms disrupted sleep and included headaches, dizziness, nausea, and facial numbness. Examination revealed 4 kg grip strength on the left versus 28 kg on the right. Positive provocative tests led to a diagnosis of left-sided neurogenic TOS. On June 11, 2024, she underwent left anterior scalenotomy, which initially resolved all her symptoms. By September 26, her headaches, facial pain, numbness, dizziness, and nausea had fully subsided, and provocative tests were negative. Her grip strength improved to 20 kg. However, over time, shoulder, upper arm, and clavicular pain re-emerged. Both clinical findings and painful palpation indicated left radial nerve compression. On October 7, 2024, the patient underwent radial nerve decompression at the spiral groove. Following surgery, clavicular, shoulder, and upper arm pain resolved. By December 12, she was symptom-free, with her shoulder pain partially relieved.

Summary. This case illustrates successful diagnosis and surgical treatment of both neurogenic TOS and concurrent radial nerve compression. The patient's persistent pain after TOS surgery prompted further investigation, revealing a second compressive neuropathy.

Conclusions. This case underscores the importance of considering radial nerve compression in patients presenting with TOS symptoms, as their coexistence may be more often a rule then execption.

UTILIZING 3D PRINTING TO CORRECT IVC AND HEPATIC VEIN DRAINAGE INTO LEFT ATRIUM IN A 4 YEAR OLD

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Keywords. Ectopic drainage; 3D printing; Cardiopulmonary bypass

Introduction. Ectopic drainage of the inferior vena cava (IVC) into the left atrium (LA) is a rare congenital anomaly often presenting with cyanosis. This report highlights the role of three-dimensional (3D) imaging and flexible surgical strategies in managing such complex cases.

Case Description. A 4-year-old boy with a systolic murmur, recurrent respiratory infections, and a history of food allergies was evaluated. Echocardiography and CT revealed three atrial septal defects (ASDs) and abnormal drainage of the inferior vena cava (IVC) and hepatic veins into the left atrium (LA). While these imaging methods provided key findings, the complex anatomy required further clarification. A 3D-printed model of the heart was created, offering a detailed visualization of the ASDs, the ectopic IVC and hepatic vein openings, and a transverse septum near the IVC orifice. During surgery, the 3D model proved invaluable for planning and execution. Cardiopulmonary bypass was performed without IVC cannulation, based on the model's clear depiction of the ectopic IVC location. Atrial drains were placed strategically, ensuring effective blood removal and a clear surgical field. The transverse septum, redirecting some IVC blood into the right atrium via the ASDs, was observed exactly as predicted. This guided precise closure of the ASDs with a bovine pericardial patch and the successful rerouting of venous drainage to the right atrium. Postoperative echocardiography confirmed normal blood flow restoration.

Summary. This case emphasizes how 3D printing can bridge the gap between imaging and surgical intervention, providing unparalleled insights into complex anatomy and ensuring a safer, more effective procedure.

Conclusions. Ectopic venous drainage into the LA, when combined with ASDs, poses unique challenges. Advanced 3D imaging techniques and adaptable surgical strategies are essential for accurate diagnosis, efficient planning, and successful treatment of such rare congenital defects in the future.

SUCCESSFUL MANAGEMENT OF MULTIFOCAL CHRONIC POST-SURGICAL PAIN FOLLOWING THORACOTOMY WITH PLEURAL WINDOW AND LAPAROTOMY

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Keywords. Chronic post surgical pain CPSP; Radicular pain; Epidural steroids; Intercostal nerve block; Scar trigger-point injections

Introduction. CPSP is a common complication following surgery, characterized by pain at the surgical site or radiating to a nerve or dermatome, typically after injury to deep somatic or visceral tissues, persisting for at least three months. The median incidence ranges from 20% to 30%.

Case description. A 72 year old female with persistent paravertebral back pain at the T8-T12 level, radiating along the rib cage, and left-sided chest wall pain along the thoracotomy scar, rated 8/10 Numerical Rating Scale (NRS), persisting for two months after surgery. Two years prior, she underwent surgery for hiatal hernia, followed by worsening dysphagia. This led to a laparotomy 10 weeks ago and creation of an esophagogastric anastomosis. After surgery, the patient developed pleural empyema due to anastomosis insufficiency, requiring video-assisted thoracoscopic surgery, followed by left-sided thoracotomy with pleural window creation. Due to pain, the patient received epidural steroid injection at T12 level with 40 mg of Triamcinolone and reported a 25% pain reduction. Three weeks later, a left-sided 8th and 9th intercostal nerve block was performed using 40 mg of Triamcinolone, 5x3 ml 1% Lidocaine, and scar infiltration with 10 ml of 1% Lidocaine and 8 mg of Dexamethasone. At follow up, the patient reported significant pain relief 2/10 (NRS) and no further interventions were deemed necessary. The patient also took Gabapentin 300 mg and Amitriptyline 10 mg twice daily for 6 weeks.

Summary. CPSP and radicular pain were successfully treated with epidural steroid injection, intercostal nerve blocks, and scar trigger point injections, resulting in a 75% reduction in pain.

Conclusions. Combined interventional treatments targeting the source of pain have proven effective in managing CPSP. A precise selection of the relevant nerves enhances the therapeutic outcome.

CHALLENGING ENDOVASCULAR TREATMENT OF A GIANT ARCH-DESCENDING RUPTURED DISSECTING AORTIC ANEURYSM IN CONDITION AFTER EVAR; A CASE REPORT

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Keywords. Giant aortic arch aneurysm; Endovascular repair; Elderly

Introduction. Open surgical repair serves as the established standard of care for managing aortic arch aneurysms. Nevertheless, patients presenting with significant comorbidities could derive advantages from a minimally invasive strategy.

Case description. A 66-year-old male was admitted from the ED for surgical intervention due to ruptured aortic arch aneurysm. The patient presented signs of shock, hypotension, and hemorrhage into the left pleura, reported chest and abdominal pain, and had a history of treatment of AAA (EVAR) 10 years prior. The urgent CTA revealed a ruptured 12 cm in diameter aortic arch aneurysm, including also an initial DTA segment with features of rupture to the pleura, displacing the trachea, and compressing the left main bronchus. The AAo was approximately 36 mm in diameter. The AA was slightly dilated, with the right stent graft leg ending in an RCIAA. As a result, the patient was deemed ineligible for cardiac surgery and qualified for endovascular procedure. A triple arch branch was successfully implanted, along with two thoracic devices. Running the system via the branch of the bifurcated stent graft was a technical challenge; however, this was made achievable by the use of dilators and two extra-stiff guidewires. A right-sided iliofemoral graft was performed with a vascular prosthesis. Fine blood flow in treated vessels was achieved. Despite intensive care following the operation, there were indications of growing multiorgan failure associated with the patient's multiple concomitant diseases, which contributed to his eventual death.

Summary. The aforementioned case demonstrates that some vascular surgery procedures may supplant certain interventions previously dominated by cardiac surgery.

Conclusions. The presented case proves that ruptures within the AoA with an appropriate diameter of the AAo may be treated with the endovascular technique, which increases a chance of saving a patient with multiple loads.

CORONARY ARTERY BYPASS GRAFTING IN ADULT PATIENT WITH FACTOR XII DEFICIENCY: BALANCING THE SCALES OF ANTICOAGULATION AND RISK OF THROMBOSIS

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Keywords. Factor XII deficiency; aPTT; ACT; Cardiopulmonary bypass; Coronary artery bypass grafting

Introduction. Factor XII deficiency is a rare autosomal recessive disorder with a prevalence of 1 in 1,000,000. It prolongs activated partial thromboplastin time (aPTT) and activated clotting time (ACT) due to impaired contact activation, rendering standard anticoagulation monitoring ineffective. This case underscores the challenges of managing anticoagulation and thrombotic risks during cardiopulmonary bypass (CPB) in a patient with Factor XII deficiency undergoing cardiac surgery.

Case description. A 68-year-old male with triple-vessel coronary artery disease was admitted for elective coronary artery bypass grafting (CABG). The patient had a history of myocardial infarction in the year 2017 followed by percutaneous coronary intervention (PCI) with a drug-eluting stent (DES) in the right coronary artery (RCA). Preoperative investigations revealed a prolonged aPTT and further testing confirmed congenital factor XII deficiency, which is associated with increased perioperative thrombotic risk rather than clinically significant bleeding. The surgical team proceeded with CABG using the following precautions: To mitigate thrombosis risk during CPB, heparin was administered at an increased dose, while antifibrinolytics, including tranexamic acid, were avoided. Postoperatively, significant drain discharge was seen in the first hours after surgery, therefore fresh frozen plasma (FFP) was administered to manage the bleeding. The patient was transferred to the ward on the first postoperative day and further recovery was uneventful.

Summary. Factor XII deficiency sets unique challenges for CPB, as conventional heparin monitoring is impaired. Tailored strategies, including increased heparin dosing and avoiding antifibrinolytics, are crucial for a successful outcome.

Conclusions. This case highlights the critical importance of preoperative planning and intraoperative monitoring in patients with rare coagulation disorders. It emphasizes the need for further research to better understand Factor XII's role in haemostasis and its implication during CPB, enabling refinement of risk stratification and management strategies.

PULMONARY ARTERIOVENOUS FISTULA IN A PATIENT WITH SMAD4 GENE MUTATION: A CASE REPORT

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Keywords. Pulmonary arteriovenous fistula; SMAD4, genetic mutation; multidisciplinary

Introduction. The SMAD4 gene is associated with various hereditary conditions, including hereditary hemorrhagic telangiectasia (HHT) and juvenile polyposis syndrome (JPS). Pulmonary arteriovenous fistulas (PAVFs) are rare vascular anomalies in patients with SMAD4 mutations which diagnosis and management require a comprehensive and multidisciplinary approach. This case underscores the importance of early detection, advanced imaging techniques, and collaborative care from multiple disciplines to achieve the best patient outcomes.

Case description. A 27-year-old patient with a history of polyps in the colon was diagnosed with NM_005359.6(SMAD4):c.[1245_1248del];[1245_1248=] variant in 2022. The patient previous history didn't show any arteriovenous malformations. Patient has a family history of digestive cancer and was suspected of JPS and HHT. In 2023 the patient had an ischemic stroke in the left middle cerebral artery territory (treated with IV thrombolysis) and was suspected of a patent foramen ovale. However, heart MRI accidental finding revealed a pulmonary arteriovenous fistula in segment S5 instead. The patient was evaluated by a multidisciplinary team, including an angiologist, pulmonologist, neurologist, and gastroenterologist, due to the genetic mutation-related findings. The pulmonary arteriovenous fistula was successfully closed using a catheter-based occluder.

Summary. A patient with a history of polyps in the colon and a pathogenic SMAD4 gene variant did not have a history of arteriovenous malformations after SMAD4 diagnosis. After the patient was admitted for ischemic stroke, accidental heart MRI revealed a pulmonary arteriovenous fistula in segment S5. The patient underwent successful catheter-based occlusion of the fistula and was evaluated by a multidisciplinary team.

Conclusions. This case highlights the importance of multidisciplinary management and radiology screening in patients with SMAD4 mutations and the benefit of heart MRI for incidental findings in arteriovenous malformation detection. Early diagnosis and intervention can lead to favorable outcomes and prevent potential complications.

COMPREHENSIVE MANAGEMENT OF ASYMPTOMATIC CORONARY ARTERY DISEASE IN A PATIENT WITH CHRONIC LIMB-THREATENING ISCHEMIA: A CASE REPORT

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Keywords. Peripheral arterial disease; Chronic limb-threatening ischaemia (CLTI); Coronary artery disease (CAD)

Introduction. Patients with CLTI undergoing lower extremity revascularization face high mortality due to significant, often asymptomatic, CAD, present in 60-70% of cases. Despite advances in medical and interventional therapies, the 5-year mortality rate remains 60%. Current guidelines prioritize pharmacological treatment and risk management for CAD in such patients but advise against routine preoperative cardiac testing in asymptomatic cases, leaving a gap in optimizing care for those with extensive vascular disease.

Case description. A 61-year-old male patient presented with intense leg pain while walking, without cardiac symptoms. CTA revealed bilateral superficial femoral artery occlusions, critical stenosis in the common femoral and right deep femoral arteries, leading to a diagnosis of CLTI. He underwent an open endarterectomy on the affected right-side arteries. Preoperative vascular screening with ultrasound, later confirmed by CTA, showed critical bilateral internal carotid artery stenosis, 60-70% stenosis in the right vertebral artery, and occlusion of the left vertebral artery. Coronary CTA, performed as part of a clinical study, revealed significant CAD, including 70% stenosis in the RCA and LAD, 60% in the LCX, and severe calcific aortic valve stenosis (valve area: 103mm2). Staged procedures included two percutaneous coronary interventions with two DES in the RCA and two in the LAD. Due to elevated stroke risk and potential aortic valve surgery, an open endarterectomy of the left-side affected carotid arteries was performed. The patient remains under monitoring for potential valve replacement and further revascularization.

Summary. This case demonstrates a comprehensive diagnostic and management strategy for asymptomatic CAD in patient with CLTI, addressing extensive systemic vascular disease to achieve optimized outcome.

Conclusions. This case underscores the need to revise the approach to CAD in CLTI patients and advocates for evidence-based studies on routine CAD screening in all such cases.

ENDOVASCULAR RECONSTRUCTION OF OCCLUDED INFERIOR VENA CAVA USING BARREL TECHNIQUE WITH TWO PARALLEL STENTS: A CASE REPORT

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Keywords. Inferior vena cava; Occlusion; Varicose veins; Collateral circulation; Endovascular intervention

Introduction. Complete inferior vena cava (IVC) occlusion is a rare condition characterized by a complete blockage of the IVC, a major vein responsible for returning blood from the lower body to the heart. Untreated, IVC occlusion can lead to severe complications, including lower extremity edema, deep vein thrombosis, chronic venous insufficiency and venous ulcers. This case describes a patient with chronic IVC occlusion successfully treated at our hospital.

Case Description. A 44-year-old male with a history of Staphylococcus aureus sepsis in infancy and multiple phlebectomies reported recurrent varicose veins on the lower extremities and lower part of abdomen since childhood. Computerised tomography and digital subtraction angiography (DTA) were performed, revealing complete infrarenal IVC occlusion, robust collateral venous network connected to paravertebral vein systems, varicocele, and May-Thurner syndrome, leading to post-thrombotic changes and calcifications in both iliac veins. An endovascular recanalisation and angioplasty of IVC in Barrel technique was performed by implanting two 14x150mm parallel self-expanding stents (BeYond Venous, Bentley), followed by overlapping 14x120mm, 14x100mm and 14x80mm stents of the same kind in both iliac veins. The patient spent two days in the Intensive Care Unit and was discharged on the fifth day. The recovery was successful as confirmed by follow-up DTA and intravascular ultrasound a year later.

Summary. This case reports a complete infrarenal IVC occlusion with a collateral venous network, May-Thurner syndrome, and post-thrombotic changes treated by an endovascular reconstruction with multiple stents resulting in successfully restored IVC patency and a favorable outcome at one-year follow-up.

Conclusions. The case highlights the challenges of managing complex venous occlusions, particularly in patients with extensive collateral circulation. Endovascular intervention is an effective treatment option for complete IVC occlusion, and should be considered the method of choice due to being minimally invasive.

AN ACUTE TYPE B AORTIC DISSECTION ASSOCIATED WITH PREGNANCY AND HYPERTENSION: CASE STUDY

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Background:

Type B aortic dissection occurring after labour is rare but can be life-threatening. Severe hypertension is one of the main risk factors. This report highlights the role of early intervention to symptoms of aortic dissection and special monitoring of pregnant women.

Case Report:

We present the case of a woman with pregnancy-associated acute aortic dissection, who had risk factors including uncontrolled hypertension and obesity.

Two attempts at indication of labour were performed, unsuccessful. After c-section, she was subjected to 5 surgeries: two laparotomies, thoracic endovascular aortic repair, duodenum resection, creation of a gastro-descending colon anastomosis. This individual was diagnosed with a type B dissection of the thoracoabdominal aorta, complicated by malperfusion. Endovascular aortic repair involved placement of an aortic stent graft under imaging guidance. Introduced a 0.035-inch wire guide to facilitate the introduction of the Zenith TX2 Dissection Endovascular Graft with Pro Form Z-Track Plus Introduction System. Postoperatively, specialized intensive care monitoring included hemodynamic assessment, organ function evaluation, and imaging follow-up.

Upon hospital admission, the patient was in a very serious general condition, however after 2 months of treatment and improvement she was discharged. The patient was put forward under multidisciplinary care.

Conclusion:

In the case of suspected acute aortic dissection and prevention of life threatening complication, CT with contrast should be performed as soon as possible, due to the higher benefits than the risk of adverse effects of this imaging technique.

The most effective and safest method of treating postpartum aortic dissection appears to be the immediate endovascular approach.

CASE REPORTS, CASE REPORT SERIES

GENERAL SURGERY

THE ROLE OF EARLY TREATMENT OF GIANT RETRORECTAL CYSTIC HAMARTOMA IN TWO POTENTIALLY AVOIDABLE CESAREAN SECTIONS - A CASE REPORT

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Keywords: Retrorectal mass; Tailgut cyst

Introduction. Tailgut cysts, or retrorectal cystic hamartomas, are rare benign congenital lesions found almost exclusively in the presacral space. They originate from embryonic hindgut tissue that fails to regress. Tailgut cysts are more common in middle-aged women, with a female-to-male ratio of 3:1. While often asymptomatic, they can cause symptoms like constipation, pain, or dysuria due to local mass effects. Likewise, tailgut cysts carry 2-13% malignancy risk and can also lead to infection with secondary fistulization.

Case Report. A 39-year-old woman presented a retrorectal mass initially discovered incidentally at age of 15. Over two decades, the lesion progressively increased in size, causing discomfort and chronic lumbopelvic pain. Despite its presence, the mass remained undiagnosed, and the patient underwent two cesarean sections, as natural birth was considered impossible without addressing the obstruction. Following her pregnancies, the disease progressed further, leading to severe pelvic pain, especially when sitting, which significantly affected her quality of life. Magnetic resonance imaging revealed a well-defined oval cystic lesion measuring 12 × 10 × 6 cm, located in the retrorectal space, without infiltrating surrounding structures. The mass occupied 30-50% of the pelvis, causing a significant displacement of the rectum and anal canal, while pushing the vagina anteriorly and extending into subcutaneous fat of the right gluteal region. The patient underwent surgical excision of the mass. Histopathology confirmed a benign cyst with a squamous epithelial lining and keratinous content, showing no malignancy or infection.

Summary. This case highlights the rare occurrence of a large retrorectal tailgut cyst and emphasizes the consequences of delayed diagnosis, including the lack of timely therapy that made natural birth impossible.

Conclusions. Retrorectal cystic hamartomas are rare tumors that require surgical treatment primarily due to the symptoms they cause, as well as the risks of infection or malignant transformation.

MULTIDISCIPLINARY MANAGEMENT OF COMPLICATIONS OF HYPERCALCEMIA CAUSED BY PARATHYROID ADENOMA: CASE REPORT

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Keywords. Parathyroid adenoma; Nephrolithiasis; Hypercalcemia; Stroke

Introduction. Parathyroid adenomas are benign tumors causing primary hyperparathyroidism, leading to elevated parathyroid hormone (PTH) levels, hypercalcemia, hypertension and complications like nephrolithiasis and renal insufficiency. Treatment includes medical management to lower calcium, followed by surgical resection of the adenoma.

Case Report. A 38-year-old male tourist in Sweden, with a four-year history of arterial hypertension, presented with an acute intracranial hemorrhage localized to the right cerebral hemisphere, resulting in left-sided hemiparesis. Upon admission to ICU, he developed febrile episodes. Computer tomography identified an 8 mm obstructive ureteral calculus in the right kidney, leading to urinary stasis and urosepsis, as well as parenchymal calcification in the left kidney. Initial management included antibacterial therapy and percutaneous nephrostomy. The patient was transferred to Latvia for further treatment. Laboratory investigations revealed hypercalcemia (3.5 mmol/L) and elevated PTH levels (611 pg/mL). Thyroid ultrasonography identified a left inferior parathyroid adenoma . Due to the unresolved cerebral infarction zones, parathyroidectomy was deferred. To reduce the risk of recurrent urinary tract infections the nephrostomy tube was replaced with pyelovesical stents. However, persistent hypercalcemia heightened the risk of recurrent nephrolithiasis, ultimately resulting in stent encrustation. Following 12 weeks of rehabilitation, the patient underwent shock wave lithotripsy and simultaneous parathyroid adenoma resection, combined with flexible ureteroscopy and lithotripsy, to address the stone burden.

Summary. The case presents a patient diagnosed with a parathyroid adenoma, but surgery was not possible due to a recent stroke. Therefore, the treatment strategy was not based solely on general clinical guidelines but rather on a holistic, patient-centered approach.

Conclusions. This case highlights the complex interplay between hypercalcemia, parathyroid adenoma, and its systemic complications, necessitating a multidisciplinary approach. Definitive surgical management was successfully coordinated with urological interventions, ensuring comprehensive care while minimizing the risks of recurrent infection and obstruction.

ISCHEMIC HEPATITIS AFTER LAPAROSCOPIC GASTRIC SURGERY

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Keywords. Ischemic hepatitis; Laparoscopy; Gastric surgery; Postoperative complications

Introduction. Laparoscopic gastric surgeries often involve the use of a retractor to elevate the left liver lobe, enhancing surgical exposure. However, this can lead to reduced hepatic blood flow and postoperative liver enzyme elevation with severe pain in the epigastric region. In this report, we present a case of a patient who developed postoperative ischemic hepatitis and kidney failure following laparoscopic gastric surgery.

Case Report. A 63 year old male diagnosed with gastric adenocarcinoma was hospitalized for a planned laparoscopic gastrectomy. On the first postoperative day increasing uremic markers, oliguria, severe anemia and thrombocytopenia were noted. AST, ALT and LDH values were elevated 110, 83 and 26 fold, respectively. The patient was moved to the ICU due to hypovolemia, acute ischemic hepatitis and acute kidney injury. Treatment included erythrocyte and thrombocyte mass transfusions, infusion and oxygen therapy, empiric antibiotics, hypertension correction and analgesia. A CT scan showed active contrast medium extravasation at the jejuno-jejunostomy junction in the small bowel. A branch of the jejunal artery was embolized during angiography. During the course of treatment, the patient's condition showed significant improvement, uremic markers and liver enzymes decreased, complete blood count results improved. Notably, AST levels normalized, while LDH and ALT levels were markedly reduced.

Summary. Retractor-related postoperative liver enzyme elevation is a common yet transient finding with no major clinical significance. Rarely, it can lead to significant liver injuries. In our case, hypovolemia caused by postoperative bleeding further contributed to liver damage, which resulted in a dramatic increase in liver enzyme levels. There is no specific treatment for ischemic hepatitis and the prognosis depends on the underlying condition.

Conclusions. Prolonged gastric surgeries involving liver retraction increase the risk of ischemic hepatitis. To minimize this, the liver should be periodically released during prolonged surgeries.

CASE REPORT: ANAL CANAL DUPLICATION – A RARE CONGENITAL ABNORMALITY WITH COMPLEX DIAGNOSIS AND TREATMENT

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Keywords: Anal canal duplication; Congenital malformation; Retrorectal abscess; Pediatrics; Case report

Introduction. Anal canal duplication (ACD) is one of the rarest congenital abnormalities of the intestinal tract, with only about 100 cases reported worldwide, predominantly affecting females. While ACD is typically diagnosed during childhood, some cases remain undetected until adulthood. This condition presents as a secondary opening near the anal canal, most commonly located at the six o'clock position in the lithotomy view, without communication with the anorectum.

Case Report. We report the case of one-year-old girl admitted with fever, bloating, constipation, mucus-laden stool, and pain in the anal region. Physical examination revealed dense structure with overlying redness. Initial ultrasound and MRI findings suggested retrorectal abscess. The patient underwent antibacterial therapy and incisional abscess drainage. Despite treatment, symptoms recurred, leading to five hospital admissions over the next two years, with repeated antibacterial therapy and abscess drainage. On second admission, seven months after the initial presentation, pus culture identified Escherichia coli, and fibrocolonoscopy revealed 2 cm fistula without connection to rectum. During the third admission, nine months later, fistulography demonstrated fistula with connection to an abscess cavity. By the fourth admission, a year and three months later, symptoms persisted, prompting further investigation. On the fifth admission, Crohn's disease was suspected but ruled out based on findings from fibrogastroscopy and biopsy.

Summary. The planned surgical intervention was performed after a year due to a strong suspicion of ACD. The patient underwent posterior sagittal excision of the duplicated anal canal, extirpation of the retrorectal cyst, and sigmoidostomy. Two months later, a repeated laparotomy was performed to close the colostomy and patient recovered well postoperatively.

Conclusions. This case underscores the rarity of ACD and challenges in its diagnosis due to recurrent abscesses and fistulas mimicking other conditions, causing diagnostic delays and prolonged treatment.

PYOGENIC LIVER ABSCESS AND ENDOGENOUS ENDOPHTHALMITIS DUE TO HYPERVIRULENT ST23 KLEBSIELLA PNEUMONIAE : A CASE REPORT

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Keywords: Case report; Hypervirulent *Klebsiella pneumoniae*; Pyogenic liver abscess; Endogenous endophthalmitis

Introduction. Pyogenic liver abscess is an infectious pathology prevalent in Asian countries, yet its incidence has been rising in Western nations. Klebsiella pneumoniae has become a leading causative pathogen, with its hypervirulent strains being of particular concern. These strains increase the risk of severe systemic complications, including endogenous endophthalmitis.

Case Report. A 77-year-old female with history of heart failure, right-eye cataract surgery, breast cancer, and recurrent liver abscess, first occurring three months ago, presented with high fever and persistent right upper quadrant abdominal pain, was diagnosed with Klebsiella pneumoniae liver abscess. Despite being a risk factor for liver abscess, diabetes mellitus is absent in this patient. On both the current and previous occasions, the abscess was localized in the right hepatic lobe, specifically within segments V and VI. Treatment included percutaneous drainage and targeted antibacterial therapy with Ceftriaxone. During hospitalization, she developed progressive vision loss and ocular pain in the left eye. Advanced testing identified hypervirulent Klebsiella pneumoniae sequence type 23 (ST23). Endogenous endophthalmitis was treated with multiple antibacterial intravitreal injections, vitrectomy, and topical therapies.

Summary. The patient was diagnosed with hypervirulent Klebsiella pneumoniae (hvKP) ST23 pyogenic liver abscess. Due to the pathogen's virulence, the infection disseminated, developing endogenous endophthalmitis as a secondary complication. The patient was transferred to the ophthalmology department for further evaluation and appropriate treatment. Despite using all possible treatment methods, visual function was not recovered, and her left eye exhibited signs of orbital atrophy.

Conclusions. Our objective is to present a rare complication associated with Klebsiella pneumoniae liver abscess and to outline the multidisciplinary treatment strategies. HvKP infection is a rapidly progressing condition characterized by its potential for metastatic dissemination. Early symptom recognition and timely referral are vital for quality of life and complication prevention.

WOHLFAHRTIIMONAS CHITINICLASTICA AND IGNATZSCHINERIA INDICA BACTEREMIA IN A PATIENT WITH MAGGOT-INFESTED WOUNDS: A CASE REPORT

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Keywords: Wohlfahrtiimonas chitiniclastica; Ignatzschineria indica; Wound myasis

Introduction. Wohlfahrtiimonas chitiniclastica and Ignatzschineria indica are emerging pathogens commonly associated with wound myasis. Bacteria enter traumatic skin lesions via fly larvae, resulting in severe myiasis and wound contamination. Majority of infected patients typically have poor hygiene, alcoholism, and/or chronic wounds. We report a case of patient with maggot infested trophic leg wounds who was diagnosed with Wohlfahrtiimonas chitiniclastica and Ignatzschineria indica bacteremia.

Case Report. A 54-year-old male was hospitalized due to chronic trophic ulcers on the right ankle, that were infested with numerous maggots. Upon presentation, the patient was febrile and hypotensive. Manual maggot removal was performed and empirical antibiotic treatment with Ceftriaxone was initiated. Blood cultures revealed polymicrobial bacteremia with Wohlfahrtiimonas chitiniclastica, Ignatzschineria indica and beta-haemolytic group C Streptococcus. Wound swabs identified Providencia stuartii, Escherichia Coli, Globicatella sulfidifaciens, Wohlfahrtiimonas chitiniclastica. Due to ongoing fevers despite treatment with Ceftriaxone, and P.stuartii and E.coli being AmpC producers, antibiotic treatment was escalated to Piperacillin/Tazobactam. Local wound treatment with repeated maggot removal was performed. Patient had poor living conditions and chronic alcoholism. After the escalation of antibiotics patient's condition rapidly improved,so he was discharged 11 days later with a recommendation to continue Ciprofloxacin for additional 3 days.

Summary. his case report presents a patient with a maggot-infected wounds, which were complicated by Wohlfahrtiimonas chitiniclastica and Ignatzschineria indica bacteremia. This is a unique clinical case for Latvia, as it is the first report of such bacteremia.

Conclusions. There are few cases of simultaneous Wohlfahrtiimonas chitiniclastica and Ignatzschineria indica bacteremia described in the literature. Majority of the reports have been from areas with relatively warm climates. This is the first report of such bacteremia in Latvia. In patients with wound myasis, blood and wound cultures tend to be polymicrobial, reflecting the complexity of wounds colonized by maggots.

SURGICAL MANAGEMENT OF RENAL CLEAR CELL CARCINOMA IN AN ECTOPIC PELVIC KIDNEY

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Keywords. Pelvic ectopic kidney; Radical nephrectomy; Renal clear cell carcinoma

Introduction. Renal ectopia is a rare congenital anomaly often discovered incidentally. Clear cell renal carcinoma (RCC) arising in an ectopic kidney is an uncommon presentation that poses unique diagnostic and surgical challenges. Our case highlights the surgical management and outcomes of a pelvic ectopic kidney with RCC through an atypical radical nephrectomy.

Case Report. During a routine examination, a 60-year-old male, presenting with general malaise, was found to have an ectopic kidney located in the pelvic region during an abdominal ultrasound. This finding was subsequently confirmed through a CT scan. Following a targeted biopsy, the diagnosis of renal clear cell carcinoma was established. A decision was made to perform an atypical radical right nephrectomy. The abdominal cavity was accessed through a lower midline laparotomy incision. An ectopic kidney with a tumor was palpated in the pelvis. The kidney was dissected from the surrounding tissues, and hemostasis was achieved through coagulation. At the aortic bifurcation, the renal artery and renal vein were dissected, ligated, and transected. The ureter was identified at the lower pole adjacent to the bladder also ligated and transected. Approximately 200 mL of blood loss occurred during the procedure. The incision was closed layer by layer, a drain was left in the abdominal cavity, and a dressing was applied. Histological examination revealed pT1b R0, G2 clear cell carcinoma of the kidney. The patient was transferred to medical rehabilitation postoperatively and reported no further complaints.

Summary. This case report details a successful atypical radical nephrectomy performed to treat RCC in a pelvic ectopic kidney, highlighting the challenges and outcomes of this rare presentation.

Conclusions. Atypical radical nephrectomy is a feasible and effective approach for managing renal clear cell carcinoma in a pelvic ectopic kidney, with favorable postoperative outcomes.

A CASE REPORT OF COMPLICATED HEPATIC ECHINOCOCCOSIS

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Keywords: Echinococcus granulosus; Percutaneous transhepatic cholangiography (PTC)

Introduction. We present a case of a patient with progressive jaundice due to extensive hepatic echinococcosis. Multiple procedures, including PTC, abscess drainage, liver resection, Roux-en-Y hepaticojejunostomy, were performed to manage biliary and septic complications. This case highlights the challenges in treating advanced liver echinococcosis.

Case Report. A 52-year-old female presented with progressive jaundice was admitted to Pauls Stradiņš Clinical University Hospital in June 2023. Imaging revealed extensive echinococcosis of the right hepatic lobe, compressing the common bile duct and adhering to the inferior vena cava, rendering surgical resection unfeasible. To manage the cholestasis, PTC with stenting of the common bile duct was performed.

In July, a right lobe liver abscess was drained percutaneously, this procedure was complicated by formation of a biliary fistula. A repeat PTC was necessary to optimize bile drainage into the duodenum using adjusted stents. Throughout her subsequent hospitalizations, the patient experienced recurrent abscesses requiring additional percutaneous drainage.

In December, the patient underwent a right subcostal laparotomy, with atypical resection of the right hepatic lobe, evacuation of the abscess, and drainage. This was followed by another PTC that involved balloon dilation, recanalization, and establishment of external biliary drainage.

In February, a Roux-en-Y hepaticojejunostomy was formed, and six days later, a follow-up PTC led to the removal of the drainage catheter. In October, the patient was readmitted due to cholangitis and biliary strictures, necessitating two further PTC procedures, along with internal-external drainage and the placement of additional stents. In November, the PTC drain was removed, and the patient was subsequently discharged for outpatient management.

Summary. This report highlights a case of extensive hepatic echinococcosis. The patient underwent multiple invasive procedures to address the complications of the disease.

Conclusions. A multidisciplinary approach is essential for the effective management of extensive liver echinococcosis.

LAPAROSCOPIC WHIPPLE PROCEDURE AND REOPERATION FOR HEMORRHAGE IN PATIENT WITH DISTAL COMMON BILE DUCT CARCINOMA

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Keywords: Laparoscopic Whipple procedure; Distal bile duct carcinoma; Retroperitoneal hematoma; Hemorrhagic shock; Pancreatic fistula

Introduction. Pancreatic head tumors, often malignant, present significant therapeutic challenges. Surgical resection, such as the Whipple procedure, remains the primary curative option. However, its complexity and potential complications require meticulous perioperative planning and prompt management to ensure favorable outcomes.

Case Report. A 63-year-old male was admitted for elective laparoscopic pancreaticoduodenectomy due to carcinoma of the distal bile duct. His medical history included endoscopic retrograde cholangiopancreatography (ERCP) with stent placement. The surgery was performed without intraoperative complications, and the patient was initially managed in the intensive care unit (ICU). On postoperative day 5, the patient exhibited signs of internal bleeding, and hemorrhagic shock ensued. Emergency computed tomography (CT) and fibrogastroscopy revealed a large retroperitoneal hematoma. Intraoperatively the cause of bleeding was identified as suture insufficiency in the small curvature of the stomach. The bleeding site was sutured with stitches, total blood loss exceeded 1000 ml. The patient was stabilized in the ICU and returned to the surgical ward 10 days later. Subsequent postoperative monitoring revealed persistent drain output, diagnosed as a low-output pancreatic fistula. Conservative management was employed, resulting in progressive improvement in the patient's condition, with reduced complaints. The patient was discharged in a generally satisfactory state for follow-up care at a regional hospital.

Summary. This case highlights the complexity of managing complications following laparoscopic pancreaticoduodenectomy. Massive retroperitoneal hemorrhage and low-output pancreatic fistula were successfully managed through timely surgical intervention and conservative care.

Conclusions. The case demonstrates the feasibility and safety of minimally invasive pancreaticoduodenectomy in selected patients, emphasizing the importance of vigilant postoperative monitoring and prompt management of complications to ensure favorable outcomes.

MANAGEMENT OF COLORECTAL CANCER LIVER METASTASES USING TRANSARTERIAL RADIOEMBOLIZATION: A CASE REPORT

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Keywords: Colorectal cancer; Liver metastases; Transarterial radioembolization (TARE); Targeted radiotherapy

Introduction. Colorectal cancer (CRC) is one of the most common cancers worldwide. Approximately 15%-25% of CRC patients develop liver metastases, necessitating a multidisciplinary approach that includes systemic chemotherapy, surgical interventions, radiotherapy, and other treatment modalities . Transarterial radioembolization (TARE) has shown positive outcomes in treating CRC liver metastases. TARE is a locoregional therapy that delivers yttrium-90 via resin microspheres directly to the tumor, providing high-dose radiotherapy.

Case Report. This case report presents a 60-year-old female patient diagnosed in April 2023 with rectosigmoid adenocarcinoma and liver metastases (cT3N2M1 G1). The initial multidisciplinary treatment included systemic chemotherapy, achieving a 45% reduction in liver metastases. Additional interventions included thermal ablation and surgical resection of hepatic metastases, followed by continued chemotherapy. Despite initial progress, disease progression was observed, prompting two TARE procedures at the end of 2024. Within one month, the treatment significantly reduced the size and metabolic activity of nearly all metastases. The patient remained stable and reported no side effects. Systemic chemotherapy is ongoing.

Summary. This case report highlights the use of TARE for treating CRC liver metastases in Lithuania.

Conclusions. TARE offers a targeted treatment option for hepatic metastases, allowing selective delivery of therapy to tumors while sparing surrounding healthy tissue. This approach preserves treatment efficacy while minimizing adverse effects.

CROHN'S DISEASE WITH SHORT BOWEL SYNDROME

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Keywords. Crohn's disease; Short bowel syndrome

Introduction. Crohn's disease is a chronic inflammatory disorder affecting gastrointestinal tract. The primary clinical symptoms of Crohn's disease include diarrhea, abdominal pain, weight loss, or fatigue. It may also present atypically with perianal abscesses, fistulas, or fissures without general symptoms.

Case description. A 44-year-old man presented with a suspected inflammatory hemorrhoidal nodule and developing perianal fistula. The patient was treated conservatively, but after the onset of fever and blood with mucus in the stool, he was hospitalised. Ultrasound was performed and two intrasphinteric abscesses were drained. Subsequently, diarrhea with blood recurred, and anemia was observed. An MRI scan showed another abscess with perianal fistula, which required a re-operation. A subsequent rectoscopy showed multiple erosions, fragile mucosa, and purulent hemorrhagic secretion. The multidisciplinary team decided to create a temporary stoma and investigate for Crohn's disease. Diagnostic laparoscopy revealed multiple inflammatory adhesions, so a part of small intestine was removed and a loop ileostomy was formed. The patient's condition deteriorated with gastrostasis, ileus, bleeding, anemia, and inflammation; Crohn's disease was confirmed and treatment with glucocorticoids started. Later, the CT scan revealed pneumoperitoneum, suggesting small bowel perforation, requiring multiple relaparotomies and small bowel resections in the upcoming days. Various treatment methods for bleeding and re-occurring perforations were used. The small intestine was reduced to ~1 m from Treitz ligament. The patient was diagnosed with corticosteroid-resistant Crohn's disease with postoperative short bowel syndrome. Treatment with infliximab and azathioprine was started. After some time, the condition stabilized and the stoma was closed.

Summary. This case emphasises the challenges of diagnosing and treating Crohn's disease with atypical presentations and underscores the risk of severe post-operative complications.

Conclusions. Crohn's disease can initially present atypically, with perianal fistulas and pararectal abscesses, rather than typical clinical signs or general symptoms.

FUNCTIONAL RECONSTRUCTION OF ANTERIOR ABDOMINAL WALL AFTER APPENDICEAL ADENOCARCINOMA METASTASIS RESECTION

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Keywords: Appendiceal adenocarcinoma; Anterior abdominal wall reconstruction; Innervated musculocutaneous ALT flap; Transposition flaps

Introduction. Appendiceal adenocarcinoma is a rare malignancy, comprising less than 1 % of all gastrointestinal tumors and 0.2 to 0.3 % of appendectomy specimens. The integrity of the abdominal wall is vital as it protects internal organs, supports the spine, helps maintain posture, and supports urination, coughing, and defecation. Treatment of large appendiceal adenocarcinoma metastasis in the anterior abdominal wall presents significant challenges due to the complexity of soft tissue reconstruction required to restore functionality.

Case Report. A 44-year-old male presented to the Oncology Centre of Latvia with pain in the ileocecal region and an increase of pathological mass in the anterior abdominal wall. The patient underwent an ileocecal resection nearly four years prior, with histopathology confirming appendiceal adenocarcinoma. CT scan and MRI were performed, revealing – a soft tissue mass in the anterior abdominal wall. The patient underwent neoadjuvant and adjuvant chemotherapy. Surgical treatment was performed, which consisted of radical tumor resection and functional reconstruction. The anterior abdominal wall was reconstructed using an innervated musculocutaneous anterolateral thigh (ALT) free flap and transposition flaps. Post-surgery, the patient began gradual mobilization. As of now, more than 6 months after surgery, the patient is disease-free and with good functionality.

Summary. This case details the unique surgical treatment of appendiceal adenocarcinoma metastasis in the anterior abdominal wall. Radical tumor resection was followed by functional reconstruction using an innervated musculocutaneous ALT free flap and transposition flaps. Over six months post-surgery, the patient remains disease-free and with good functionality.

Conclusions. Appendiceal adenocarcinoma is a rare malignancy. In the case of a large abdominal wall metastasis, radical resection is crucial for safe oncological outcomes, while functional reconstruction is vital for enabling radical surgical treatment and maximizing functional restoration of the anterior abdominal wall.

THE FIRST LAPAROSCOPIC WHIPPLE PROCEDURE IN LATVIA: A CASE REPORT

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Keywords: Pancreatoduodenectomy; Laparoscopic surgery; Pancreatic cancer

Introduction. Pancreatic cancer has one of the highest mortality rates, with limited treatment possibilities. It is most commonly localised in the head of the pancreas and if diagnosed early surgical intervention is possible. The standard surgical approach, pancreatoduodenectomy or Whipple procedure, is a complex operation traditionally done in laparotomic approach. With the development of minimally invasive surgery, a technique has been established for pancreatoduodenectomy to be performed laparoscopically.

Case Report. A 70-year-old female was admitted for planned operation on a recent diagnosis of pancreatic head tumour, where an abdominal CT scan showed 29x26x28 mm large neoplasm with signs of destruction. Patient has previous history of cholecystectomy. Preoperative preparation included ERCP with biliary stent placement 3 weeks prior. Laparoscopic pancreatoduodenectomy was performed using one optical and four working ports. The pancreatic head, duodenum, pyloric part of the stomach and proximal jejunum were mobilized and resected. The surgical specimen as a single unit was removed through a Pfannenstiel incision. Gastrointestinal reconstruction included pancreaticojejunal, biliodigestive and gastrojejunal anastomoses. Postoperative CT scan showed small retroperitoneal peripancreatic fluid collections. 6 days postoperatively patient was discharged in generally satisfactory condition. Histopathological results showed negative resection margins – $T_2N_1M_0G_2R_0$. 3-month follow-up CT scan showed no evidence of progression of malignant disease or fluid collections.

Summary. A 70-year-old patient with previously diagnosed pancreatic head tumour underwent the first laparoscopic pancreatoduodenectomy in Latvia, with successful resection and reconstruction, followed by uneventful postoperative recovery and no disease progression at follow-up.

Conclusions. Surgical resection is the main treatment for early-stage pancreatic head cancer. The successfully done laparoscopic Whipple procedure shows a remarkable advancement in minimally invasive surgical practice in Latvia.

AGAINST THE ODDS: A REPORT OF A HOMICIDE ATTEMPT SURVIVAL

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Keywords: Stab wound; Hemoperitoneum; Hemopneumothorax; Splenectomy

Introduction. According to WHO, approximately 1 in 3 women worldwide experience physical violence in their lifetime. Violent attacks are high-priority medical emergencies requiring prompt, accurate healthcare decisions. This report presents a life-threatening case, its management, and the successful outcome.

Case Report. A 51-year-old female presented to the Emergency department with multiple stab wounds inflicted by her husband with a kitchen knife. She was conscious but hemodynamically unstable. The patient was rushed to the OR. She was positioned in right lateral decubitus which allowed adequate exposure of the primary wound that extended from the iliac crest to the thorax on the left side, penetrating the retroperitoneal space and abdominal cavity with active bleeding and a ruptured diaphragm. Upon successful retroperitoneal tamponade she was rotated supine which allowed for a midline laparotomy to be performed. The second phase included bleeding source identification, splenectomy and diaphragm repair. Six additional wounds were sutured. Postoperatively, she received massive transfusions, antibacterial, analgesic, and infusion therapy and was discharged after 13 days. One month later, she was readmitted with dyspnea, hydrothorax, and iron deficiency anaemia, requiring thoracocentesis and iron infusions. She was discharged 9 days later in good health.

Summary. This report highlights a case of domestic violence, showcasing a multidisciplinary team's surgical approach to a life-threatening situation. It provides a step-by-step account of emergency management, from stabilization and surgical intervention to postoperative care.

Conclusions. Perfect knowledge of topographic anatomy and immediate decision-making is of vital importance for surgeons in emergency care. The report implies the role of trauma protocols and the necessity for suspicion due to possible hidden injuries. The patient survived and recovered successfully due to the rapid response of an effective multidisciplinary team, meaning that preparedness and skill might defy the odds in a high-risk situation.

PROPHYLACTIC SUBCUTANEOUS MASTECTOMY AND IMMEDIATE RECONSTRUCTION WITH IMPLANTS: A CLINICAL CASE

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Keywords. Prophylactic subcutaneous mastectomy; BRCA gene

Introduction. BRCA gene mutations lead to a 45% to 75% lifetime risk of developing breast cancer. The most effective prevention of breast cancer incidence in high–risk populations is surgical removal of breast tissue. Prophylactic subcutaneous mastectomy reduces breast cancer incidence in BRCA gene mutation carriers by approximately 90%. However, subcutaneous mastectomy with implant placement often results in breast implant rippling.

Case Report. A 29–year–old female with a confirmed BRCA2 gene mutation and a positive family history of breast cancer underwent prophylactic subcutaneous mastectomy and immediate reconstruction with implants. The surgical procedure involved axillary and inframammary fold incisions on both sides, with ultrasound assistance to separate the breast glandular tissue from the skin, subcutaneous tissue, and pectoralis major muscle. Microtextured implants were placed, covered superiorly by the m. pectoralis major and by the skin and residual tissue inferiorly. Seven months later, a III–degree capsular contracture of the left breast implant was diagnosed. Revision surgery involved the release and refixation of the pectoralis major muscle. Two flaps – the serratus anterior muscle and remaining pectoralis major muscle with capsule - were rotated anteriorly to cover the inferior pole of the replaced smooth implant to provide suspension.

Summary. Ultrasound assistance and the double–incision technique reduce blood loss, minimize tissue injury, shorten hospitalization, and improve skin and subcutaneous tissue homogeneity. Implant placement under the pectoralis major muscle allows coverage of the superior portion of the implant, reducing the risk of implant rippling.

Conclusions. BRCA2 mutation significantly increases breast cancer risk. Prophylactic subcutaneous ultrasound–assisted mastectomy with immediate reconstruction using implants, combined with axillary and inframammary fold incisions provides an excellent breast cancer preventative result. The serratus anterior muscle and the remaining pectoralis major muscle with capsule could be used for lower part breast reconstruction when implant capsular contracture occurs.

CASE REPORTS, CASE REPORT SERIES

DENTISTRY, MAXILLOFACIAL SURGERY, OTORHINOLARYNGOLOGY

A RARE CASE OF NEUROENDOCRINE CARCINOMA IN THE MAXILLARY SINUS

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Keywords. Primary small-cell carcinoma; Neuroendocrine tumor; Maxillary sinus; Transoral biopsy

Introduction. Neuroendocrine tumors in the head and neck are rare, with primary small-cell neuroendocrine carcinoma in the maxillary sinuses being even more uncommon. These tumors often have nonspecific symptoms, leading to delayed diagnosis, and are known for their rapid progression and poor prognosis.

Case description. A 54-year-old male presented with persistent rhinorrhea, headache, nasal obstruction for four months, and recent loss of vision in his left eye, which developed two weeks prior to hospital admission. Imaging, including a non-contrast computed tomography (CT) scan, revealed a mass in the left maxillary sinus extending into the orbit and affecting the optic nerve. Endoscopic evaluation confirmed sinus involvement, and a transoral biopsy was performed. Magnetic resonance imaging (MRI) and CT scans showed significant soft tissue invasion without evidence of distant metastasis. Biopsy results confirmed the diagnosis of primary small-cell neuroendocrine carcinoma of the maxillary sinus, with immunohistochemistry supporting the diagnosis. Given the tumor's advanced stage (T4bN0M0), it was considered non-resectable, and the patient was initiated on cisplatin-etoposide chemotherapy.

Summary. This case emphasizes the rarity of primary small-cell neuroendocrine carcinoma in the maxillary sinus and the difficulties in diagnosing it early. The symptoms are often nonspecific, and the rapid progression of the disease requires timely and precise diagnostic methods, such as imaging and biopsy.

Conclusions. Primary small-cell neuroendocrine carcinoma of the maxillary sinus is an aggressive cancer with nonspecific symptoms and a poor prognosis. Early detection is vital for treatment, which usually includes chemotherapy and radiotherapy, however, the prognosis remains poor due to rapid progression and metastatic risk.

A RARE CASE OF SECONDARY FIBROUS DYSPLASIA IN THE MANDIBLE: DIAGNOSTIC AND THERAPEUTIC CHALLENGES

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Keywords. (Secondary) Fibrous Dysplasia; Mandibular Lesion; Maxillofacial Surgery

Introduction. Fibrous dysplasia (FD) is a bone condition where normal bone is replaced by fibrous tissue, resulting from an imbalance between osteoblasts and osteoclasts. FD can be monostotic (single bone) or polyostotic (multiple bones), with the monostotic form most often affecting the head and neck. A mutation in the GNAS gene is central to its pathogenesis, leading to clinical manifestations such as pain, fractures.

Case description. A 32-year-old female patient presented to the Maxillofacial Surgery Clinic for follow-up after the surgical removal of a fibrous dysplasia (FD) lesion in the mandibular region (teeth 35-45) and bone augmentation, performed 2 years earlier. The initial surgery was conducted following confirmation of the FD diagnosis through histopathological examination and imaging, which revealed a mixed radiopaque-radiolucent lesion. A year after surgery, radiographic findings showed no significant changes compared to preoperative images. During follow-up, secondary fibrous dysplasia was suspected, prompting a second surgical intervention. The lesion was excised - histopathological analysis confirmed secondary fibrous dysplasia. The patient continues annual radiographic follow-ups to monitor for possible recurrence or malignant transformation, which is more difficult to assess due to the heterogeneous nature of the regenerated bone.

Summary. This case highlights a rare occurrence of mandibular FD. A secondary lesion was identified during subsequent follow-up, requiring a second surgical intervention, which was confirmed histopathologically as secondary FD. The patient is under ongoing monitoring for potential recurrence or malignant transformation. Regular radiographic and histopathological evaluations are crucial for effective management, especially in cases of secondary involvement.

Conclusion. This case underscores the rarity of mandibular FD and the importance of accurate diagnosis through radiological and histopathological methods. Timely, individualized treatment, including surgery when needed, is essential. Regular follow-up is critical for detecting recurrence and managing potential complications such as malignant transformation.

A COMPLICATED CASE OF COCHLEAR IMPLANTATION IN INCOMPLETE PARTITION TYPE III WITH UNUSUAL ELECTRODE CHOICE

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Keywords. Cochlear implantation; Incomplete partition type III

Introduction. Incomplete partition type III (IP-III) is a rare malformation of the inner ear characterized by the absence of modiolus and is associated with sensorineural hearing loss (SHL). Cochlear implantation (CI) can be challenging due to inevitable cerebrospinal fluid (CSF) leaks and the potential misplacement of electrode within the internal auditory canal (IAC). Selecting the appropriate electrode is a subject of ongoing debate, as it is determined by multiple factors.

Case description. Patient, at the age of 2, was diagnosed with severe bilateral SHL. MRI and CT scans were performed and showed bilateral cochlear malformations. At the age of 2, the patient underwent right CI via the classical transmastoid-facial recess approach. Due to the round window's atypical placement, a cochleostomy was performed to allow for the insertion of the electrode. Upon opening the cochlea, a CSF gusher was encountered. A slim modiolar electrode with a sheath was successfully inserted in the cochlea, and the cochleostomy was sealed with m.temporalis fascia, achieving good CSF control. Due to postoperative liquorrhea, a revision surgery was performed two days after initial surgery. Increased perilymph outflow along the implant electrode was observed and managed with fascia and fibrin glue. The patient developed vertigo and nystagmus, with conservative therapy and watchful waiting the symptoms resolved 2 days later. Perilymph outflow was no longer observed without requiring a lumbar puncture.

Summary. This case highlights the challenges of cochlear implantation in IP-III, including CSF gushers and postoperative liquorrhea, which were effectively managed through surgical and conservative measures.

Conclusions. Despite the complexities associated with IP-III, we avoided electrode misplacement into the IAC by using a slim modiolar electrode with a sheath. The complications that arose—CSF gusher syndrome and postoperative leakage—were resolved efficiently, demonstrating that tailored approaches can lead to successful outcomes.

RECURRENT RANULA ASSOCIATED WITH SUBLINGUAL SALIVARY GLAND: DIAGNOSIS AND SURGICAL MANAGEMENT

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Keywords. Recurrent ranula; Plunging ranula; Salivary gland

Introduction. A ranula is a pseudocyst in the oral or cervical regions caused by trauma to the sublingual salivary gland (SLG) and subsequent extravasation of its mucus. Ranulas are classified as intraoral, or plunging (cervical), when they extend into the neck through the mylohyoid muscle. This case highlights diagnostic challenges and surgical management of a recurrent plunging ranula in a young adult female.

Case description. A 25-year-old woman presented with complaints of a recurring neck mass that intermittently formed and subsided. In 2021 patient had a cyst and right submandibular salivary gland (SMG) removal. Histological examination confirmed the diagnosis of a ranula. Despite the initial surgery, the symptoms recurred every two months. Upon examination, a soft, mobile, non – tender swelling measuring approximately 5x2 cm was observed in the right submandibular area. Diagnostic evaluations, including ultrasound and MRI, identified a cystic lesion in the right submandibular area associated with the right SLG. Aspiration of the mass produced a frothy, viscous fluid. Surgical treatment was performed, which included excision of the SLG and removal of the ranula through an intraoral approach. During the surgery, right SLG was dissected, and the resembling saliva was aspirated from the right submandibular area. The excised tissues were sent for histological examination, which confirmed the diagnosis of a ranula. Ultrasound re-evaluation at 10 months and intraoral clinical examination at 24 months confirmed the absence of relapse.

Summary. Despite prior surgical removal of a cyst and right SMG, symptoms reappeared every two months. Diagnostic imaging revealed a cystic lesion associated with the SLG. Surgical treatment involved excision of the SLG and intraoral removal of the ranula.

Conclusions. This case emphasizes the importance of thorough diagnostics and surgical planning for recurrent ranulas. Initial surgery addressed the SMG, recurrence underscores the importance of SLG excision.

CLEAR ALIGNERS AND MYOBRACE IN EARLY TREATMENT OF CLASS II DIVISION 1 MALOCCLUSION: A CASE REPORT

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Keywords. Early orthodontic treatment; Class II division 1 malocclusion; Clear aligners; Myobrace

Introduction. Malocclusion affects 80% of children worldwide, with Class II division 1 being one of the most prevalent forms, reported in 17% of cases. This condition is marked by excessive overjet and maxillary incisor protrusion, which increases the risk of dental trauma and can negatively impact psychosocial well-being, particularly in females. Early intervention during the mixed dentition phase is crucial to guide growth, reduce malocclusion severity, and prevent more complex treatments later. Functional appliances like Myobrace further enhance outcomes by addressing muscle imbalances and supporting skeletal development.

Case description. A 10-year-old female presented with Class II division 1 malocclusion, featuring an 8 mm overjet, maxillary incisor protrusion, incompetent lips, and mouth breathing. The treatment plan included 20 clear aligners to correct dental alignment and Myobrace to address oral habits and muscle function. Myobrace aimed to improve muscle activity and reduce detrimental oral habits. After eight months of treatment, the patient showed significant improvement, with the overjet reduced to 3 mm, a Class I molar relationship achieved, enhanced facial aesthetics, lip closure, and optimal dental occlusion.

Summary. Early treatment of Class II division 1 malocclusion is critical for preventing dental trauma, which is twice as common in children with increased overjet. Early intervention during mixed dentition helps guide jaw development, reducing malocclusion severity. Clear aligners address dental alignment, while Myobrace improves muscle function and posture, influencing skeletal relationships. By promoting correct tongue posture and nasal breathing, Myobrace aids in the development of proper oral habits. This combined approach not only aligns the teeth but also supports craniofacial development.

Conclusions. Early orthodontic treatment for Class II division 1 malocclusion leads to better long-term outcomes in both dental function and psychosocial well-being.

CASE REPORT: A RARE AND UNUSUAL DORSAL SKIN MELANOMA METASTASIS TO THE PALATINE TONSIL WITH SPECIFIC NECK LYMPHADENOPATHY

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Keywords. Melanoma; Tonsillar metastasis; Palatine tonsil; Lymphadenopathy

Introduction. Malignant melanoma is an aggressive cutaneous melanocytic neoplasia with a high potential of lymphatic and hematogenous spread. Metastasis of cutaneous melanoma to oral cavity is very rare, accounting for <0,6% of known metastasis to the head and neck region. Less than 30 cases of metastasis in the palatine tonsils had been published.

Case description. A 54 year old female was evaluated for bleeding birthmark on her back two years ago. Due to the suspicion of a malignant process, excision of the tumor and its histological examination were performed, after which the diagnosis of melanoma was established. For the patient adjuvant immunotherapy with Pembrolizumab was prescribed, however, the disease progressed with right axillary lymphadenopathy. Becauce of the disease progression, therapy was changed to BRAF/MEK inhibitors, of which no improvement was obtained and right axillary lymphadenectomy was performed. 3 months later patient presented to the otorhinolaryngology department with complaints about formation in the left mandibular region. Due to the complaints magnetic resonance imaging (MRI) with intravenous contrast injection was performed on the soft tissue of the head and neck and a biopsy was taken from the left palatine tonsil. Examination results confirmed metastases of non-pigmented melanoma.

Summary. Our case represents a rare manifestation of tonsillar metastasis two years after an initial diagnosis of primary cutaneous melanoma cancer. Given that tonsillar metastases are indicative of disseminated disease, the prognosis in this case is very poor.

Conclusions. Malignant cutaneous melanoma is very agressive cancer, after which excision about 30% of patients develop metastasis in various organs. Metastases in palatine tonsils in particular are very rare and therefore difficult to diagnose and require extensive specialist attention.

TRANSIENT POSTOPERATIVE SIALADENITIS

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Keywords. Rare postoperative complications; General anaesthesia; Anaesthesia mumps; Transient parotid gland oedema

Introduction. Anaesthesia mumps, or acute transient sialadenitis, is a benign postoperative complication that may present as unilateral or bilateral salivary gland oedema. Although the aetiology is unknown, many predisposing factors are suggested in the literature: prolonged surgical procedures and patient positioning (prone, sitting, head-extension, or compression of one side), leading to arterial ischemia or obstruction of venous drainage; dehydration and anticholinergic medication resulting in reduced salivary secretion and duct obstruction; and retrograde airflow into the salivary duct during ventilation causing pneumoparotitis.

Case description. A female patient with a medical history of bulimia nervosa, underwent an elective laparotomic myomectomy. Induction of general anaesthesia with endotracheal intubation was performed with intravenous boluses of fentanyl, propofol, and atracurium without complications, sevoflurane was used to maintain anaesthesia. The patient developed severe bradycardia, which required administration of intravenous bolus of atropine. As the patient emerged from general anaesthesia, signs of patient-ventilator asynchrony were observed and managed with an intravenous bolus of propofol. Post-extubation, bilateral parotid gland swelling without airway obstruction or impairment of speech, was observed. On the following day, parotid gland swelling had reduced and completely resolved by the next week.

Summary. This case reports an unusual post-operative complication - anaesthesia mumps, presenting as bilateral parotid gland swelling after laparotomic myomectomy, that resolved within a week. Evaluating such rare complication is essential to improve clinical knowledge of post-operative risks.

Conclusions. Postoperative salivary gland oedema usually is self-limiting and benign; however, it is rare and requires careful consideration of possible causes. In this case, the underlying causes may include pneumoparotitis and administration of atropine.

AIR IN THE TEARS: UNVEILING LACRIMAL SAC PNEUMATOCELE WITH CT DACRYOCYSTOGRAPHY – A CASE SERIES

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Keywords. Pneumatocele; Lacrimal Drainage System; Lacrimal Sac; CT Dacryocystography

Introduction. Lacrimal sac pneumatocele is an extremely rare, often underdiagnosed condition characterized by the formation of air-filled cavities in the lacrimal sac or nasolacrimal duct. It shares symptoms with more common disorders like nasolacrimal duct obstruction and dacryocystitis, leading to diagnostic delays. With only a few reported cases in the literature, lacrimal sac pneumatocele remains an uncommon and challenging condition to diagnose. CT dacryocystography is a crucial tool in accurately diagnosing lacrimal sac pneumatoceles and differentiating them from other lacrimal pathologies.

Case description. Two patients with lacrimal sac pneumatoceles were diagnosed using CT imaging. The first, a 22-year-old male, presented with bilateral tearing and mild discomfort. CT dacryocystography revealed obstruction in the upper third of the nasolacrimal ducts, confirming bilateral pneumatoceles. The second patient, a 47-year-old female, reported persistent tearing, wetness, and sensitivity in the left eye. CT imaging identified a left-sided pneumatocele. Both cases highlight the role of CT dacryocystography in diagnosing this rare condition, preventing unnecessary procedures such as probing or dacryocystorhinostomy, typically indicated for more common causes of lacrimal duct obstruction.

Summary. This case series demonstrates the importance of CT dacryocystography in diagnosing lacrimal sac pneumatoceles in two patients. The first case involved bilateral pneumatoceles in a 22-year-old male, and the second involved a left-sided pneumatocele in a 47-year-old female. Both cases emphasize the value of precise imaging in distinguishing this rare condition from more common lacrimal pathologies.

Conclusions. Lacrimal sac pneumatoceles are rare and easily misdiagnosed conditions. CT dacryocystography plays a vital role in accurate diagnosis, distinguishing this entity from common lacrimal disorders. Early identification ensures appropriate management, avoids unnecessary interventions, and optimizes patient outcomes.

SUCCESSFUL RECONSTRUCTION AND RECOVERY IN PANFACIAL TRAUMA: A CASE REPORT HIGHLIGHTING MULTIDISCIPLINARY SURGICAL AND FUNCTIONAL MANAGEMENT

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Keywords. Panfacial trauma; Multidisciplinary approach; Surgical reconstruction; Facial reconstruction

Introduction. Panfacial trauma, typically resulting from high-energy impacts, can also be caused by less common sources such as animal injuries. These injuries often require complex airway management and extensive surgical reconstruction, presenting significant clinical challenges for recovery.

Case description. A 49-year-old woman was found unconscious in a horse stable with severe facial injuries, including Le Fort II-III fractures, a lower lip laceration, an open mandibular fracture, and multiple traumatic tooth extractions. Emergency intubation was performed on-site, extent of her injuries. A tracheostomy was subsequently performed by an otorhinolaryngologist upon admission to Pauls Stradiņš Clinical University Hospital to secure the airway and facilitate surgical intervention. CT scans revealed no spinal or internal organ trauma, allowing focused craniofacial treatment. Acute surgical intervention included intermaxillary fixation, metal ligatures (DD41, 42, 26, 27, 11, 33), and microplate and miniplate fixation for fractures of the zygomatic bones, maxillae et mandibulae. The right nasal bone was fixed, but the maxillary parasanasal region was irreparable. Postoperatively, the patient underwent a month of bed rest, a non-solid food diet, and regular adjustments to the fixation. A six-month follow-up CT confirmed fracture healing, and 1.5 years later, only minor root resorption was noted. She returned to work with animals and reports a high quality of life.

Summary. This case highlights the essential role of timely surgical intervention, a coordinated multidisciplinary approach, and diligent postoperative care in managing complex facial trauma. It underscores the potential for functional and aesthetic recovery even in cases involving extensive panfacial injuries.

Conclusions. Panfacial trauma requires a coordinated multidisciplinary approach and a timely surgical intervention. Despite the extent of the injuries, successful recovery is possible with proper treatment, demonstrating the potential for functional restoration and regaining of quality of life.

CASE REPORTS, CASE REPORT SERIES

INTERNAL MEDICINE I (CARDIOLOGY, PULMONOLOGY)

A CASE REPORT OF HYPERTROPHIC CARDIOMYOPATHY AND LONG QT SYNDROME: THE ROLE OF GENETIC TESTING

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Keywords. Hypertrophic cardiomyopathy; Long QT syndrome; QTc; Gene mutation

Introduction. Hypertrophic cardiomyopathy (HCM) is the most prevalent inherited cardiomyopathy while long QT syndrome (LQTS) is the most common cardiac channelopathy. Both are associated with an increased risk of malignant ventricular arrhythmias and sudden cardiac death (SDC) in young individuals. Secondary QT interval prolongation is observed in about 13% of HCM patients, mainly due to myocardial hypertrophy and structural damage. Congenital LQTS is a coincidental finding in structural heart disease and only molecular genetic testing can help differenciate the etiology of QT prologation in such cases.

Case description. 35-year-old male was referred for a comprehensive cardiologist`s evaluation due to the family history of HCM. Patient was completely asymptomatic. The electrocardiogram revealed signs of left ventricular hypertrophy (LVH) and the prolongation of QTc interval (507 ms). Echocardiography demonstrated mild LVH, no left ventricular outflow tract obstruction, normal left ventricular ejection fraction. Cardiac MRI showed basal septal wall thickening up to ~13 mm, excessive ventricular trabeculation. The patient underwent a genetic evaluation. Next generation sequencing identified pathogenic variants c.1484G>A in MYBPC3 gene (HCM) and c.477+1G>A in the KCNQ1 gene (LQTS type 1). Lifestyle modifications were recommended and the patient was prescribed non-selective beta-blockers for the long term treatment.

Summary. Asymptomatic patient with a familial history of HCM, mild left ventricular hypertrophy and prominent QTc prolongation was found to be a carrier of two pathogenic variants related to different cardiac entities: HCM and LQTS type 1. Both congenital diseases may predispose SCD at a young age.

Conclusions. This case highlights the coexistence of HCM and LQTS in a single patient due to distinct genetic mutations, emphasizing the importance of genetic testing. Identifying additional pathogenic variant through comprehensive screening is vital for SCD risk stratification, treatment and prognosis of the patient and his family.

LEFT BUNDLE BRANCH AREA PACING AS AN ALTERNATIVE FOR CONVENTIONAL BIVENTRICULAR PACING FOR HEART FAILURE MANAGEMENT

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Keywords. LBBa Pacing; CRT-D; Heart Failure; Reduced Ejection Fraction; Dilated Cardiomyopathy; LBBB; His-Purkinje System; Ventricular Synchrony

Introduction. This case highlights the innovative application of Left Bundle Branch area Pacing (LBBBa) within a CRT-D framework to manage a patient with chronic heart failure (CHF) with reduced ejection fraction, dilated cardiomyopathy (DCM), and complete left bundle branch block (LBBB). Unlike traditional biventricular pacing, LBBBa pacing aims to achieve physiological ventricular synchrony by directly targeting the His-Purkinje system and surrounding region. Enhancing left ventricular ejection fraction (LVEF), improving clinical outcomes, and assessing its wider potential for managing heart failure were the main goals.

Case description. A 63-year-old woman with a medical history of dilated cardiomyopathy (DCM) and left bundle branch block (LBBB) experienced persistent NYHA Class III symptoms and a significantly reduced left ventricular ejection fraction (LVEF) of 25%, despite being on maximally tolerated doses of guideline-directed medical therapy.

Summary. Following a thorough clinical assessment, the patient underwent cardiac resynchronization therapy with a defibrillator (CRT-D) utilizing LBBa pacing.

In order to maximize electrical conduction down the left bundle a Biotronik device was implanted and programmed in left ventricular pacing-only setting. In just three months, LVEF increased from 25% to 40%, and fatigue and dyspnea symptoms decreased as well. Interrogation of the device verified 100% ventricular capture without any arrhythmias. Restored ventricular synchronization and normalized left ventricular sizes were shown by follow-up imaging, highlighting the physiological benefits of LBBBa pacing.

Conclusions. This case study is a perfect example of how LBBa pacing can be used as an alternative to traditional biventricular pacing for heart failure patients with LBBB and reduced ejection fraction. By directly engaging the His-Purkinje system, this approach enhances cardiac function and improves patient outcomes. The results emphasize the need for further research on this innovative heart failure management.

CARDIOGENIC SYNCOPE IN ELDERLY PATIENTS: A CASE REPORT

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Keywords. Syncope; Elderly; Older person; Cardiogenic syncope

Introduction. Cardiogenic syncope can be caused by a variety of cardiovascular diseases, such as arrhythmias (bradycardia, tachycardia) and structural heart lesions (aortic stenosis, hypertrophic cardiomyopathy, aortic dissection). We present a case of an 83-year-old patient with a history of permanent atrial fibrillation and dyslipidemia, who was diagnosed with cardiogenic syncope.

Case description. A 83-year-old male patient with a history of permanent atrial fibrillation, dyslipidemia, was admitted to Emergency Diagnostic and Short-Term Treatment Unit in Hospital of Lithuanian University of Health Sciences Kaunas clinics in 2024 after a third episode of syncope. The patient was investigated in an outpatient clinic for the etiology of recurrent syncopes in recent months. Physical examination, Holter monitoring, carotid ultrasound and laboratory tests were normal.Holter monitoring performed at this admission showed: atrial fibrillation, heart rate ranged from 47bpm to 92bpm, mean 68bpm, also was observed. 279 pauses with a maximum duration of 10.96 seconds. Patient experienced syncope during the longest pause. In the absence of temporary, transient causes of bradycardia, a VVIR pacemaker was implanted.

Summary. Syncope is a common problem in older people. Cardiogenic syncope accounts for about 15% of all syncope cases in this population. In the elderly, the weakening of the cardiac conduction system is closely linked to ongoing physiological changes that can lead to a range of complications, including short-term loss of consciousness. The prevalence of syncope in the elderly is about 20% and the prevalence increases with age. The causes of syncope in this demographic group are multi-etiological and therefore a thorough investigation and prediction of further treatment are essential.

Conclusions. This case is an important reminder that cardiogenic syncope in elderly patients is a common condition and requires urgent attention and detailed assessment.

UNEXPECTED CAUSE OF SYNCOPE

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Keywords. Syncope; Genetic mutations; Asystole; Pacemaker implantation

Introduction. Sinus node dysfunction (SND) is a common cardiac disorder, primarily affecting older adults but also occurring in younger individuals due to genetic factors. Its prevalence is about 1% in those aged 45 and older. Sinus bradycardia is the most frequent presentation, but SND may also involve sinus block or prolonged asystole, leading to syncope.

Case description. A 52-year-old woman presented to the LSMU KK Cardiology Clinic with frequent syncope, mostly while lying down and occasionally sitting. Prodromal symptoms included weakness, cold sweats, nausea, an urge to urinate, and an unpleasant smell. Witnesses reported a 30-second loss of consciousness. Episodes, persisting for two years, had recently increased to daily or several times weekly.

A tilt table test with nitroglycerin provocation showed blood pressure dropping to 40/20 mmHg at the 5th minute, with atrioventricular rhythm (HR 34 bpm) and pauses up to 5 seconds, indicating cardioinhibitory syncope (type 2A). Pacemaker implantation was not initially recommended due to a vasodepressor mechanism.

Additional evaluations, including echocardiography, Holter monitoring, brain MRI, EEG, and laboratory tests, showed no significant findings. ECG revealed SR, HR 81 bpm, T-wave inversions in leads III and aVF, and QT/QTc intervals of 354/391 ms. Family history noted sudden cardiac deaths around age 50.

During hospitalization, telemetry recorded asystole episodes lasting 17–19 seconds, with syncope and prodromal symptoms. A dual-chamber pacemaker was implanted, and genetic testing was advised for suspected familial progressive cardiac conduction disease.

Summary. SND ranges from asymptomatic to severe syncope caused by asystole. Mutations in genes like SCN5A, HCN4, CASQ2, and RYR2 are linked to SND and sudden cardiac death risk. Genetic testing identifies at-risk families.

Conclusions. SND is a significant and potentially dangerous cardiac cause of syncope. Early diagnosis and pacemaker implantation can prevent sudden cardiac death.

PULMONARY EMBOLISM AS A COMPLICATION OF CONTRACEPTIVE TRANSDERMAL PATCH USE

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Keywords. Pulmonary embolism; Combined hormonal contraception; Transdermal contraceptive patch

Introduction. Pulmonary thromboembolism (PE) occurs when a blood clot blocks one or more pulmonary artery branches, disrupting blood flow and oxygen uptake. Risk factors include surgeries, trauma, thrombophilia, and hormonal contraceptives. Although PE is rare in young women, combined hormonal contraceptives increase the risk. Studies show that contraceptive patches raise thromboembolism risk 8 times more, with transdermal patches posing a higher risk than pills with 30-35 mcg ethinylestradiol due to greater estrogen absorption.

Case description. A 23-year-old patient presented to the ED with worsening dyspnea over the past month. In the last week, symptoms got worse. She has psoriasis, treated with ixekizumab, and has used contraceptive transdermal patches for a year. ECG showed sinus rhythm and right ventricular overload signs: S wave in leads I, aVL, V5-V6, QS with inverted T in III, aVF, V1-V4, no R wave growth in V1-V4. Elevated D-dimers (1855.00 ug/l) and BNP (762.8 ng/l) suggested PE, confirmed by CT angiography - massive pulmonary embolism on both sides. Echocardiography showed right ventricular dilation, reduced systolic function, and a right ventricular thrombus. DVT and abdominal ultrasounds were normal. Hematology ruled out antiphospholipid syndrome. However, due to ongoing anticoagulant therapy and acute thrombosis phase, results may be inaccurate, further thrombophilia testing is planned.

Summary. Ixekizumab and contraceptive patches were discontinued and further thrombophilia testing was recommended. The patient improved and was discharged with continued anticoagulation therapy.

Conclusions. This case highlights the importance of considering risk factors like thrombophilia and hormonal contraceptive use when diagnosing PE in young women. The risk of thromboembolism is eight times higher with contraceptive patches. To prevent recurrent PE, alternative contraception methods should be explored.

SURGICAL MANAGEMENT OF AN ANOMALOUS AORTIC ORIGIN OF CORONARY ARTERY

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Keywords. Anomalous aortic origin of coronary artery; Coronary artery bypass grafting; Left main coronary artery unroofing; Aortic valve commissure reimplantation

Introduction. Anomalous aortic origin of coronary artery from an opposite sinus is a rare coronary abnormality, associated with risk of sudden cardiac death due to myocardial ischemia. Herein we present a surgical management of a 61-year-old female with anomalous left coronary artery originating from the right coronary sinus (left AAOCA) and concomitant coronary artery disease.

Case description. A 61-year-old woman presented with chest pain during physical exertion. Exercise test revealed low exercise tolerance, limited by submaximal heart rate, with the applied workload not provoking angina or ischemic changes on the ECG. Echocardiography showed preserved left ventricular ejection fraction (LVEF) with no areas of myocardial hypokinesia or akinesia observed. Coronary angiography revealed that left coronary artery originate from the right coronary sinus. Furthermore, 50-60% stenosis in mid-third of the left anterior descending (LAD) was found. The coronary artery bypass grafting (CABG) using the left internal mammary artery (LIMA) to the left anterior descending artery (LAD) followed by unroofing of the left main (LM) artery to create a neo-ostium in the non-coronary sinus and reimplantation of the aortic valve (AoV) commissure was performed. Postoperative period was uneventful. Patient was discharged home 6 postoperative day.

Summary. This case report demonstrates successful surgical treatment of left AAOCA with concomitant CABG in adult patient.

Conclusions. Early diagnosis and surgical management are essential for patients with congenital coronary artery abnormalities to prevent sudden cardiac death due to myocardial ischemia. This case report demonstrates an advanced surgical approach to address this complex and potentially fatal cardiac lesion.

A CASE REPORT OF PULMONARY TUMOR EMBOLISM

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Keywords. Pulmonary tumor embolism; Pulmonary carcinoid; Cancer-related dyspnea

Introduction. Dyspnea in cancer patients can result from various causes. Pulmonary tumor embolism (PTE), though rare, is a potential cause. It occurs when tumor cells obstruct the pulmonary microvasculature, leading to a subacute, progressively worsening condition that mimics thromboembolic disease. Unfortunately, this condition is rarely diagnosed before death due to the difficulty in detection.

Case description. An 84-year-old female presented with worsening dyspnea. She had been diagnosed with a pulmonary carcinoid three years earlier, treated with radiotherapy, and achieved remission. She had a history of recurrent pulmonary thromboembolism (PE), treated initially with NOACs, which were later switched to warfarin due to inadequate response. A month ago, a follow-up CT scan revealed disease progression with metastases to the lungs, liver, and lymph nodes. Due to recurrent PE episodes, further oncological treatment was deferred. During this hospitalization, a chest CT scan revealed signs of PE and tumor masses in the right atrium. With D-dimer levels within the normal range, warfarin was discontinued, and the patient was switched to NOACs due to atrial fibrillation. Given the ineffectiveness of anticoagulants in managing PE, PTE was suspected, which was confirmed through cardiac ultrasound, showing tumorous masses between the heart and aorta, displacing the left atrium and invading the entire right atrium. As inflammatory markers increased and pneumonia developed, antibacterial treatment was initiated. However, the patient's condition worsened leading to sudden cardiac death on day 6 of hospitalization.

Summary. This case highlights the challenges of diagnosing and managing PTE, emphasizing the need for broad differential diagnoses and multidisciplinary care.

Conclusions. Imaging studies often fail to detect the majority of PTE's. Although PTE may mimic thromboembolism, when symptoms persist and there is a history of underlying cancer, tumor embolism should be considered as a possible cause.

UNMASKING SILENT RISKS: A CASE OF CRITICAL CORONARY STENOSIS IN NSTEMI

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Keywords. NSTEMI; Cardiology case

Introduction. Acute non-ST-elevation myocardial infarction (NSTEMI) involves reduced blood flow to the heart muscle, causing tissue damage. It lacks ST elevation on an ECG, often due to an atherosclerotic plaque rupture, and requires urgent treatment to prevent complications.

Case description. A 58-year-old male presented to the emergency department with severe, pressure-like chest pain radiating to the left arm, associated with shortness of breath, diaphoresis, nausea. The pain persisted despite rest and nitroglycerin, starting two hours before arrival. Past medical history included hypertension, hyperlipidemia and family history of cardiovascular disease. Physical examination revealed elevated blood pressure (170/90 mmHg), heart rate of 104 bpm, no murmurs, or edema. ECG showed ST-segment depression in multiple leads, troponin I was significantly elevated at 2.4 ng/mL. The patient was diagnosed with NSTEMI and started on dual antiplatelet therapy, high-dose atorvastatin, intravenous nitroglycerin, and enoxaparin. Coronary angiography revealed critical stenosis in the proximal left anterior descending (LAD) artery (90%) and mid-right coronary artery (RCA) (70%). Coronary artery bypass grafting was successfully performed. The patient was discharged with a comprehensive cardiac rehabilitation plan.

Summary. Contributing risk factors, including a sedentary lifestyle, genetic predisposition, and poorly controlled hypertension, are well-documented. (1) However, the precise mechanisms leading to critical coronary stenosis in specific segments can vary and are not always fully elucidated. In this case, critical stenosis was identified in the proximal LAD and mid RCA segments, underscoring the importance of early recognition and imaging for timely intervention.

Conclusions. This case exemplifies the importance of a multidisciplinary approach, combining prompt medical, interventional, and rehabilitative strategies, to improve outcomes in such patients.

CONDUCTION DISORDER IN HOLT-ORAM SYNDROME: A THERAPEUTIC CHALLENGE

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Keywords. Holt-Oram Syndrome; Congenital Heart Malformation; Atypical Flutter

Introduction. Holt-Oram Syndrome (HOS) is the most common type of heart-hand syndrome, characterized by congenital upper limb abnormalities, heart malformations, and conduction disease. While typically familial, sporadic cases are also documented. Prevalence is estimated at 1 in 100, 000 live births. This case report highlights a sporadic presentation of HOS, predominantly featuring arrhythmogenic manifestations.

Case description. A 38-year-old male presented to a cardiologist in 2021 with dizziness and weakness. His history included an atrial septal defect and an inherited left-hand anomaly, both surgically corrected in 1989. On evaluation, he was diagnosed with heart failure with reduced ejection fraction and atypical atrial flutter, contributing to his symptoms. Catheter ablation was performed to restore sinus rhythm; however, this resulted in significant sinus bradycardia. Consequently, a dual-chamber implantable cardioverter-defibrillator was implanted in 2022, providing pacing support and protection against arrhythmic events.

Summary. This case highlights the complex interplay of structural and conduction abnormalities in Holt-Oram Syndrome. The patient falls into the 15% of cases without molecular genetic confirmation. The patient's arrhythmogenic presentation, characterized by sinus node dysfunction, intermittent atrioventricular blockade, and atypical atrial flutter, underscores the diagnostic and therapeutic challenges associated with this condition. These findings emphasize the need for a tailored, multidisciplinary approach to manage both congenital and acquired cardiac complications effectively.

Conclusions. The diagnosis of Holt-Oram Syndrome was established following a comprehensive therapeutic approach. Patients with HOS, whether or not they have congenital cardiac malformations, are at increased risk of conduction disorders. In this case, dual-chamber ICD therapy was employed as a secondary preventive measure.

SEVERE AORTIC STENOSIS IN A FEMALE PATIENT WITH LATE-ONSET FABRY DISEASE

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Keywords. Fabry disease; Aortic stenosis; Left ventricular hypertrophy

Introduction. Aortic stenosis (AS), commonly found in older women, can rarely coexist with conditions like Fabry disease (FD), an X-linked lysosomal storage disorder caused by GLA gene mutations resulting in deficient alpha-galactosidase A activity. Both conditions share overlapping cardiovascular manifestations, including LVH, arrhythmias, and heart failure (HF) complicating diagnosis.

Case description. A 72-year-old female with AS and medical history of ischemic heart disease, LAD PTCA 12 years ago and pacemaker implantation for SAN dysfunction 7 years ago, was referred to cardiologist for progressing HF symptoms and AF. ECG recorded AF with pacemaker activity. Laboratory testing detected elevated TnI (784.9 μg/l) and BNP (682.1 ng/l). Echocardiography revealed asymmetric LVH (IVS 17 mm, LV mass index 135.5 g/m, LVEF 55%) and severe AS (AV peak velocity 4.5 m/s, mean PG 44 mmHg, AVA 0.78 cm^2). Family history revealed two sons were diagnosed with FD. Genetic testing identified a pathogenic heterozygous variant in GLA gene (c.898_904del), normal alpha-galactosidase activity (4,6 μmol/l/h) and elevated globotriaosylsphingosine (13,2 ng/ml). CMR confirmed asymmetric LVH with thickened IVS (17mm to 20mm), severe LA dilation, and late gadolinium enhancement in the basal-mid posterior LV wall. Coronary angiography showed stenosis up to 50%. After multidisciplinary consideration, she underwent biological AVR with valve/myocardium biopsies, confirming FD. Currently, together with optimal pharmacological HF treatment, enzyme replacement therapy (ERT) for FD is planned.

Summary. This case highlights that AS, typically prevalent in the elderly, can coexist with and mask the symptoms of rare diseases, such as late-onset FD. Given that both conditions manifest with similar cardiovascular symptoms - LVH, arrhythmias, HF - close family history, genetic testing, advanced imaging and multidisciplinary management are crucial.

Conclusions. Close family history, genetic testing, advanced imaging are essential for diagnosing coexisting severe AS and FD and initiating early ERT.

HEPATOPULMONARY FISTULA- A LIFE THREATENING COMPLICATION OF HUMAN LIVER ECHINOCOCCOSIS: A CASE REPORT

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Keywords. Echinococcosis; Hepatopulmonary fistula

Introduction. Echinococcosis is a zoonosis caused by the larval stages of taeniid cestodes belonging to the genus Echinococcus. Hepatic echinococcosis is a life-threatening disease, mainly differentiated into alveolar and cystic forms. If the infection is not treated adequately, life-threatening complications may develop,one of which is hepatopulmonary fistula. In this case report we present a diagnostic and therapeutic opportunities for hepatic echinococcosis complications.

Case description. A 48-year-old male with previously known cystic echinococcus was hospitalized with symptoms such as pain in the right upper quadrant, progressive dyspnea and cough with a large amounts of greenish-yellow sputum in color and consistency resembling bile. From the anamnesis it is known that there was placed a metal stent in ductus choledochus during endoscopic retrograde cholangiopancreatography due to the reacurrent obstructive jaundice. A CT scan of the lungs was done, where bilateral infiltrative changes with destruction as well as subdiaphragmatic collections of fluid were found. MRI showed intrahepatic cholestasis, subphrenic collections of fluid connected by a fistula to the middle lobe of the right lung. There were made continuous biliary decompressions with a percutaneous transhepatic drainage.

Summary. This case report presents a patient with a known cystic echinococcus, that was complicated by a rare complication such as hepatopulmonary fistula. Both surgical and medical treatment with a broad spectrum antibiotics were applied.

Conclusions. A biliary decompression results in a reduction of the outflow of bile into the extrahepatic space and chest. Also the patient received antibacterial therapy with Meropenem, Metronidazole and loop diuretic Torasemide. Control chest CT scan showed a positive dynamics with a significant decrease in focal infiltrative changes in both lungs and decrease of subdiaphragmatic fluid collection. MRI of the abdomen also showed a decrease in fluid collection in the right liver lobe that indicates the effectiveness of the treatment.

FROM NECK PAIN TO PULMONARY TUBERCULOSIS: A CLINICAL CASE REPORT

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Keywords. Pulmonary tuberculosis; Mycobacterium tuberculosis

Introduction. Tuberculosis, caused by Mycobacterium tuberculosis, mainly affects the lungs but can impact other organs. In 2021, it caused 1.6 million deaths, with a third of the global population carrying the bacillus. In 2023, tuberculosis cases in Lithuania are decreasing, however, the country's tuberculosis incidence rate per 100,000 population remains among the highest in Europe.

Case description. A 54-year-old female presented with persistent cervical and thoracic spine pain for six months. Initial X-rays of the cervical, thoracic spine and preventive chest examination revealed sparse interstitial changes and small nodules in the D-L1-S2-S3 regions. A CT scan a month later showed small subsegmental nodules in the right lung's S3 segment, prompting bronchoscopy and follow-up. Bronchoscopy confirmed Mycoplasma pneumoniae IgM, leading to azithromycin treatment, while Mycobacterium tuberculosis culture was negative. Follow-up CT imaging six months later showed stable centrilobular nodules in the D-S2 region, likely bronchogenic. A follow-up CT was advised in six months. A month later, the patient sought a second opinion at another hospital due to persistent symptoms. Prior CT scans were re-evaluated by another doctor and showed findings typical of pulmonary tuberculosis: multiple tree-in-bud pattern foci and isolated bronchiectasis in the upper lobe of the right lung. Repeat fibrobronchoscopy and bronchoalveolar lavage (BAL), which was not done at the previous hospital, confirmed M. tuberculosis complex DNA in BAL fluid (RAB negative). Tuberculosis was confirmed. Treatment began inpatient and later transitioned to outpatient at the patient's request.

Summary. This case illustrates the importance of standardized TB diagnostic guidelines. Correct CT interpretation and BAL are especially useful, but not always achievable, for patients with atypical tuberculosis symptoms.

Conclusions. This case underscores the importance of adhering to standardized tuberculosis guidelines, highlighting the critical role of doctors in accurately interpreting and ordering appropriate tests in atypical scenarios.

THIRD-DEGREE ATRIOVENTRICULAR BLOCK DURING RIGHT HEART CATHETERIZATION

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Keywords. Third-degree AV block; Right heart catheterization; Pulmonary hypertension

Introduction. Pulmonary arterial hypertension (PAH) is the leading cause of death for systemic sclerosis patients; thus, it is important to monitor the probable development of PAH for these patients. The DETECT calculator is a screening tool for PAH in systemic sclerosis patients. It is based on 8 variables including echocardiography data, ECG, spirometry, DLCO and serum testing – NT-proBNP, urate. If the result is greater than 35, right heart catheterization (RHC) is indicated. RHC is the gold standard method for diagnosing PAH. As the procedure is invasive, risk of complications exists.

Case description. A 74 year old woman diagnosed with systemic sclerosis 17 years ago had a routine transthoracic echocardiography examination. It revealed mild pulmonary hypertension (RVSP 35-40mmHg). The DETECT calculator gave the result of 52 - RHC was indicated. A month later RHC was performed. Before the procedure 12 lead ECG revealed left bundle branch block. Right femoral vein was punctured and catheter guided upwards into right atrium. As soon as the guide wire touched the inside walls of right ventricle, patient's heart rate dropped to 30x/min in a few seconds. The patient felt lightheaded and weak. 1mg of atropine was administered intravenously, which had no effect. Screening transthoracic echocardiogram showed no hemopericardium. After aborting the RHC, 12 lead ECG showed third-degree atrioventricular block. A few hours later permanent cardiac pacemaker was implanted; the patient was discharged after 3 days.

Summary. Catheter interrupted conduction in right bundle branch resulted in complete heart block. Quick and confident action from doctors involved let to preserve the patient's hemodynamic state and treat the acquired AV block.

Conclusions. Invasive specialists must take extra precaution treating patients with preexisting bifascicular block. RHC must only be performed at specialized centres with opportunity to provide tertiary care.

RHABDOMYOLYSIS DURING CONCOMITANT USE OF TICAGRELOR AND ROSUVASTATIN – A CLINICAL CASE ABOUT POSSIBLY HARMFUL ANTIPLATELET-STATIN COMBINATION

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Keywords. Rhabdomyolysis; Statin-induced rhabdomyolysis; Drug-drug interactions; Acute renal failure; Acute liver injury

Introduction. Rhabdomyolysis is a syndrome characterized by skeletal muscle contents in the bloodstream due to muscle breakdown. Traumatic injuries account for most cases, but metabolic effects of medications and toxins, hereditary or acquired diseases contribute significantly. Complications of rhabdomyolysis heighten the 10% mortality rate and include acute renal failure, cardiac arrhythmias, compartment syndrome, and disseminated intravascular coagulation. This report examines drugs, their interactions and their role in the development of rhabdomyolysis.

Case description. An 80-year-old male patient presents with a one-month history of asthenia, nausea, and emesis. Prior to these symptoms, the patient underwent percutaneous coronary intervention with drug-eluting stents and adjusted antiplatelet and statin therapy. The patient's medical history includes type 2 diabetes, diabetic nephropathy and a complex cardiovascular profile - coronary heart disease, myocardial infarction, atrial fibrillation, class II chronic heart failure, primary arterial hypertension. On examination, findings revealed acute renal failure, acute liver injury, elevated creatine phosphokinase levels and metabolic acidosis in laboratory tests. Admission to intensive care followed, where intermittent haemodialysis was initiated. Conservative therapy was implemented to restore diuresis, and the patient was referred to an endocrinologist for insulin therapy management.

Summary. The clinical diagnosis includes statin-induced rhabdomyolysis, liver injury and acute renal failure on the background of chronic kidney disease. At admission, the patient was using nine different pharmacological agents. The interaction between rosuvastatin and ticagrelor was identified as a likely contributor to the myopathic effects, which led to renal and hepatic complications.

Conclusions. This case highlights the issue of ensuring safe secondary cardiovascular prophylaxis of a complex cardiovascular patient requiring statins and antiplatelets. The interaction between ticagrelor and rosuvastatin is rarely documented. This raises the question of whether rhabdomyolysis could have been avoided, particularly in regions where lower-risk statins, such as fluvastatin, are not readily available.

PULMONARY ARTERY THROMBOEMBOLISM: A CLINICAL CASE

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Keywords. Pulmonary artery thromboembolism; Deep vein thrombosis

Introduction. Pulmonary artery thromboembolism (PATE) is a life-threatening condition characterized by the obstruction of pulmonary arteries by thrombi, resulting in impaired pulmonary circulation. Often originating from deep vein thrombosis (DVT), PATE poses a diagnostic challenge, due to its diverse and nonspecific symptoms, including dyspnea, pleuritic chest pain, and syncope. This report presents a clinical case of massive PATE complicated by a thrombus in the right atrium, underscoring the critical importance of timely diagnosis and management to reduce mortality.

Case description. A 67-year-old male presented with progressive dyspnea, pleuritic chest pain, and subfebrile fever persisting for four weeks. Physical examination revealed an oxygen saturation of 92%, sinus rhythm on ECG, and elevated biomarkers (D-dimers: 6830 µg/L, Troponin I: 41.6 ng/L, BNP: 1086.8 pg/mL). Imaging confirmed massive PATE, pulmonary hypertension, and infarction, with concurrent right leg DVT. Despite initial anticoagulation with intravenous heparin, the patient's condition deteriorated. He required thrombolysis and extracorporeal membrane oxygenation (ECMO) due to worsening respiratory failure and hemodynamic instability.

Summary. This case underscores the complexity of diagnosing and managing PATE, particularly when symptoms mimic other conditions. The patient's rapid clinical decline despite anticoagulation emphasizes the need for aggressive intervention, including thrombolysis and ECMO in severe cases. Diagnostic imaging and biomarker analysis were critical for confirming the diagnosis and guiding treatment decisions.

Conclusions. PATE presents significant diagnostic and therapeutic challenges due to its variable presentation and high mortality. Early recognition, timely intervention, and multidisciplinary care are vital to improving outcomes. Anticoagulants remain the cornerstone of treatment, while advanced therapies like thrombolysis and ECMO are crucial in severe cases.

ACUTE CORONARY SYNDROME IN A PATIENT WITH A CONNECTIVE TISSUE DISORDER

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Keywords. Spontaneous Coronary Artery Dissection; Marfan Syndrome; Connective Tissue Disorders

Introduction. Spontaneous coronary artery dissection (SCAD) is an uncommon, nonatherosclerotic cause of acute coronary syndrome (ACS), characterized by a presence of an intramural hematoma within coronary arteries. It primarily affects younger females and is often associated with pregnancy, postpartum period, and fibromuscular dysplasia. SCAD in patients with inherited connective tissue disorders, such as vascular Ehlers-Danlos or Marfan syndrome is rare. This report describes a case of SCAD in a postpartum patient with genetically confirmed Marfan syndrome, emphasizing the importance of early recognition and management.

Case description. A 32-year-old postpartum female with genetically confirmed Marfan syndrome presented with severe substernal chest pain. Electrocardiography showed sinus rhythm and ST-segment elevations in the anterior wall of the left ventricle. Echocardiography revealed left ventricular dilation, apical hypokinesia, moderately reduced left ventricular ejection fraction (39%), dilation of sinus of Valsalva (38 mm). Computed tomography angiography (CTA) excluded aortic dissection and pulmonary embolism but identified cardiomegaly and aortic root dilation up to 40 mm. Laboratory analysis showed elevated cardiac biomarkers. Coronary angiography confirmed SCAD in the mid-left anterior descending artery (LAD). The patient underwent successful percutaneous coronary intervention (PCI) using plain old balloon angioplasty. The patient was discharged in stable condition six days after admission.

Summary. CTA excluded life-threatening aortic and pulmonary conditions, while coronary angiography identified SCAD as the cause of ACS. Echocardiographic findings confirmed significant cardiac dilation and reduced function. Prompt PCI resulted in clinical stabilization and favorable outcomes.

Conclusions. SCAD is a rare but critical differential diagnosis in acute coronary syndrome, particularly in patients with connective tissue disorders like Marfan syndrome. This case highlights the value of coronary angiography for early detection and the effectiveness of PCI in managing SCAD. Timely diagnosis and appropriate intervention can significantly improve outcomes in this patient population.

SUCCESSFUL MULTIPLE PREGNANCIES IN A PATIENT WITH CYANOTIC HEART DISEASE

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Keywords. Cyanotic congenital heart disease; High-risk pregnancy

Introduction. Congenital heart disease (CHD), especially cyanotic, is not only a risk factor for pregnancy and its outcomes, but also increases the likelihood of preterm birth, low birth weight (LBW) and compromised overall health in the newborn. Given the numerous anatomical variations of unrepaired cyanotic heart defects, sharing clinical experiences regarding pregnancy outcomes in these patients is essential. We report the outcomes of four successful pregnancies in a patient with complex cyanotic CHD.

Case description. Female patient with congenitally corrected transposition of great arteries, 2 ventricular septal defects, severe pulmonary stenosis, palliation with right-sided modified Blalock-Taussig (BT) shunt, and with resting blood saturation (BS) around 80%, had 2 miscarriages at the age of 23. After additional palliative surgery with reconstruction of pulmonary arteries and creation of Glenn anastomosis, her resting BS increased >85%, which contributed to 4 uncomplicated pregnancies, resulting in 4 healthy newborns. All infants were born at term (37-40+1 week of pregnancy - WP) with normal birth weights (2740-3010g), except for the infant born at 37+ WP with LBW of 2070g. All deliveries were performed via C-sections, except for the first one. The mother's fourth delivery was at the age of 33.

Summary. Despite a high-risk pregnancy and previous miscarriages, by increasing BS after additional palliative surgery, the patient with a complex cyanotic CHD was able to have multiple successful pregnancies.

Conclusions. Increasing saturation >85% enhances the likelihood of successful pregnancy and normal newborn weight for women with cyanotic CHD. However, these outcomes are highly dependent on more maternal risk factors such as the underlying heart defect, degree of cyanosis and ventricular function.

WOLF-PARKINSON-WHITE SYNDROME WITH DUAL ACCESSORY PATHWAYS: A CLINICAL CASE AND TREATMENT APPROACH

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Keywords. Wolf-Parkinson-White syndrome; Dual accessory pathways; Catheter ablation; Electrophysiological study

Introduction. Wolf-Parkinson-White (WPW) syndrome, though uncommon, can be dangerous because of multiple accessory pathways (APs) or other features that increase the risk of sudden cardiac death. The risk of cardiac arrest or ventricular fibrillation was estimated at 2.4 per 1000 person-years. While asymptomatic WPW may not always require intervention, although certain high-risk features necessitate treatment, such as radiofrequency catheter ablation. WPW syndrome may be associated with left ventricular dysfunction, and sudden cardiac death.

Case description. A 32-year-old man presented with recurrent paroxysmal supraventricular tachycardia. An electrocardiogram (ECG) revealed a shortened PR interval, delta waves, and a widened QRS complex, suggesting preexcitation through a left lateral accessory pathway. The patient was referred for an electrophysiological study (EPS). During EPS, three electrodes (coronary sinus, His bundle, and ablation electrode) were positioned, and early electrical excitation was detected in the region of lateral mitral annulus. Ablation in this region altered the preexcitation pattern but did not fully eliminate it. Persistent conduction was observed through a second accessory pathway in the anteroseptal mitral annulus. A second ablation in this area successfully eliminated preexcitation, with no further accessory pathway conduction observed. At a six-month follow-up, the patient remained asymptomatic with no evidence of recurrence on ambulatory monitoring.

Summary. This case demonstrates a successful outcome in a WPW syndrome patient with dual accessory pathways, a condition found in approximately 12% of WPW cases. Multiple pathways increase the risk of atrial fibrillation, left ventricular dysfunction, and sudden cardiac death.

Conclusions. WPW syndrome with multiple accessory pathways requires careful evaluation and timely intervention. Radiofrequency catheter ablation is an effective treatment, particularly for high-risk cases. Early ECG screening in young individuals may help identify WPW cases and prevent life-threatening complications.

RAPID RESPONSE IN HEMOTHORAX MANAGEMENT AMONG ELDERLY PATIENTS ON NOAC THERAPY

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Keywords. Hemothorax; Rivaroxaban; Andexanet; Hemorrhage

Introduction. Timely intervention in anticoagulant therapy complications is critical, particularly for elderly patients with multimorbidity. As the aging population and cardiovascular diseases increase, NOACs like rivaroxaban are widely used due to their benefits, such as avoiding INR monitoring and fewer drug interactions compared to vitamin K antagonists. However, NOACs can cause severe hemorrhagic complications, such as hemothorax, which is especially dangerous in elderly patients, even with minor trauma. The introduction of andexanet alfa in 2019 has revolutionized the treatment of hemorrhagic complications by quickly reversing the effects of NOACs, such as rivaroxaban and apixaban, through its recombinant form of factor Xa.

Case description. We present a 75-year-old female with multiple chronic conditions, including atrial fibrillation treated with rivaroxaban, heart failure, and atherosclerosis, who was admitted with massive pleural hemorrhage following a chest injury. Due to worsening respiratory symptoms and hypoxemia, andexanet alfa was administered to reverse rivaroxaban's effects and control the bleeding. Hemostasis was achieved, enabling safe pleural drainage and stabilizing the patient, avoiding more invasive interventions. This case highlights the importance of timely anticoagulation reversal in managing hemorrhagic complications and emphasizes the need for coordinated emergency interventions.

Summary. A 75-year-old female with multiple comorbidities, including atrial fibrillation on rivaroxaban, suffered massive pleural hemorrhage after a chest injury. Prompt administration of andexanet alfa controlled the bleeding and enabled safe drainage, emphasizing its critical role in emergencies.

Conclusions. This case highlights the importance of prompt action and interdisciplinary collaboration in managing anticoagulant therapy complications. The availability of modern antidotes like andexanet alfa and advanced imaging is vital for improving emergency outcomes. With an aging population at higher risk of severe complications from minor injuries, ensuring access to these treatments and educating medical staff on their use should be a priority.

AORTIC DISSECTION: CASE REPORT

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Keywords. TIA; Aortic dissection

Introduction. Aortic dissection is a life-threatening condition that can disrupt blood flow to vital organs, causing aortic rupture, organ ischemia, or cardiac tamponade.

Case description. A 47-year-old patient presented to her family doctor with complaints of body twitching, tingling, chest and neck pressure, shortness of breath, headache, and jittery thinking. Due to suspicion of transient ischemic attack (TIA), she is sent to the emergency department for further examination. The patient is disoriented, feels fear, and anxiety, with history of regular, prolonged stress at work, frequent waking up, and disturbed sleep. An ECG and blood tests are done. Diagnosis: reaction to chronic stress, somatization. The patient received S.Diazepam (10mg i/v bolus), (S.Dolmen 50mg i/v), and was discharged after significant improvement. During follow-up with her family doctor, differing blood pressure readings between arms necessitated further testing. Echocardiography revealed sclerotic changes with dilatation in the ascending aorta and sinus Valsalva, sinus Valsalva aneurysm, and AoV hinge sclerosis with aortic regurgitation (II-III). CT confirmed a spindle-shaped dilated ascending aorta with chronic dissection and elongated ascending aorta. Urgent surgical intervention was indicated. Bentall-type surgery, aortic arch prosthesis, was performed under artificial blood circulation and hypothermia. Postoperatively, one episode of atrial fibrillation was managed with medication. The wounds healed without complications, and she was discharged in satisfactory condition with recommendations to avoid physical strain for three months. She was granted sick leave for rehabilitation and assigned a 24% loss of work capacity.

Summary. Early suspicion of TIA and further examinations, including echocardiography and CT angiography, helps to establish the correct diagnosis - chronic ascending aortic dissection with successful treatment.

Conclusions. A multidisciplinary approach improves the accuracy of clinical diagnosis and treatment tactics.

FROM TICK BITE TO AV BLOCK

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Keywords. Lyme carditis; Atrioventricular block; Borrelia burgdorferi

Introduction. Lyme carditis is a late manifestation of Lyme disease, caused by the spirochete Borrelia burgdorferi. The most common presentation is atrioventricular block (AVB), ranging from first-degree to complete AVB. Symptoms may vary from palpitations and dizziness to syncope or, in severe cases, heart failure.

Case description. A 65-year-old man presented with weakness, shortness of breath, and a slow pulse. He had a history of joint pain and multiple tick bites within the last month. ECG showed third-degree AVB with a heart rate of 30 bpm. The patient was hospitalized and due to significant bradycardia unresponsive to salbutamol, a temporary right ventricular pacemaker was implanted. Tests revealed leukocytosis, CRP of 6.4 mg/L. Echocardiography findings grade II MV regurgitation, and an EF of 50%. Suspecting Lyme carditis, the patient received ceftriaxone, and immunological tests confirmed positive IgG and IgM antibodies against Borrelia burgdorferi on day seven. Throughout hospitalization, the patient's heart activity was monitored via telemetry. Holter monitoring on day 10, showed sinus rhythm with a minimum HR of 41 bpm, an average of 53 bpm, and a maximum of 93 bpm, with episodes of second-degree, Mobitz type I AVB and no hemodynamically significant pauses. The temporary pacemaker was removed, and the patient was discharged home with continued close outpatient follow-up.

Discussion. Cardiac monitoring is essential in cases of bradycardia, as AVB can progress to complete block or asystole. In Lyme carditis, up to 30% of patients may require a temporary pacemaker, with some needing permanent pacemaker implantation.

Conclusions. Lyme carditis can cause varying degrees of AVB, and early antibiotic treatment typically leads to AVB regression. However, some cases may require temporary pacemaker implantation.

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SUBCUTANEOUS PANNICULITIS-LIKE T-CELL LYMPHOMA ASSOCIATED WITH HAVCR2 HOMOZYGOUS MUTATION IN A 9-YEAR-OLD FEMALE PATIENT

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Keywords. Subcutaneous panniculitis-like T-cell lymphoma (SPTCL); HAVCR2

Introduction. Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare subtype of cutaneous non-Hodgkin lymphoma, primarily presenting as solitary or multiple erythematous subcutaneous nodules, predominantly on the lower extremities, with an annual incidence of approximately 1 in 10,000,000 in Europe. This report describes a unique case of histologically confirmed SPTCL in a pediatric patient with lymph node involvement.

Case description. A 9-year-old girl presented with a 0.5 cm painless subcutaneous nodule on her left shin, first noted in March 2024, which grew to 1.0 cm. Ultrasound revealed edema in the gastrocnemius muscle and subcutaneous fat. MRI showed lymph node involvement in the popliteal fossa, measuring up to 1 cm. After referral to the Children's Clinical University Hospital in June 2024, antibacterial, local therapies were initiated, leading to reduced symptoms; however, imaging indicated further progression to the left thigh. Immunophenotyping showed EBER(dc-), CD3+, CD2+, CD7+, CD8+, TCRα/β+, Granzyme B/Perforin/TIA1+, with a 90% Ki67 positivity. Histopathology confirmed CD4+/CD8+/granzyme B+ SPTCL with gamma/delta receptor co-expression. Genetic analysis identified a homozygous germline mutation in HAVCR2. The patient underwent six cycles of chemotherapy based on ALCL regimen (CHOP). Biopsy of the lesion after third chemotherapy cycle on 17th of October 2024 suggestednecrotic fat tissue, reactive inflammation infiltrate with CD3+ component, massive CD68+ macrophage infiltrate, proliferation KI-67 index 20-30%, no evidence of SPTCL relapse. Post-chemotherapy MRI on 23rd of December 2024 revealed reduced swelling, no presence of pathological lymph nodes. PET/CT response is pending.

Summary. This report highlights a 9-year-old girl with a dorsal shin lesion initially misdiagnosed as contact dermatitis. Following the diagnosis of gamma/delta SPTCL, she received chemotherapy according to the ALCL regimen.

Conclusions. The HAVCR2 mutation may predispose patients to SPTCL. Prompt diagnosis is essential for improving patient prognosis and treatment outcomes. PET/CT results are pending.

FROM INFECTION TO EPILEPSY: CHALLENGES OF FIRES IN CHILDHOOD

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Keywords. FIRES; Febrile infection-related epilepsy syndrome; Cannabidiol; Refractory epilepsy; Ketogenic diet; Immunotherapy; Paediatric neurology

Introduction. Febrile infection-related epilepsy syndrome (FIRES) is a rare and severe form of epilepsy that primarily affects children after a febrile infection. Despite advances in understanding the clinical features of the syndrome and its potential mechanisms, FIRES remains a diagnostic and therapeutic challenge, often resulting in severe long-term neurological complications.

Case description. A 6-year-old patient was admitted to the Paediatric Intensive Care Unit due to frequent and treatment-resistant epileptic seizures. The patient had no prior medical conditions, and his psychomotor development was normal before the onset of seizures. A week after a mild viral infection accompanied by fever, he began experiencing various types of seizures, including generalised tonic-clonic, generalised tonic, and focal motor seizures. The seizure frequency escalated to several dozen per hour. Initial standard therapies, including anti-epileptic drugs and immunomodulatory therapies such as intravenous immunoglobulin and corticosteroids, were unsuccessful in controlling the seizures. Although a ketogenic diet was introduced, it had to be discontinued due to complications, including hypertriglyceridemia and pancreatitis. The initiation of cannabidiol (CBD) therapy after 72 days showed significant improvements, reducing seizure frequency and intensity. CBD was administered alongside anti-epileptic drugs, resulting in sustained improvement. However, the patient experienced persistent cognitive deficits and structural brain abnormalities, including cerebral atrophy.

Summary. This case illustrates the complexity of managing FIRES and highlights the importance of personalized treatment approaches. Cannabidiol showed potential as an adjunctive therapy, particularly in cases where conventional treatments proved ineffective.

Conclusions. Managing FIRES requires a comprehensive and individualised treatment approach. Although the prognosis remains poor, emerging treatments such as cannabidiol provide a glimmer of hope for better seizure control.

A CASE REPORT OF THE WHOOPING COUGH IN INFANTS

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Keywords. Pertussis; Vaccination; Infants; Diagnosis; Disease; Respiratory failure

Introduction. Pertussis is a highly contagious bacterial respiratory infection characterized by paroxysmal coughing fits accompanied by vomiting and apnea. (1) Severe forms of the disease predominantly affect infants and may lead to complications such as respiratory failure, cardiac insufficiency, and encephalitis. (2)

Case description. A 6-month-old infant was hospitalized due to persistent coughing and oxygen dependence. As respiratory failure progressed and apnea episodes worsened, accompanied by significant desaturation, the patient was intubated, and mechanical ventilation was initiated. Blood tests revealed increasing hyperleukocytosis and chest X-rays showed atelectasis. The medical history revealed that the patient's parents had refused vaccinations for children, and sister at home had been coughing for three weeks. Based on the clinical presentation, leukocytosis, the patient's and parents' vaccination history, and the sister's disease history, a diagnosis of pertussis was made during the consilium. During the course of treatment, inflammatory markers showed improvement, and coughing fits regressed as sedation was reduced. The patient was extubated. However, at discharge, the patient still required supplemental oxygen at home. The parents refused to confirm the whooping cough diagnosis by testing the sister's blood for Ig specific antibodies, leaving the newborn's diagnosis unverified.

Summary. According to data from the Lithuanian Institute of Hygiene, two cases of pertussis are registered annually in children under the age of three (3). Taking care of childhood immunization is not just a personal decision – it is a responsibility that looks after the health and well-being of the whole community (4).

Conclusions. As vaccination rates decline, pertussis incidence is becoming an increasingly significant public health issue, potentially leading to severe consequences for children (4). Effective vaccination, as well as awareness among parents and society, are key factors in reducing the prevalence of pertussis.

TOO YOUNG FOR PATHOLOGY: RARE ABDOMINAL DIAGNOSES IN INFANCY

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Keywords. Appendicitis; Mesenteric lymphadenitis; Hypertrophic pyloric stenosis; Infants; Pediatric radiology

Introduction. Acute appendicitis, mesenteric lymphadenitis, and hypertrophic pyloric stenosis (HPS) are rare in infants, with presentations often complicated by nonspecific symptoms. Their occurrence in these early age groups poses diagnostic and management challenges. Radiological imaging plays a critical role in identifying these conditions promptly.

Case description. Case 1: A 46-day-old male, born preterm at 34 weeks, presented with fever, lethargy, and abdominal pain. Laboratory results showed elevated CRP (105.91 mg/L) and IL-6 (46.48 pg/mL). Ultrasound revealed a hypoechoic lesion (3.8 × 1.8 cm) with mesenteric edema, suggestive of appendicular pathology. MRI confirmed a well-defined appendicular abscess (2.0 × 1.1 × 0.9 cm) with a fluid-filled lumen. DWI showed restricted diffusion, and T2-weighted imaging revealed hyperintense signals. A 0.4 × 0.2 cm focus, likely an appendicolith, was detected. Laparoscopy confirmed acute appendicitis with abscess formation. Case 2: An 8-month-old term female presented with bilious vomiting, fever, and abdominal pain. Laboratory results showed elevated CRP (12.58 mg/L) and IL-6 (1789 pg/mL). Ultrasound detected a hypoechoic lesion (3.2 × 2.9 cm), and MRI confirmed a mesenteric abscess (2.9 × 2.9 × 2.6 cm). Laparotomy revealed abscessed colon transversum mesenteric lymphadenitis. Case 3: An 8-week-old male, born preterm at 33 weeks, presented with persistent projectile non-bilious vomiting, visible peristaltic waves, dehydration and failure to thrive. Ultrasound confirmed hypertrophic pyloric stenosis (HPS) with a thickened pyloric muscle (4 mm) and elongated channel (16 mm). Despite timely pyloromyotomy, respiratory insufficiency and the impact of 10p15.3p13 deletion led to a fatal outcome.

Summary. These cases illustrate the rarity of appendicitis, mesenteric lymphadenitis, and HPS in infants. Radiological imaging was vital for diagnosis, particularly in distinguishing these conditions from other abdominal pathologies.

Conclusions. Radiological imaging and early intervention are essential for managing rare abdominal conditions in infants.

A RARE PEDIATRIC CASE OF MIS-C PROVOKED BY ADENOVIRUS AND CHLAMYDIA PNEUMONIAE CO-INFECTION

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Keywords. MIS-C; Co-infection; Adenovirus; Pediatric Case

Introduction. Multisystem inflammatory syndrome in children (MIS-C) is a severe inflammatory condition predominantly associated with SARS-CoV-2 infection. This case report presents MIS-C provoked by a mixed infection of adenovirus and Chlamydia pneumoniae, highlighting the impact of co-infections.

Case description. A 9-year-old boy presented with left-sided abdominal pain, generalized rashes, high fever (40°C), and lethargy, which began three days before hospital admission. The initial evaluation suggested tonsillitis; however, his condition worsened, progressing to respiratory distress and suspected sepsis, necessitating referral to a tertiary care center.

Laboratory tests revealed significantly elevated inflammatory markers, including C-reactive protein (68.1mg/L), procalcitonin (28.19µg/L), and ferritin (839.6µg/L), along with leucocytosis (5.54x10⁹/L), neutrophilia (81.1%). Additionally, hyponatremia (126.2mmol/L) was observed. Further evaluation identified hypoxemia and bilateral lung infiltrates.

Examinations regarding possible infections revealed positive adenovirus in a respiratory virus panel, positive SARS-CoV-2 IgG antibodies (titer 71.2BAU/ml), and a low-positive Chlamydia pneumoniae IgM titer (27AU/ml), suggesting a combined impact of viral and bacterial pathogens. A coagulation test showed elevated D-dimer levels (3.15mg/L) and prolonged prothrombin time (31.2s), consistent with MIS-C-associated hypercoagulability. Extensive testing excluded other bacterial infections and Kawasaki disease.

The patient met MIS-C criteria, with respiratory failure, cardiovascular dysfunction, systemic inflammation, and hypercoagulability. A single dose of intravenous immunoglobulin (IVIG) at 2g/kg (total dose 90g) significantly and rapidly improved the patient's condition. Other antibiotics, anticoagulants, and supportive care for two weeks led to full recovery.

Summary. This case presents a 9-year-old boy with MIS-C provoked by adenovirus and Chlamydia pneumoniae co-infection. Comprehensive diagnostic and multidisciplinary care resulted in a fast and successful recovery.

Conclusions. This case illustrates the importance of recognizing MIS-C early and searching for additional infections. Comprehensive diagnostic and multidisciplinary management are crucial to improving outcomes in similar cases.

DISSEMINATED MYCOBACTERIUM BOVIS INFECTION FOLLOWING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT IN PATIENT WITH FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS SECONDARY TO UNC13D MUTATION

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Keywords. Disseminated Mycobacterium bovis infection; HSCT; Familial Hemophagocytic Lymphohistiocytosis

Introduction. Familial Hemophagocytic Lymphohistiocytosis (FHL) is a rare, often lethal genetic disorder characterized by a primary innate immunodeficiency, resulting in heightened T-lymphocyte and macrophage activity and leading to aberrant cell proliferation. Here, we describe, to our knowledge, the first reported case of disseminated Mycobacterium bovis (MB) infection in a child with familial hemophagocytic lymphohistiocytosis secondary to a UNC13D mutation (FHL3) after undergoing hematopoietic stem cell transplant (HSCT) in Latvia.

Case description. We report a 6-month-old female with FHL3 who presented 76 days post-allogeneic HSCT with redness, a dense mass at the left shoulder BCG vaccination site, and axillary lymphadenopathy. Prior to transplantation, the patient received HLH-2004 protocol-based treatment and a BCG vaccine at birth. Antituberculosis therapy with isoniazid and rifampicin was initiated, but three days later, a generalized erythematous rash developed. A skin biopsy ruled out Graft-versus-Host Disease . Ultrasound revealed persistent masses in the spleen and liver, along with subcutaneous lesions in the left leg. MRI confirmed MB lesions in the spleen and liver. Rifampicin was discontinued due to interference with cyclosporin blood levels, and the patient was transitioned to isoniazid, ethambutol, and levofloxacin. Following the detection of isoniazid resistance, rifabutin was introduced. The patient is currently recovering. The latest post-transplant chimerism is 99%, with stable ultrasound findings. Despite fluctuations, cyclosporin levels remained within the therapeutic range during antituberculosis treatment.

Summary. The patient with FHL3 developed disseminated Mycobacterium bovis infection, attributed to BCG vaccine reactivation, 76 days post-allogeneic HSCT. Management was complicated by drug resistance and interactions impacting immunosuppressive therapy.

Conclusions. This case highlights the importance of multidisciplinary management to navigate the complex interplay between infection control, transplant care, and immunosuppressive therapy.

FANCONI ANEMIA-D1 WITH COMPOUND HETEROZYGOUS BRCA2 MUTATIONS: WILMS TUMOR AND MYOD1-MUTATED RHABDOMYOSARCOMA

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Keywords.

Introduction. Fanconi anemia (FA) is a rare genetic disorder characterized by DNA repair defects, predisposing patients to malignancies, including Wilms tumor and rhabdomyosarcoma. This case highlights the complexities of managing malignancies associated with FA-D1 and compound heterozygous BRCA2 mutations.

Case description. In March 2023, a 2-year-old boy presented with abdominal pain, fatigue, and a left renal mass identified as stage III Wilms tumor. NGS Genetic testing revealed compound heterozygous BRCA2 mutations (NM_000059.3: c.658_659del, p.(Val220IlefsTer4) and c.4423del, p.(Met1475TrpfsTer4)), consistent with FA-D1. Preoperative chemotherapy per the Umbrella 2016 protocol reduced tumor size. Histology post-surgical resection confirmed mixed-type stage III nephroblastoma. Postoperative AV-2 chemotherapy and abdominal radiation therapy were administered and remission was achieved

In January 2024, a painless lump in the left upper arm was diagnosed as MYOD1-mutated spindle cell rhabdomyosarcoma (pT1N0M0, IRS II). Radical excision was followed by CWS protocol chemotherapy. Treatment was complicated by febrile neutropenia, severe bone marrow aplasia, and thrombocytopenia, necessitating dose reductions and transfusions. Despite these challenges, remission was confirmed during follow-up examinations, even as chemotherapy continued.

Summary. This case describes a 2-year-old boy with Fanconi anemia who was diagnosed with Wilms tumor and, less than a year later, MYOD1-mutated spindle cell rhabdomyosarcoma. Remission was achieved for both tumors through multidisciplinary, personalized care, including chemotherapy, surgery, and radiation therapy. Genetic analysis revealed compound heterozygous BRCA2 mutations, highlighting the importance of precision medicine in managing rare, high-risk cases.

Conclusions. This case highlights the diagnostic and therapeutic challenges of FA-associated malignancies, emphasizing the impact of BRCA2 mutations on treatment planning. The management of concurrent Wilms tumor and rhabdomyosarcoma required multidisciplinary and personalized approaches.

HUMAN HERPESVIRUS-6 (HHV-6) ENCEPHALITIS IN AN IMMUNOCOMPETENT PEDIATRIC PATIENT: A CASE REPORT

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Keywords. HHV-6, encephalitis; Immunocompetent; Ganciclovir; CNS; Chromosomal integration

Introduction. HHV-6 is a common beta-herpes virus, mostly affecting children till the age of three. Primary infection causes roseola infantum, also known as exanthema subitum, which is the most common exanthem disease in infants. Although there are literature reports, it is debated whether HHV-6 can cause encephalitis in older children and adults, especially if they are immunocompetent and if the virus is an active CNS infection or is it chromosomal integration of the virus.

Case description. We present an eleven-year-old girl, who was admitted to the emergency department with dizziness, gait instability, nausea, vomiting, headache and photosensitivity. It is known that prior she had a febrile fever for three days that was followed by a maculopapular rash on the face and body. Neurological examination showed slight ataxia with both hands and left leg, dysdiadochokinesia and unstable gate. Diagnostic imaging showed no abnormalities, and a lumbar puncture encephalitis/meningitis test panel showed positive HHV-6 IN CSF as well as in the blood. Patient was started on antiviral therapy- ganciclovir for 2 weeks. On intensive physical therapy and antivirals her neurological symptoms improved, and the patient was discharged after 18 days with a positive outcome.

Summary. This case report demonstrates a rare case of HHV-6 encephalitis in an immunocompetent patient with a positive response to antiviral therapy.

Conclusions. It is rare for an immunocompetent patient to have HHV-6 encephalitis, especially in older children and adults. It is important to rule out any other infectious or autoimmune diseases, that can be the culprit for encephalitis, as the virus is known for its lifelong persistence in the latent form, possibility of reactivation and the possibility of the child being infected with several pathogens at the same time.

STAPHYLOCOCCAL SCALDED SKIN SYNDROME: CASE REPORT

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Keywords. Staphylococcal scalded skin syndrome; Neonates; Children's Clinical University hospital (CCUH)

Introduction. Staphylococcal scalded skin syndrome (SSSS) is a severe dermatological condition caused by *Staphylococcus aureus* exfoliative toxins. It is characterized by widespread erythema, blistering, and exfoliation, resembling scalding. Neonates are particularly susceptible due to immature immune systems and renal function. Early diagnosis and intervention are essential to manage the condition, minimize complications, and ensure recovery.

Case description. We present a case of an 18-day-old male newborn, born at 39+2 weeks of gestation via Cesarean section, who was transferred from a regional hospital to Children's Clinical University Hospital (CCUH) after treatment of a suspected allergic reaction with topical steroid cream failed, leading to worsening skin lesions. Upon ICU admission, the general condition was severe, with extensive skin erosions, pain, and restlessness, requiring analgesia with ketamine and morphine. The following day, the patient developed clonic seizures, tachycardia, fever, hypercapnia, and mixed-type metabolic acidosis, leading to intubation and initiation of mechanical ventilation. In a culture of biological material from a skin smear under aerobic conditions, *Staphylococcus aureus* was identified. Skin lesions were treated with bactigras, mepitel dressings, prontosan, and vaseline. Sedation was achieved with dexmedetomidine, and antibacterial therapy included oxacillin and gentamicin. Mechanical ventilation was required for six days, after which the patient was transitioned to a non-invasive ventilation. Oxacillin was administered for 10 days. The patient was hospitalized for 21 days and discharged with recommendations for skin care, including recreol cream, fucidin cream, zinc paste, and regular bathing.

Summary. This case highlights the clinical manifestations of SSSS, a rare yet critical condition, and demonstrates an effective treatment strategy leading to a successful recovery.

Conclusions. SSSS is a life-threatening condition requiring early recognition and intervention to minimize complications and ensure successful outcomes in neonates.

REFRACTORY ARRHYTHMIAS AND POLYAUTOIMMUNITY IN A PEDIATRIC PATIENT: A CASE REPORT

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Keywords. Pediatric arrhythmia; Cardiac telemetry; Polyautoimmunity; Amplatzer device; Congenital heart disease

Introduction. Arrhythmias pose significant dangers, especially in pediatric patients, as early diagnosis and management are crucial for ensuring long-term health. Diagnosing arrhythmias can be challenging, which is why tools like cardiac telemetry are invaluable for detecting irregularities that standard ECGs might miss.

Case description. A 15-year-old female patient with congenital atrial septal defect type II (ASD II) underwent correction via transcatheter Amplatzer device implantation at 3 years old. Post-procedure, she developed refractory arrhythmias unresponsive to standard therapies and underwent multiple electrophysiological studies and implantable cardioverter-defibrillator (ICD) implantation. In family history, dilated cardiomyopathy was present, but the genetic test for it was negative. She also developed autoimmune diseases that include Hashimoto's thyroiditis and ulcerative colitis, hence making her management challenging. Monitoring was carried out with continuous cardiac telemetry to warrant adequate treatments on time.

Summary. This case illustrates the complexities of managing a pediatric patient with congenital heart disease, refractory arrhythmias, and polyautoimmunity. Following Amplatzer device implantation for an atrial septal defect type II (ASD II), the patient developed persistent arrhythmias unresponsive to standard therapies. Potential associations are considered, but a direct link between the device and arrhythmias is inconclusive. The coexistence of autoimmune disorders—Hashimoto's thyroiditis and ulcerative colitis—may contribute to cardiac involvement. Extended monitoring using continuous cardiac telemetry was very useful as it allowed early identification and intervention for newer onset, potentially life threatening.

Conclusions. Evaluators should suggest that clinicians monitor for arrhythmias, particularly in patients after device implantation and in the presence of an autoimmune disorder. Integration of cardiac telemetry as a tool in arrhythmia management proves very useful in improving patient status. This means developing an individualized comprehensive treatment plan for the client with cardiac and autoimmune diseases.

WEST NILE FEVER WITH ACUTE NEUROLOGICAL MANIFESTATION IN A 15-YEARS-OLD PATIENT: A CASE REPORT

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Keywords. West Nile virus; Meningitis; Mycoplasma pneumonia

Introduction. West Nile virus is a mosquito-borne viral infection, which is commonly found in Africa, parts of Europe, the Middle East, North America and West Asia. Infection mostly asymptomatic, but approximately 25 percent may present as a generalized febrile illness – West Nile fever or 1 out of 150 to 250 develop neurological disease. Neuroinvasive disease presents as fever in conjunction with meningitis, encephalitis or flaccid paralysis. Meningitis occurs more commonly in children. The detection of immunoglobulin M (IgM) antibodies in serum or cerebrospinal fluid is typically fundamental for establishing a diagnosis in most cases.

Case description. A 15-years-old child was hospitalized with headaches, fever, instability, photophobia and cough. A lumbar puncture revealed lymphocytic meningitis, and the initial cerebrospinal fluid tests were negative. Tests for infection showed positive Anti – Mycoplasma pneumonia IgM, which could be the cause of the cough. Mycoplasma pneumonia was also suspected to be the cause of the neuroinfection. Repeated DNA analysis of Mycoplasma pneumonia in the cerebrospinal fluid was negative. Considering the patient's recent travel to Egypt prior to symptom onset additional blood test shows positive West Nile virus IgM. Based on the patient's clinic, epidemic meningitis is of West Nile virus aetiology.

Summary. The case report illustrates the diagnostic process of a patient with West Nile virus, which is rare in West Europe. Mostly travelers are at risk for West Niles virus infection and that complications.

Conclusions. This case shows the importance of considering travel history and performing comprehensive diagnostic evaluations in patients with neurological symptoms. Based on how rare West Nile virus infections in Western Europe are, clinicians should maintain a high index of suspicion in travelers returning from endemic areas.

CASE REPORT OF DUODENAL DUPLICATION CYST FORMATION IN THE ABDOMINAL CAVITY OF A NEONATE

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Keywords. Duodenal duplication; Neonatal surgery; Abdominal cyst; Vomiting; Marsupialization; Paediatrics

Introduction. Congenital gastrointestinal duplications are rare abnormalities that can present with various symptoms depending on the location, size, and associated complications. Duodenal duplication is one of the rarest forms, often identified during prenatal screening or in early postnatal life. This report highlights the clinical course, surgical intervention, and results in a newborn diagnosed with a duodenal duplication cyst.

Case description. A female newborn born at 37+3 weeks of gestation (birth weight 3340 g, Apgar scores 8/9) was diagnosed prenatally with an abdominal cyst. Postnatally, ultrasound confirmed a cystic structure (3.75x4.15x3.91 cm) near the liver. Feeding difficulties and recurrent vomiting began on the sixth day of life, necessitating emergency hospitalization. Examination revealed poor weight gain, persistent vomiting of undigested milk, and hyperbilirubinemia that required phototherapy.
Magnetic resonance imaging (MRI) suggested a duodenal duplication cyst or mesenteric cyst. Conservative management with intravenous fluids, parenteral nutrition, and phototherapy stabilized the newborn. Persistent symptoms and imaging findings indicated surgical intervention.
On day 12 of life, a laparotomy was performed. A large cyst (5.7x6.0x5.7 cm) was identified, punctured and partially excised from the anterior medial wall of the duodenum. Histopathological evaluation confirmed duodenal duplication. Marsupialization was performed for the remaining cystic structure adherent to the duodenal wall, and enteral feeding was gradually reintroduced postoperatively.

Summary. Duodenal duplication cysts can appear early with obstructive symptoms in neonates, necessitating prompt diagnosis and surgical intervention. Marsupialization combined with partial resection ensured resolution of symptoms and preserved intestinal function in this case. Comprehensive preoperative imaging, intraoperative endoscopy, and postoperative care were essential for optimal outcomes. This case underscores the importance of a multidisciplinary approach in the management of rare congenital anomalies.

A HIDDEN PELVIC CONUNDRUM: A RARE CASE OF INFLAMMATORY MYOFIBROBLASTIC TUMOUR IN A CHILD

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Keywords. Urachu; Inflammation; Inflammatory myofibroblastic tumor

Introduction. The urachus is a connective tissue band that remains from the allantois, the embryonic precursor of the umbilical cord. Normally, it involutes after birth to form the median umbilical ligament. However, in about 1% of children, the urachus persists as a remnant, carrying a risk of infection or malignancy.

Case description. A 4-year-old boy with a history of bilateral cryptorchidism presented with a 2-day history of abdominal pain, vomiting, and fever. Laboratory tests showed elevated inflammatory markers. Abdominal ultrasound revealed a heterogeneous, hypoechoic 19 × 27 × 20 mm mass with central calcification in the lower abdomen and significant faecal retention. Despite evacuating faecal matter, the follow-up ultrasound showed no change in the lesion. Magnetic resonance imaging disclosed an inflammatory mass in the pelvis, compressing the bladder.

Exploratory laparoscopy demonstrated a poorly demarcated extraperitoneal tumor firmly adherent to the abdominal wall in the midline between the umbilicus and bladder. Given its continuity with the iliac vessels, the procedure was converted to open surgery. The lesion's boundaries were identified, and the mass was successfully separated from the bladder.

Histopathological analysis aroused suspicion of an inflammatory myofibroblastic tumor, further analysis is ongoing.

Summary. Urachal remnants may remain asymptomatic, but they are susceptible to infection. Urachal inflammation should be considered in the presence of lower abdominal pain, fever, and a palpable suprapubic mass.

Conclusions. Urachal infection is frequently confused with a wide spectrum of midline intraabdominal or pelvic inflammatory disorders. Due to the risk of malignant transformation into urachal carcinoma, prompt surgical excision of any symptomatic or infected urachal remnant is recommended.

HYPERTROPHIC CARDIOMYOPATHY ASSOCIATED WITH RIT1-RELATED NOONAN SYNDROME: A CASE REPORT

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Keywords. Newborn; Hypertrophic cardiomyopathy; Noonan Syndrome; MEK Inhibitors

Introduction. Noonan syndrome is a genetic disorder that affects multiple systems of the body and is characterized by distinctive facial features, heart defects, short stature and developmental delays. It is a part of a group of related conditions known as RASopathies, caused by mutations in genes that are involved in the RAS/MAPK signaling pathway. The condition can occur as a de novo mutation or be inherited in an autosomal dominant pattern. The severity and range of symptoms in Noonan Syndrome can vary widely among individuals. Cardiovascular issues, such as pulmonary valve stenosis or hypertrophic cardiomyopathy, are among the most serious and are often the reason for initial diagnosis.

Case description. A newborn born in a regional hospital at around 37 gestational weeks from a pregnancy without prenatal care is transferred to the Children's Hospital with a suspected hypertrophic cardiomyopathy (HCM) for further investigation. An echocardiogram confirmed the diagnosis HCM with severe pulmonary stenosis. Later genetic testing revealed Noonan syndrome with a missense mutation in RIT1 gene which is likely the cause of the clinical manifestations. Due to critical illness, the patient was started off-label on the mitogen-activated extracellular kinase (MEK) inhibitor, trametinib, following consultation with authors of similar clinical cases. The drug was well tolerated and the patient was discharged. After three months of treatment there is evident HCM improvement.

Summary. A case of a newborn with Noonan syndrome and hypertrophic cardiomyopathy with severe pulmonary stenosis. The patient receives off-label treatment with trametinib, leading to noticeable improvement in the condition.

Conclusions. Early diagnosis and multidisciplinary care are crucial for managing Noonan syndrome. Off-label trametinib is showing promise for Noonan syndrome-associated HCM treatment, when there are no other approved favorable options.

EARLY SMA DETECTION: HOW 2-WEEK SCREENING TRANSFORMED A 2-YEAR-OLD'S LIFE?

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Keywords. Spinal muscular atrophy; SMN1 gene; SMN2 gene; Newborn screening

Introduction. Spinal muscular atrophy (SMA), a rare neuromuscular disorder, is caused by mutations in the SMN1 gene which result in insufficient production of survival motor neuron (SMN) protein, leading to progressive motor neuron degeneration and muscle weakness. Since 2022, effective treatments, including Zolgensma and Risdiplam, have been available in Poland. Furthermore, the introduction of a national newborn screening program in March 2021 has enabled early detection and treatment of SMA. This case demonstrates the transformative impact of such programs on disease management and patient outcomes.

Case description. A 2-week-old infant, born via cesarean section with an Apgar score of 10/10, underwent newborn screening for SMA with a positive result. Genetic testing confirmed a deletion of exons 7 and 8 in the SMN1 gene and presence of three copies of the SMN2 gene. Based on these findings, the infant was diagnosed with SMA. At 3 weeks of age, the child was enrolled in the Polish National Health Fund's (NFZ) treatment program and initiated nusinersen therapy. Over the next two years, systematic treatment led to remarkable progress. First physiotherapeutic assessment scored 38/64 points on the CHOP INTEND scale. By the age of 2, the child achieved a score of 64/64 on the CHOP INTEND scale and 56/66 points on the Hammersmith Functional Motor Scale-Expanded (HFMSE), demonstrating significant motor function improvement.

Summary. This case highlights the importance of newborn screening program for SMA, introduced in Poland in March 2021. Early detection of SMN1 mutations in a 2-week-old infant enabled the timely initiation of nusinersen therapy.

Conclusions. This case demonstrates the critical role of newborn screening in the early identification of SMA. Early intervention not only halts disease progression but also minimizes its detrimental effects, allowing affected children to achieve near-normal development.

FROM DIAGNOSIS TO PROGRESS: THE IMPACT OF ZOLGENSMA IN AN INFANT WITH SMA

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Keywords. Spinal muscular atrophy; Newborn screening; SMN1 gene; SMN2 gene

Introduction. Spinal Muscular Atrophy (SMA) is a genetic neuromuscular disorder which manifests by the degeneration of motoneurons in the spinal cord which leads to muscle atrophy and weakness. It is caused by mutations in the SMN1 gene. SMA treatment has been transformed since Zolgensma and Risdiplam are available in Poland from 2022. The case presents the impact and outcomes on patient of one of these gene therapies.

Case description. An 11-day old infant, born via cesarean section in 42 weeks (about 9 and a half months) of gestation with a 10/10 Apgar score underwent SMA screening which revealed irregularities. A physiotherapy assessment was carried out, where it scored 13/64 on CHOP INTEND scale. Genetic testing confirmed deletion of exons 7 and 8 in both alleles in SMN1 gene and the presence of two copies of SMN2 gene. In the second week of life, the patient was qualified by the Polish National Health Fund's (NFZ) for inclusion in the drug program and received Zolgensma. One year later the child scored 44/64 on CHOP INTEND scale which demonstrates its improvement.

Summary. The availability of gene therapies in NFZ program revolutionized SMA treatment in Poland. This case underscores the importance of accessibility of these innovative therapies, showing the remarkable progress of a treated infant with SMA. Also, it highlights the crucial role of early newborn screening, that leads to early diagnosis and treatment, which shows the significant improvement in the CHOP INTEND score from 13 to 44 within a year.

Conclusions. This case highlights the critical importance of early diagnosis in SMA management, emphasizing the importance of continued access to innovative therapies. Ongoing monitoring and further research are crucial to optimize outcomes and fully explore the potential of gene therapies in SMA management.

MYCOPLASMA PNEUMONIAE INFECTION ASSOCIATED ACUTE PANCREATITIS IN A CHILD

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Keywords. Mycoplasma pneumoniae; Pancreatitis; Extrapulmonary manifestation

Introduction. Mycoplasma pneumoniae is a frequent bacterial pathogen causing community-acquired pneumonia in children 5 years and older. This pathogen is known to cause diverse extrapulmonary manifestations, including acute pancreatitis. However, it is a rare manifestation with only five published cases in the past 25 years.

Case description. On the 28th of October 2024, a 9-year-old girl started to experience cough and febrile temperature elevations. Two days later a radiographic image of the chest was taken which showed infiltrative opacity in the lower lobe of the left lung suggestive of pneumonia. She was prescribed 400 mg of Amoxiclav twice daily. On the 31st of October, she started to experience cramping abdominal pain, vomiting 1 to 3 times a day and loose stools. On the 3rd of November, she was admitted to Children's Clinical University Hospital. Crepitations were audible in the left lung during auscultation. Laboratory tests revealed a high titer of anti-Mycoplasma pneumoniae IgM. Biochemical tests showed elevated lipase levels at 154.68 U/L. A day later lipase level reached 215.78 U/L and the amylase level was elevated to 105.50 U/L. Abdominal ultrasound showed an enlarged pancreatic head measured 2.4 cm in thickness. Viral antigen detection and stool culture were negative. The diagnosis of acute pancreatitis was made. She received therapy with Azithromycin for 5 days. The patient was discharged on the 7th of November with follow-up recommendations.

Summary. This clinical case describes a rare Mycoplasma pneumoniae extrapulmonary manifestation – acute pancreatitis. All diagnostic criteria for pancreatitis were fulfilled, alternative causes were excluded.

Conclusions. Acute pancreatitis is a diagnosis to take into account in children with Mycoplasma pneumoniae infection and symptoms consistent with pancreatitis diagnosis. Even if it was mild in this case, severe necrotizing pancreatitis has also been reported, as well as cases of misdiagnosis.

CLINICAL AND GENETIC MANAGEMENT OF X-LINKED HYPOPHOSPHATEMIC RICKETS: A CASE STUDY

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Keywords. Hypophosphatemic rickets; Pediatric Growth Disorders; X-linked Hypophosphatemia (XLH); PHEX Gene Mutation

Introduction. Hypophosphatemic rickets (XLH) is a rare X-linked disorder caused by mutations in the *PHEX* gene, leading to increased fibroblast growth factor 23 (FGF23) activity, renal phosphate wasting, and impaired bone mineralization. This case highlights the clinical course and multidisciplinary management of a pediatric patient with XLH and concomitant growth hormone (GH) deficiency.

Case description. An 11-year-old male presented with short stature (-2.8 SDS), severe leg deformities, and dental anomalies. Despite early diagnosis of vitamin D-resistant rickets at 7 months and treatment with calcitriol and phosphate supplements, growth and skeletal abnormalities persisted. Family history revealed maternal features consistent with XLH. Biochemical investigations confirmed hypophosphatemia, elevated alkaline phosphatase, and normal calcium levels. Genetic testing identified a hemizygous deletion in exon 9 of the *PHEX* gene, confirming XLH. Additional endocrinological evaluation revealed GH deficiency through suboptimal stimulation test results. The patient received phosphate and α-calcidol supplements alongside growth hormone therapy (0.035 mg/kg/day). Orthopedic interventions addressed progressive genu varum deformities, and dental care targeted recurrent abscesses and enamel hypoplasia.

Summary. Over five years, the patient gained 30 cm in height, improved bone alignment, and reduced symptomatology. Long-term follow-up monitors renal function to mitigate the risk of nephrocalcinosis and biochemical markers to optimize phosphate and hormone replacement.

Conclusions. This case emphasizes the importance of early diagnosis and personalized, multidisciplinary care in managing XLH with GH deficiency. GH therapy significantly improved linear growth without exacerbating disproportionate limb length. Emerging therapies targeting FGF23, including inhibitors like burosumab, hold promise for further improving clinical outcomes in XLH.

PATIENT WITH PERSISTENT LIVEDO RETICULARIS AND ADA 2 DEFICIENCY

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Keywords. Livedo reticularis; ADA2 deficiency; Sneddon's syndrome; Pediatric stroke

Introduction. The association between livedo reticularis (LR) and stroke is known as Sneddon's syndrome, which arises from several causes, including ADA2 deficiency (DADA2). DADA2 is a monogenic autoinflammatory disease caused by an autosomal recessive mutation in adenosine deaminase 2 (ADA2). Its clinical presentation is highly variable and typically includes systemic inflammation from an early age: vasculitis, periodic fevers, LR, musculoskeletal disorders (myalgia/arthralgia, arthritis, myositis), and hematological manifestations (hypogammaglobulinemia, cytopenias). It may lead to ischemic/hemorrhagic stroke.

Case description. In 2022, a 12-year-old asthenic male was hospitalized with persistent LR since toddlerhood, acute febrile fever, leg muscle pain, and stomachache. Thorough examination ruled out infection, immunodeficiency, and oncohematological pathology. Findings showed microcytic anemia, elevated inflammatory indicators, and positive HLA-B27. After antibiotics and anti-inflammatory treatment, he was discharged with diagnoses of reactive myositis and fever of unknown origin. Medical history revealed reactive arthritis and cyanotic rashes at age 3, raising suspicions of connective tissue disease. Skin biopsy and skeletal scintigraphy showed no pathology. The family history was unremarkable except for a maternal great-uncle who died at 30 from a stroke. At 14, he was hospitalized with an acute lacunar stroke in the pons. Pediatric stroke gene panel sequencing identified two pathogenic heterozygous variants in the ADA2 gene. Patient was discharged with spasticity, hemiparesis and dysarthria (mRS2). Anticoagulation therapy was prescribed.

Summary. A patient with persistent LR, recurrent myositis, and fever was ultimately diagnosed with DADA2 at 14 after lacunar stroke.

Conclusions. This case illustrates the diagnostic challenge and delayed identification of DADA2 in a pediatric patient with livedo reticularis and inflammatory symptoms. Early consideration of DADA2 in children with unexplained vasculopathy, febrile myositis, and ischemic events is essential for timely intervention with anticoagulation and immunomodulatory therapy to prevent further complications and improve outcomes.

VENO-ARTERIAL ECMO FOR CRITICALLY ILL NEONATAL AND PEDIATRIC PATIENTS IN LATVIA :A CASE SERIES

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Keywords. Veno-arterial ECMO; Case series; mobile ECMO

Introduction. Extracorporeal membrane oxygenation (ECMO) is a lifesaving therapy for critically ill patients to temporarily support heart or lungs. To achieve optimal outcomes, ECMO should be performed in specialized centers using Hub-and-Spoke model of care.

Case description. We present a case series of seven critically ill neonatal and pediatric patients who were treated at the Children's University Hospital of Latvia from 2022 to 2024. Due to their severe condition, all patients underwent veno-arterial ECMO cannulation and were afterwards transported to Karolinska University Hospital by a mobile ECMO team.

Among four neonatal patients, two were cannulated for ECMO due to meconium aspiration syndrome with persistent pulmonary hypertension, one for severe respiratory infection, and one for septic shock with refractory hypoxemia. In the pediatric group, two patients presented with streptococcal septic shock and multiple organ dysfunction syndrome, and one with malignant pertussis.

Average time from consultation with the ECMO center to ECMO initiation was six hours (range: three to ten hours). All neonatal patients survived and were transported back to Latvia after 4-6 days of ECMO therapy. Among the pediatric patients, only one survived ECMO treatment and was discharged from the ECMO intensive care unit; however, later died in pediatric intensive care unit in Latvia.

Summary. Of the seven patients treated with ECMO, four recovered with severe to no complications, while three succumbed to their critical condition. Our findings emphasize the importance of early ECMO team involvement in severe pediatric sepsis and highlight the potential benefits of performing ECMO cannulation at the Children's Hospital in Riga to expedite treatment initiation.

Conclusions. This case series underscores the critical role of ECMO in managing severely ill children. Timely initiation of ECMO is essential for improving outcomes, and implementing local cannulation may further enhance care delivery in Latvia.

EXPLORING THE POTENTIAL LINK BETWEEN POVIDONE-IODINE ANTISEPTIC AND IATROGENIC HYPOTHYROIDISM IN NEONATES: A CASE REPORT

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Keywords. Hypothyroidism; Povidone-iodine exposure; Neonate

Introduction. Povidone-Iodine is among the most widely used antiseptics in hospitals. While generally safe, prolonged topical exposure can result in iodine-induced hypothyroidism- a rare but clinically significant complication. This case highlights the intersection of congenital anomalies, their surgical management and endocrine complications that require intervention and monitoring for the best patient outcome.

Case description. A male infant, born at 36+3 weeks of gestation, was admitted to the newborn intensive care unit 3 hours after birth with gastroschisis, repair with a Silo bag was performed shortly after arrival. After surgery daily wound care with povidone-iodine was performed. The following day newborn screening was done showing normal TSH values. Second screening on day 7 also revealed normal TSH levels. Week after surgery signs of wound infection developed, necessitating wound care with povidone-iodine twice daily. Abdominal wall defect was closed after 19 days. Third screening on day 28th revealed elevated TSH levels, additionally FT4 and FT3 values were low. A pediatric endocrinologist was consulted and levothyroxine 30 μg daily was started. Povidone-iodine use was discontinued after 27 days of exposure due to concerns of iodine-induced hypothyroidism.
Levothyroxine dosage was gradually decreased and the infant was discharged after 124 days, still on medication. Two months later, with euthyroid laboratory values, levothyroxine was discontinued after 140 days of therapy. The mother has no known thyroid dysfunction.

Summary. An infant with gastroschisis presenting normal TSH levels during the first week of life was exposed to daily povidone-iodine for prolonged wound care. On day 28, screening revealed elevated TSH and decreased FT4 and FT3 levels. Levothyroxine therapy was initiated, and povidone-iodine was discontinued. The infant achieved an euthyroid state and successfully discontinued levothyroxine after discharge**.**

Conclusions. TSH levels should be monitored in neonates with repeated povidone-iodine exposure for surgical wound care.

DISSEMINATED MYCOBACTERIUM BOVIS INFECTION FOLLOWING ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT IN PATIENT WITH FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS SECONDARY TO UNC13D MUTATION

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Keywords. Disseminated Mycobacterium bovis infection; HSCT; Familial Hemophagocytic Lymphohistiocytosis

Introduction. Familial Hemophagocytic Lymphohistiocytosis (FHL) is a rare, often lethal genetic disorder characterized by a primary innate immunodeficiency, resulting in heightened T-lymphocyte and macrophage activity and leading to aberrant cell proliferation. Here, we describe, to our knowledge, the first reported case of disseminated Mycobacterium bovis (MB) infection in a child with familial hemophagocytic lymphohistiocytosis secondary to a UNC13D mutation (FHL3) after undergoing hematopoietic stem cell transplant (HSCT) in Latvia.

Case description. We report a 6-month-old female with FHL3 who presented 76 days post-allogeneic HSCT with redness, a dense mass at the left shoulder BCG vaccination site, and axillary lymphadenopathy. Prior to transplantation, the patient received HLH-2004 protocol-based treatment and a BCG vaccine at birth. Antituberculosis therapy with isoniazid and rifampicin was initiated, but three days later, a generalized erythematous rash developed. A skin biopsy ruled out Graft-versus-Host Disease . Ultrasound revealed persistent masses in the spleen and liver, along with subcutaneous lesions in the left leg. MRI confirmed MB lesions in the spleen and liver. Rifampicin was discontinued due to interference with cyclosporin blood levels, and the patient was transitioned to isoniazid, ethambutol, and levofloxacin. Following the detection of isoniazid resistance, rifabutin was introduced. The patient is currently recovering. The latest post-transplant chimerism is 99%, with stable ultrasound findings. Despite fluctuations, cyclosporin levels remained within the therapeutic range during antituberculosis treatment.

Summary. The patient with FHL3 developed disseminated Mycobacterium bovis infection, attributed to BCG vaccine reactivation, 76 days post-allogeneic HSCT. Management was complicated by drug resistance and interactions impacting immunosuppressive therapy.

Conclusions. This case highlights the importance of multidisciplinary management to navigate the complex interplay between infection control, transplant care, and immunosuppressive therapy.

CLINICAL MANIFESTATIONS OF FIBRODYSPLASIA OSSIFICANS PROGRESSIVA: A CASE REPORT

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Keywords. Fibrodysplasia Ossificans Progressiva; Progressive ossification; ACVR1 mutation; Subcutaneous nodules

Introduction. Fibrodysplasia Ossificans Progressiva (FOP) is an ultra-rare autosomal dominant genetic disorder caused by mutations in the ACVR1 gene, affecting approximately 1 in 2 million people. It involves progressive ossification of skeletal muscle, fascia, tendons, and ligaments, along with congenital malformations of the halluces. Avoiding unnecessary surgical procedures, soft-tissue injuries, and using prophylactic corticosteroids, NSAIDs, and COX-2 inhibitors are key interventions in care management.

Case description. A 3-year-old girl presented with progressive subcutaneous nodules and inflammatory soft-tissue swelling in the posterior neck and scapular region, resulting in limited shoulder movement. The patient reported inguinal pain, and the family noted that initially soft swellings became hard and immobile over time. At 8 months of age, the patient underwent surgical correction for preaxial polydactyly, which led to the development of osteochondromas in both feet. Computed tomography (CT) and magnetic resonance imaging (MRI) revealed extensive extraskeletal ossification at the scapular and thoracic region, frontal and parietal regions of the skull, and infiltrative changes in the neck that had developed over the past year. Biopsy of muscle formations showed histological features resembling osteochondroma. Genetic testing confirmed a heterozygous ACVR1 mutation, c.617G>A. Over two years, the patient developed significant movement limitations in the spine, shoulders, and pelvis, indicative of disease progression.

Summary. This clinical case demonstrates how FOP manifested in a 3-year-old girl with progressive subcutaneous nodules, soft-tissue swelling, and extensive ossification seen on imaging, alongside a confirmed heterozygous ACVR1 mutation, leading to significant movement limitations in the spine, shoulders, and pelvis over two years.

Conclusions. Early recognition of the clinical signs of Fibrodysplasia Ossificans Progressiva (FOP), such as congenital malformations of the halluces and progressive soft-tissue swellings, are essential to enable timely diagnosis and prevent inappropriate interventions that accelerate disease progression.

INTRACRANIAL HEMATOMA AND PRETERM LABOUR AT 34 WEEKS OF GESTATION - CASE REPORT ON RARE PAEDIATRIC HIGH-GRADE GLIOMA

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Keywords. Pediatric; Posterior fossa; High-grade glioma; Astrocytoma

Introduction. Haemophagocytic lymphohistiocytosis (HLH), also known as haemophagocytic syndrome, is a rare yet life-threatening haematological disorder. It belongs to the group of 'cytokine storm' syndromes, characterized by excessive immune activation and massive cytokine release, potentially leading to multiorgan failure and death. Secondary HLH occurs due to autoimmune diseases, malignancies, medications, or infections. This paper presents a case of HLH and osteomyelitis secondary to an open radial fracture in a child.

Case description. On May 15th, the mother reported reduced fetal movements and presented to P. Stradiņš University Hospital, where the fetus was found to have polyserositis with ventriculomegaly and hydropericardium, leading to maternal hospitalization. On May 16th, spontaneous preterm labor occurred at 34+4 weeks of gestation.

Postnatally, the neonate exhibited irregular respiration, deep apneas, and desaturation episodes.The infant was transferred to the Children's Clinical University Hospital (BKUS), where mechanical ventilation was initiated. MRI of the brain revealed a large hematoma in the posterior fossa. There was significant brainstem compression, herniation at both upper and lower levels. Neurological examinations revealed tetraparesis. On May 18th, a ventriculostomy and implantation of an Ommaya reservoir were performed. On May 23rd, suboccipital craniotomy was performed to evacuate the posterior fossa mass, and the material was sent for histological examination. Follow-up MRI showed minimal spontaneous neurological activity and slightly increased tone in all extremities. By June 3rd, an EEG revealed epileptiform activity. An emergency multidisciplinary team consultation with the parents resulted in a mutual decision not to pursue further resuscitation, to continue non-invasive respiratory support (NIV), and to focus on providing comfort care. The infant's condition deteriorated with pronounced desaturation episodes and progressively severe bradycardia. Death occurred on June 9, 2023. Psychological support was provided to the parents, and consent was obtained for an autopsy of the infant's brain.

Summary. This case represents an unfavorable prognosis of a rare High-grade glioma. This case highlights the complications of an open radial fracture, including osteomyelitis, bone necrosis, and secondary HLH, requiring a multidisciplinary approach.

Conclusions. In this case, the tumor localization was atypical, despite the fact that in very young children it is more often localized in the hemispheres and less frequently in the posterior fossa or other midline.

A MICRODUPLICATION OF XP22.12 IN A CHILD WITH CONGENITAL HEART DISEASES: A CASE REPORT

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Keywords. Xp22.12 duplication; RPS6KA3; Coffin-Lowry syndrome; Shone complex

Introduction. Chromosomal abnormalities in the X chromosome p22.12 region, including the RPS6KA3 gene, are associated with Coffin–Lowry syndrome and X-linked intellectual disability disorder. Xp22.12 duplication primarily affects the nervous system, leading to neuropsychiatric manifestations. To the best of our knowledge, this is the first reported instance of this mutation associated with congenital heart disease.

Case Report. A 2-month-old boy presented with tachypnea, dyspnea, tachycardia, and poor feeding. Echocardiography revealed coarctation of the aorta, a bicuspid aortic valve, severe aortic valve stenosis, and a parachute mitral valve consistent with incomplete Shone's complex. Following diagnosis, the patient underwent a median sternotomy for correction of the coarctation of the aorta with end-to-arch anastomosis and commissurotomy for severe aortic valve stenosis. The postoperative period was uneventful. At the 7-month follow-up, the aortic arch was optimal in size, but the patient showed signs of moderate residual aortic valve stenosis with mild insufficiency and mild stenosis of the parachute mitral valve. Left ventricular hypertrophy and diastolic dysfunction were also noted. Single nucleotide polymorphism genotyping array revealed a 428 Kb microduplication of X chromosome p22.12 region, which had not previously been reported in association with congenital heart disease. The duplicated interval involved only part of the RPS6KA3 gene. Maternal chromosome analysis was recommended to determine whether this abnormality is inherited or de novo in origin.

Summary. TA 2-month-old boy with coarctation of the aorta, severe aortic valve stenosis, and parachute mitral valve underwent successful corrective surgery, with follow-up revealing moderate residual issues and an Xp22.12 microduplication not previously associated with heart defects.

Conclusions. This reported case further expands the clinical manifestations of mutations of the X chromosome p22.12 region, including the RPS6KA3 gene, suggesting that microduplication in this region could be related to obstructive left-sided congenital heart diseases.

FROM CONGINETAL ANOMALY TO SHORT BOWEL SYNDROME: A CASE REPORT

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Keywords. Congenital portosystemic shunt; Portal hypertension; Hereditary trombocytosis

Introduction. Congenital portosystemic shunt (CPSS) is a rare vascular malformation characterized by abnormal communication between the portal venous system and systemic venous circulation, often leading to complications like portal hypertension. Its management becomes more complex when combined with genetic predispositions such as inherited thrombocytosis.

Case Report. We describe a case of a 3-year-old patient who presented with fever and hematemesis. Medical history revealed no liver disease, however, an enlarged spleen was detected three months prior. Esophagogastroduodenoscopy showed esophageal varices, which were ligated. An abdominal ultrasound revealed splenomegaly (16.1 x 4.8 cm) and a congenital portal vein anomaly with two trunks. Signs of portal hypertension progressed (splenomegaly, thrombocytopenia), and TIPS was inserted. Regular follow-up revealed persistent thrombocytopenia and progressive splenomegaly (>12 cm over three years), leading to left kidney compression. A splenectomy was performed, after which thrombocytosis was observed. Genetic testing confirmed familial thrombocytosis (thrombopoietin gene mutation). Three weeks post-splenectomy, the patient presented with gastrointestinal bleeding. An abdominal computed tomography angiography showed mesenteric and portal vein thrombosis. Surgery revealed necrotic intestines caused by superior mesenteric vein thrombosis. The necrotic small intestine was removed. Afterward, the remaining intestine was connected to the colon, and parenteral nutrition was initiated. Over time, oral feeding was restored, and the patient regained weight.

Summary. This case highlights the complex management of congenital portal vein anomalies, thrombocytosis, and related complications, requiring multidisciplinary intervention.

Conclusions. This case illustrates the link between CPSS and inherited thrombocytosis due to thrombopoietin gene mutations. These mutations lead to elevated thrombopoietin levels in the serum, causing thrombocytosis and potential thrombosis. In discussed patient, this resulted in mesenteric artery thrombosis, causing intestinal necrosis and short bowel syndrome. Thrombocytosis diagnosis was complicated by portal hypertension, which resulted in thrombocytopenia, and thrombocytosis became evident only after splenectomy.

DELINEATING PUM1-ASSOCIATED AND BRPF1-ASSOCIATED DEVELOPMENTAL DISABILITY SYNDROMES: A COMPARATIVE STUDY OF TWO RARE INTELLECTUAL DISABILITY CASES

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Keywords. PUM1-associated developmental disability syndrome; BRPF1-associated developmental disability syndrome; Intellectual disability; Developmental delay; Dysmorphic features; Whole-exome sequencing; Genetic heterogeneity

Introduction. PUM1-associated and BRPF1-associated developmental disability syndromes are rare intellectual disability (ID) syndromes marked by developmental delays and dysmorphic features. These syndromes highlight the genetic heterogeneity of neurodevelopmental disorders, requiring accurate diagnosis for appropriate management and genetic counseling. This report details the clinical and molecular profiles of two female patients, both 2.5 years old, with phenotypic similarities to Down syndrome but distinct genetic abnormalities.

Case Report. he first patient showed significant developmental delay, achieving independent ambulation at 2 years and limited speech. Dysmorphic features included a short neck, narrow palate, flat nasal bridge, upslanting palpebral fissures, and small ears. Motor skill regression at 1 year and 3 months raised concerns about a progressive neurodevelopmental disorder. Family history revealed unaffected siblings, suggesting sporadic occurrence. Karyotyping excluded mosaic Down syndrome. Whole-exome sequencing (WES) identified a pathogenic heterozygous variant in the BRPF1 gene: c.3298C>T, p.(Arg1100Ter). The second patient also experienced developmental delays, achieving independent walking at 2 years and 4 months, with recurrent respiratory infections indicating immune dysregulation. Dysmorphic features included upslanting palpebral fissures and small ears, resembling Down syndrome. MRI revealed ventriculus terminalis conus medullaris, emphasizing thorough phenotypic evaluation. Family history suggested a potential familial predisposition, as both older sisters had mild developmental delays. WES identified a pathogenic heterozygous variant in the PUM1 gene: c.3261_3264del, p.(His1088ProfsTer16).

Summary. Both patients exhibited overlapping features but distinct pathogenic variants in BRPF1 and PUM1, highlighting genetic heterogeneity. Molecular diagnostics proved essential for accurate diagnosis and personalized genetic counseling.

Conclusions. This report underscores the importance of integrating clinical assessments with advanced molecular diagnostics. Whole-exome sequencing is vital for resolving complex neurodevelopmental cases with overlapping phenotypes, enabling targeted interventions and informed genetic counseling.

RECURRENT ERYTHEMA MULTIFORME MAJOR IN PAEDIATRICS: CASE REPORT

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Keywords. Erythema multiforme major; Paediatrics; Dermatology

Introduction. Erythema multiforme major (EMM) is an acute, immune-mediated type IV hypersensitivity reaction, often triggered by HSV. It presents with macular, papular or bullous lesions that evolve into characteristic "target lesions" and involves mucosal surfaces and may result in significant morbidity.

Case description. A 16-year-old female presents with recurrent painful rashes on her hands, feet, and mouth, along with oral and lip ulcers. Symptoms first appeared in 2019 and recurred in June 2024. Dermatologist consultation in January 2022 followed similar episodes and treatment. Blood tests (April 2022): Anti-HSV Av negative, Anti-EBV IgG positive, Anti-EBV VCA IgM borderline. Treated with Isoprinosine. During a visit to Egypt in 2023, symptoms recurred and improved with Prednisolone. Blood tests (June 2023): Anti-EBV IgG positive, Anti-EBV VCA IgM borderline, Anti-HSV 1/2 and VZV Av positive. Treatment included Acyclovir (400 mg twice daily for six months) and Dexamethasone, later switched to Methylprednisolone (July–September 2023). In October 2023, ulcers reappeared when Acyclovir was briefly stopped, prompting continuation of Acyclovir through February 2024. The patient remains on Acyclovir (400 mg twice daily) since June 2024.

Summary. This clinical case represents a paediatric patient with recurrent Erythema multiforme, it is a first case of recurrent pediatric EMM in the Children Clinical University Hospital of Riga, Latvia.

Conclusions. Recurrence of Erythema multiforme major is a rare finding in paediatric patients. At the moment the precautions had been taken of prolonged use of Acyclovir and the question of the duration of the therapy to control the disease exacerbations still stands.

CASE REPORTS, CASE REPORT SERIES

GYNAECOLOGY, OBSTETRICS, PERINATOLOGY

SUCCESSFUL FETOSCOPIC RELEASE OF AMNIOTIC BAND CAUSING FETAL LIMB EDEMA – A CASE REPORT

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Keywords. Amniotic Band Syndrome; Fetoscopic Surgery; Fetal Therapy; Regional Anesthesia

Introduction. Amniotic band syndrome (ABS) is a rare prenatal condition causing fetal limb edema and malformations due to constriction by amniotic bands. Fetoscopic surgery for amniotic band release is a minimally invasive technique that is performed rarely because of its complexity and special requirements.

Case Description. 30-year-old primipara was admitted at 25 weeks of gestation for treatment of fetal right foot and ankle; an amniotic band determined this condition. Ultrasound results indicated a tight amniotic band wound around the distal part of the lower leg, causing considerable soft tissue edema (9-12 mm). There was hemorrhagic edema noted with some mild compression of the fibula, but good blood flow could be established beyond the constriction. No other fetal abnormalities were present. Fetoscopic surgery was chosen. The course of glucocorticoids for fetal lung maturation was completed before surgery. Preparation for urgent cesarean section (CS) was also made. Operation was performed under spinal anesthesia, maternal and fetal vital signs remained stable during procedure. The first follow-up ultrasound confirmed a preserved blood flow below the previous constriction and no worsening of edemosity. Active fetal movement could still be noted, without any complications for the mother. The pregnancy continued without preterm delivery.

Summary. This case brings fetoscopic surgery into the limelight as a critical life-and-limb-preserving therapy in ABS cases. Timely diagnosis and precise, skillful surgical intervention successfully avoided permanent limb deformity while securing fetal viability. The experience provides key insights into ABS management and highlights the feasibility of fetoscopic surgery for rare fetal conditions.

Conclusions. Fetoscopic surgery is a feasible and effective treatment option for ABS. Regional anesthesia is recommended due to its minimal effects on the fetus and mother, while providing optimal conditions for the procedure, especially in cases requiring cesarean section (CS).

THE ROLE OF ULTRASOUND IN THE PREOPERATIVE DIAGNOSIS OF OVARIAN TUMORS DURING PREGNANCY: A CASE REPORT OF DYSGERMINOMA

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Keywords. Dysgerminoma; Pregnancy; Surgery; Expert ultrasound

Introduction. Malignant germ cell tumors are rare ovarian cancers, accounting for less than 5% of cases. Dysgerminoma, while the most common type, is exceptionally rare, with an incidence of only 0.2–1 per 100,000 pregnancies.

Case Description. We present the case of a 21-year-old primigravida referred for an expert ultrasound following the detection of a 9.5 x 5.4 cm pelvic mass. A follow-up ultrasound revealed vascularized (score 4) , solid tumor with heterogeneous internal echogenicity, divided into lobules and exhibiting a smooth, occasionally lobulated contour, measuring 11.79 x 7.3 cm. Based on clinical and ultrasound findings, the malignancy index calculated using the ADNEX Model was 57%, with morphological features strongly suggesting dysgerminoma. Additionally, the patient's LDH levels increased from an initial 509 U/L to 847 U/L, and the CA125 level was 34.3 U/mL. The patient was referred to the Oncology Centre of Latvia, where pelvic MRI confirmed a solid ovarian mass, raising suspicion for dysgerminoma or a stromal tumor. Given the advancing pregnancy and increasing uterine size, which posed technical challenges for surgery, an immediate intervention was planned. At 15+6 weeks of gestation, the patient underwent laparoscopic left adnexectomy with a lower transverse laparotomy for specimen extraction. Histopathological analysis confirmed left ovarian dysgerminoma with lymphovascular and capsular invasion, classifying it as stage IIB. Due to the progression of the pregnancy, the onco-gynecology consilium determined that chemotherapy was not indicated.

Summary. This rare case highlights the diagnostic strategies and clinical management of a primigravida with stage IIB ovarian dysgerminoma. The patient delivered spontaneously at 40+3 weeks of gestation, and post-pregnancy follow-up revealed no radiological evidence of disease progression.

Conclusion. The subjective assessment by expert (Level III) ultrasound examiners helps distinguish between benign and malignant ovarian tumors and refine the diagnosis to a specific histological subtype.

UTERINE RUPTURE IN A PATIENT AFTER TWO PREVIOUS CAESAREAN SECTIONS

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Keywords. Uterine rupture; Uterine scars; Hysterectomy

Introduction. Uterine rupture is a rare severe complication in obstetric practice, with increased risk for the patients with uterine scar. The risk escalates during spontaneous or induced contractions. Another critical complication is total placental abruption, a serious cause of perinatal mortality. Both conditions lead to acute fetal distress and heavy maternal bleeding, necessitating emergency management of pregnancy and prevent complications.

Case description. A 32-year-old patient (G3P2) with two previous caesarean sections (4 years and a year ago) was admitted at 37+0 weeks of gestation with onset of regular uterine contractions and haemorrhage. On 37-week ultrasound partial placenta praevia was found and foetus was suspected to be growth restricted with abnomal Doppler findings probably due to maternal smoking. Patient had an emergency caesarean section (2nd category). The newborn was pale, hypotonic, hyporeflexic, non-breathing, heart rate 110, weight 2450 g, Apgar score 2/4. Resuscitation succeeded. Intraoperatively, a uterine rupture (in the corpus, above lower uterine segment) was identified, foetus was already partially expelled through uterine laceration into abdominal cavity. Placenta was found to be totally abrupted. 4000 ml blood loss, resulting in blood transfusion. Attempt to repair the laceration was made. As haemorrhage continued there was made separation of multiple adhesions and evaluation of uterine corpus. Another laceration in lower uterine segment was revealed. Total hysterectomy with salpingectomy was performed. Postoperation period was without complications.

Summary. The clinical case was unique because of uterine rupture in two localizations.

Conclusions. The risk of uterine rupture rises with uterine scars, especially during spontaneous labor. Total placental abruption increases bleeding and fetal distress. Timely risk assessment, monitoring, multidisciplinary collaboration, and prompt surgical intervention can save lives. Proper interpregnancy spacing (18–24 months), early contraceptive planning, and vigilant counseling minimize future uterine rupture risks and improve outcomes.

VITAMIN D OVERDOSE IN THE FIRST TRIMESTER OF PREGNANCY AND ASSOCIATION WITH CONGENITAL AORTIC STENOSIS

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Keywords. Vitamin D overdose; Pregnancy; Congenital aortic stenosis

Introduction. Actual topic is vitamin D deficiency during pregnancy, but it`s rarely talked about vitamin D overdose and its possible complications. In case of vitamin D overdose, hypercalcemia and transplacental transfer of vitamin D metabolites to the fetus occur, thus there are risks of the fetal development, for example, development of congenital aortic stenosis.

Case description. A 28-year-old woman (G1P1) at 20+1 weeks of gestation undergoes second trimester screening, which reveals signs of mild hydronephrosis of the fetus. Later at 21+3 gestational weeks, fetal echocardiography shows signs of possible aortic coarctation after birth. At 41+3 gestational weeks patient underwent a second stage Cesarean section due to fetal tachycardia and signs of deceleration in cardiotocography. Apgar score 8/9. Newborn diagnosis - VCC-Aortic coarctation. Neonatal jaundice. Foetus magnus. The diagnosis was confirmed after birth. Patient took 2000 IU vitamin D every day and regularly monitored vitamin D levels. At 11+5 gestational weeks, blood tests had detected hipervitaminosis D - 119.3 ng/mL (optimal level - 45-55 ng/mL). However, the newborn's calcium level was normal but vitamin D level was not measured. Several guidelines on vitamin D highlight the risks of overdose during pregnancy and its association with impaired physical and mental development in the child, with particular emphasis on the increased risk of heart disease, including aortic stenosis.

Summary. Vitamin D toxicity is as important as its deficiency and due to the potential risk of congenital anomalies, it requires careful monitoring.

Conclusions. In this case it`s possible that congenital aortic stenosis was caused by severe hipervitaminosis D and hypercalciemia. Vitamin D preparations vary and it`s very easy to overdose. Therefore, to avoid hypervitaminosis D during pregnancy, it is necessary to closely monitor vitamin D blood levels, especially when use of medium and high doses.

UNCOMMON ETIOLOGY OF OVARIAN ENLARGEMENT: PARASITIC OVA DETECTION IN A PATIENT WITH ENDOMETRIOSIS

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Keywords. Enterobius vermicularis; Parasitic ovary infection; Endometriosis

Introduction. Enterobius vermicularis is a widely prevalent helminth, infecting over 200 million people globally. While it typically inhabits the intestines, it can affect extraintestinal sites, including the female genital tract. However, ovarian involvement is extremely rare, with only a few documented cases. Here, we present a case of ovarian E. vermicularis infection in a patient with chronic abdominal pain and urinary retention.

Case description. A 47-year-old female patient presented to the Hospital of Lithuanian University of Health Sciences Kaunas Clinics with lower abdominal pain and urinary retention persisting for several months. In response, clinical evaluation was required. During ultrasound, right ovary was found to be in contact with a cystic mass in the pelvic cavity, measuring 87 x 59 mm. This mass was filled with dense content and contained solid inclusions. A blood test revealed elevated levels of CA 125 (792kU/L). Furthermore, a CT scan was conducted, revealing a cystic tumor-like structure in the left ovary. The patient was scheduled for elective laparotomic bilateral salpingectomy and unilateral left oophorectomy, during which a cystic formation measuring 9 x 8 x 3.5 cm was identified, with the adjacent fallopian tube extending up to 6.5 cm in length. Microscopic evaluation revealed preserved fallopian tube integrity, granulomas containing epithelioid cells, multinucleated giant cells, and helminth ova. These findings, including CA 125 elevation, suggest endometriosis with granulomatous inflammation, complicated by E. vermicularis infection.

Summary. This case highlights the rare occurrence of ovarian E. vermicularis infection complicating a chronic inflammatory process.

Conclusion. Ovarian E. vermicularis infection is rare and often overlooked in the differential diagnosis of ovarian pathologies. Although its pathogenicity is low, complications such as peritonitis or infertility can occur. This case emphasizes the importance of considering parasitic infections in the differential diagnosis.

OBSTETRIC OUTCOMES IN WOMAN WITH UTERINE FIBROIDS: A CASE REVIEW

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Keywords. Uterine fibroids; Fibroid necrosis; Pregnancy complications

Introduction. Uterine fibroids are non-cancerous tumors of smooth muscle cells in the uterus. The prevalence of fibroids in pregnant women ranges from 2.7% to 10.7%. If fibroids are present during pregnancy, they can affect the outcome of the pregnancy. Because of their high prevalence, the impact of fibroids on pregnancy is a major clinical concern.

Case destription. A 41-year-old woman, in her second pregnancy with a history of one prior full-term birth, at 18 weeks gestations was diagnosed with a large uterine fibroid measuring 7.99 x 9.38 cm. At 28 weeks gestation she was hospitalized for abdominal pain. An ultrasound revealed a 12.06 x 11.57 cm fibroid in the anterior uterine wall with central degeneration. MRI confirmed fibroid degeneration. Antibiotic treatment reduced inflammation, and corticosteroids were administered for fetal lung maturation. Follow-up showed normal fetal growth. Patient was discharged stable. A planned cesarean section was performed at term due to the fetal transverse position and the presence of a large fibroid. A healthy female infant was delivered with an Apgar score of 9/9. One month postpartum, the patient presented with mild abdominal pain and uterine bleeding, attributed to subinvolution. No urgent surgery was required, the patient recovered well and was referred for planned myomectomy.

Summary. Although pain is the most common complaint in uterine fibroids during pregnancy, but rapid fibroid growth can cause degeneration and necrosis. Degeneration of fibroid trigger an inflammatory response and may serve as gateway for infection, discussing the need of antibacterial treatment. Pregnancies complicated by uterine fibroids, especially larger than 3 cm, may be associated with an increased risk of postpartum hemorrhage.

Conclusions. Monitoring patients with fibroids during pregnancy is particularly important. Early detection and appropriate management can reduce the risk of complications associated with fibroids during pregnancy.

WELL-DIFFERENTIATED VULVAR SQUAMOUS CELL CARCINOMA: A RARE CASE REPORT

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Keywords. Keratinizing squamous cell carcinoma of the vulva; Vulvar cancer.

Introduction. Vulvar cancer is a relatively rare form of cancer, it accounts for only 4% of all malignant gynecological diseases. Symptoms of keratinizing squamous cell carcinoma of the vulva include persistent itching, discomfort, thickened or keratinized skin patches, non-healing ulcers, bleeding, inguinal lymph node swelling, and, in advanced stages, systemic symptoms like weight loss and fatigue.

Case description. A 78-year-old female sought medical attention due to persistent itching and lesions in the vulvar region. Evaluation revealed well-differentiated keratinizing squamous cell carcinoma, unrelated to HPV. CT showed tumor involvement in the labia minora, vagina, and pathological inguinal lymph nodes. A pelvic organ MRI was conducted for a more detailed assessment, revealing a region of altered signal intensity in the DWI sequences in the anterior part of the labia majora. A bilateral vulvectomy was performed, including removal of the clitoris and resection of approximately 5 mm of the posterior vaginal wall at the vaginal entrance also pathological lymph nodes were removed bilaterally. Preoperative antibiotic prophylaxis with Cefazolin was administered. The patient demonstrated good clinical recovery and was discharged home ten days after surgery, with plans to undergo radiotherapy for the pelvic region and a third-stage rehabilitation program at a sanatorium.

Summary. A 78-year-old female was diagnosed with well-differentiated keratinizing squamous cell carcinoma of the vulva, unrelated to HPV, after presenting with persistent itching and lesions. She underwent bilateral vulvectomy with clitoral removal, pathological lymph node excision, and partial vaginal wall resection, followed by a favorable recovery and plans for pelvic radiotherapy and rehabilitation.

Conclusion. Keratinizing squamous cell carcinoma of the vulva is a rare malignancy requiring precise diagnosis, individualized surgical management, and multidisciplinary care. Adjuvant radiotherapy and comprehensive rehabilitation play a key role in reducing recurrence risk and optimizing patient outcomes.

WHEN ANTICIPATION IS ACCOMPANIED BY UNCERTAINTY- MALIGNANT DISEASE DURING PREGNANCY- CASE REPORT

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Keywords. Melanoma; Pregnancy; Cancer

Introduction. PAM (pregnancy-associated melanoma) is defined as melanoma diagnosed during pregnancy or up to one-year postpartum. Melanoma is not only the most prevalent cancer during pregnancy, but also one of the fastest-growing tumors during pregnancy having the ability to metastasize within the placenta and fetus.

Case description. A healthy 32-year-old woman at 21 weeks of pregnancy was transported to a highly specialized hospital for further diagnostics after the detection of a splenic tumor. Additionally, magnetic resonance imaging (MRI) scan revealed pathological changes in the spleen, left adrenal gland and kidney. After admission to the university hospital the patient also complained of pain in the left subcostal region and shoulder. Breast ultrasound exposed an irregular hypoechoic focal lesion in the right breast. Chest X-ray described a well-defined round shadow in the upper left lung field. All things considered, suspicion of malignancy was raised. After multidisciplinary medical board consultations, the patient was scheduled for an urgent splenectomy due to life-threatening indications and delivery via cesarean section at 30 weeks. The histopathological and immunochemistry examination of spleen revealed melanoma metastases. The patient is currently undergoing oncological treatment, receiving chemotherapy for 9 months.

Summary. Taking into account the potential consequences of melanoma for both the woman and the fetus, a pregnant woman requires thorough investigation and therapy in a multidisciplinary approach, involving expertise from oncology, dermatology, and obstetrics. It should be remembered that any suspicious pigmented lesion detected during pregnancy must undergo biopsy.

Conclusions. It is important to inform patients planning pregnancy about monitoring moles on their skin. If there are any concerning skin changes in a pregnant woman, send for a biopsy. Cancer during pregnancy is a very complex issue requiring the collaboration of multiple specialists.

UNEXPECTED DIAGNOSIS IN STAGE IC1 OVARIAN CARCINOMA: A CLINICAL CASE

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Keywords. Ovarian carcinoma; Histological confirmation; Splenic lesion; Lymphangioma; Surgical staging; Cytoreductive surgery; Chemotherapy; Benign lesions; Overtreatment prevention

Background. Ovarian carcinoma is a significant cause of gynecologic cancer mortality, often requiring extensive surgical and systemic treatment. Rare diagnostic dilemmas, such as splenic lesions mimicking metastasis, underscore the importance of histological confirmation to guide treatment strategies.

Case description. A 37-year-old woman presented with a right ovarian mass detected during routine ultrasound. Elevated CA-125 levels (37.97 U/mL) and imaging suggested malignancy. Laparoscopic right salpingo-oophorectomy revealed endometrioid carcinoma (G1, pT1a Nx Mx). Comprehensive staging surgery, including total hysterectomy, omentectomy, and pelvic lymphadenectomy, confirmed Stage IC1 disease (pT1c1 N0 M0 G1). The patient underwent four cycles of carboplatin-based chemotherapy, achieving remission. Eighteen months later, recurrence was suspected due to imaging findings near the left iliac vessels and a splenic lesion. Cytoreductive surgery, including splenectomy, was performed. Surprisingly, postoperative histology revealed that the splenic lesion was benign lymphangiomas rather than metastasis.

Discussion. This case illustrates the complexity of managing ovarian carcinoma, emphasizing the importance of histopathological analysis in guiding treatment. While imaging and clinical findings strongly suggested splenic metastasis, histology revealed a benign condition, preventing overtreatment and altering the patient's prognosis.

Summary. A 37-year-old woman with Stage IC1 endometrioid ovarian carcinoma underwent surgery and chemotherapy, achieving remission. Imaging later suggested recurrence with suspicious lesions near the iliac vessels and spleen. After surgery, the splenic lesion was found to be benign lymphangiomas, not metastasis. This case highlights the importance of histological confirmation to avoid unnecessary treatment and improve outcomes in ovarian cancer management.

Conclusion. This case underscores the critical role of surgical staging, individualized treatment, and histological confirmation in ovarian carcinoma management. Vigilance in evaluating suspicious findings can help avoid unnecessary interventions and refine therapeutic approaches.

PREGNANCY PROGRESSION AND OUTCOME IN THE PRESENCE OF UTERINE ANOMALY: A CASE REPORT

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Keywords. Uterus didelphys; IVF, Pregnancy; Caesarean delivery; Uterine malformation

Introduction. Uterus didelphys, resulting from incomplete fusion of the Müllerian ducts between 12 and 16 weeks of fetal development, affects about 0.3% of the population[1,2]. It often leads to infertility and obstetric complications, with IVF commonly used[3]. We present a case of a patient with uterus didelphys who conceived through IVF, carried a twin pregnancy, and delivered a healthy infant via cesarean section without major complications.

Case description. A 33-year-old primipara woman presented at 38 weeks of gestation to the Lithuanian Health Science University Hospital, Department of Obstetrics and Gynecology, for delivery. Her medical history includes 6 years of primary infertility and a diagnosis of uterus didelphys with a blind left horn, two cervices, and vaginal septum. After three unsuccessful IVF attempts resulting in miscarriages, the fourth attempt led to the successful implantation of two embryos in the right uterus. A 12-week ultrasound confirmed dichorionic diamniotic twins. Subsequent ultrasounds showed normal fetals growth, and NIPT indicated a low risk. Due to complications from a multiple pregnancy and the absence of spontaneous labor, an elective C-section was performed at 38 weeks. A healthy female infant (2920g, 49 cm, Apgar 8/9) and a healthy male infant (3065g, 50 cm, Apgar 9/10) were born. The postpartum and neonatal periods passed without complications for both twins.

Summary. Uterus didelphys is a rare congenital anomaly caused by incomplete fusion of the Müllerian ducts. It is commonly associated with infertility and obstetric complications, with IVF often used for conception. An elective C-section was performed due to multiple pregnancy complications and lack of spontaneous labor.

Conclusions. The lack of prominent clinical signs of uterus didelphys can delay diagnosis, requiring thorough evaluation. Twin pregnancies with uterine anomalies should be considered high risk and managed individually to optimize outcomes.

RAPID GROWTH OF DERMOID OVARIAN CYST: CASE REPORT

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Keywords. Dermoid ovarian cyst; Teratoma; Ovarian cyst

Introduction. Dermoid cysts, or mature cystic teratomas, are the most common benign germ cell tumors in the ovaries, accounting for 10% to 20% of all ovarian tumors. Dermoid cysts are typically considered to grow very slowly, with an average increase of 1.8 mm per year in premenopausal women.

Case description. A 33-year-old woman presented in February 2024 with severe right lower abdominal pain. Laparoscopy revealed ovarian and fallopian tube torsion. The adnexa were restore, and all uterine appendages were inspected. No complications were noted. In May, the patient returned to the emergency department with recurring abdominal pain. A gynecological examination was not performed, as the patient had undergone gynecological surgery a few months prior, and no gynecological pathology was suspected. On June, the patient consulted a gynecologist. Ultrasound showed normal ovarian structure, and 7-8 cm mass behind the uterus, resembling a dermoid cyst, was identified. Considering the patient's recent laparoscopy, a differential diagnosis was conducted, including a pelvic ultrasound and MRI, which confirmed the findings. The mass was located behind the uterus, and with normal ovarian structure, it took time to confirm its origin. Multidisciplinary consultations were held, resulting in the scheduling of a planned laparoscopic surgery. On August, a cystectomy was performed, and histological examination confirmed a mature cystic teratoma.

Summary. A 33-year-old woman presented with severe right lower abdominal pain in February 2024. Laparoscopy revealed a torsion of ovary and fallopian tube. In June, ultrasound and MRI identified a 7-8 cm mass behind the uterus, resembling a dermoid cyst. After multidisciplinary consultations, a laparoscopic cystectomy was performed. Histology confirmed a mature cystic teratoma, which was grown to 7 cm in 3 months.

Conclusions. A benign mature cystic teratoma should remain a consideration when a new ovarian mass is found in a patient with previous imaging showing no ovarian abnormalities.

SEVERE, DIFFUSE ABDOMINAL PAIN POST-ENDOMETRIOSIS EXCISION SURGERY: A CASE OF ADHESION PREVENTION POWDER INDUCED COMPLICATIONS

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Keywords. Infertility; Pelvic Pain; Endometriosis; Adhesion Prevention Powder; Postoperative Complications

Introduction. Endometriosis, a benign gynecological condition, can cause pelvic pain and infertility. Pain management includes NSAIDs, hormonal therapy, or surgical excision, while infertility treatment may involve IVF or laparoscopic excision of endometriotic lesions. To reduce the risk of postoperative adhesions and improve fertility outcomes, anti-adhesion barriers, including powders, and gels can be used. While these substances are considered safe and effective, rare complications can occur such as diffuse abdominal pain, which requires prompt recognition and management to prevent further morbidity.

Case Description. A 36-year-old woman with symptomatic endometriosis causing pain and infertility underwent surgical treatment, including laparoscopic excision of endometriotic lesions, ovarian cyst excision, and anti-adhesion powder application which was followed by hysteroscopic polypectomy. Postoperatively, the patient developed increasing diffuse abdominal pain, peritoneal irritation signs, and elevated CRP up to 210 mg/dL. A CT scan revealed no abscess formation or other abnormalities. As the pain increased despite analgesics and antibiotics, a re-laparoscopy was performed. No pathology was found, and only abdominal lavage was performed, resulting in immediate symptom relief. Before surgery, the patient had initiated IVF treatment for infertility but discontinued it. Despite surgical complications, spontaneous pregnancy occurred three months after surgery.

Summary. This case illustrates a rare complication associated with anti-adhesion powder used after laparoscopic excision of endometriosis.

Conclusion. Anti-adhesion barriers can improve surgical outcomes by reducing postoperative adhesions. However, it is crucial to be aware and act immediately if any complications appear. Even though there is no evidence on the correct sequencing of procedures, it could be possible that performing hysteroscopy before laparoscopy can play a role in preventing such complications.

NAVIGATING THE MAZE: DIAGNOSIS AND MANAGEMENT OF A LARGE UTERINE FIBROID

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Keywords. Uterine fibroids; Hysterectomy; Patient-centered care

Introduction. Uterine fibroids are the most common benign gynecological tumors, affecting 30-40% of women by the age of 40. However, diagnostic challenges can arise, particularly in cases with unusual locations, complicating treatment decisions.

Case description. A 45-year-old woman presented with menorrhagia. Transvaginal ultrasound (TVUS) revealed multiple fibroids, the largest measuring 2.0 x 3.1 cm, and endometrial hyperplasia. While experiencing associated symptoms like fatigue, urinary frequency, and bowel discomfort, the patient did not initially link them to the fibroid, and the physician did not explicitly address this connection. Consequently, these symptoms remained unreported. Initial management consisted of combined oral contraceptives. However, at a five-month follow-up, TVUS demonstrated significant fibroid growth (5.8 x 5.5 cm). Precise localization proved challenging due to imaging limitations. A total hysterectomy was recommended. A preoperative workup revealed severe anemia (hemoglobin 5.5 g/dL), necessitating blood transfusions. Intraoperatively, the fibroid was identified as a large, pedunculated lesion originating from the fundus and protruding through the cervical canal. A subtotal hysterectomy was performed. Post-surgery, the patient acknowledged experiencing confusion and significant anxiety throughout the management process, which hindered her understanding of the seriousness of her diagnosis and delayed further medical evaluation. Prior to the development of this case report, written informed consent was obtained.

Summary. This case highlights the diagnostic challenges associated with uterine fibroids and the critical role of patient-centered care.

Conclusions. In cases with unusual fibroid locations diagnostic challenges prevail which complicates management decisions. The patient's experience underscores the importance of open communication and comprehensive patient education in managing fibroid-related symptoms and making informed treatment decisions.

SPLENIC ECTOPIC PREGNANCY: A RARE CASE REPORT

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Keywords. Ectopic pregnancy; Radiology; Interventional radiology; Gynaecology

Introduction. Ectopic pregnancy is a significant cause of morbidity and mortality in women of reproductive age, accounting for approximately 1-2% of all pregnancies [1]. Rarely, ectopic pregnancies can occur in unusual locations, such as the ovary, cervix, or abdominal cavity. We report a case of splenic ectopic pregnancy complicated by hemoperitoneum, which was successfully managed conservatively.

Case description. A 32-year-old woman with a history of two previous ectopic pregnancies was admitted to the Emergency Department with pain in the left side and lower abdomen, nausea, and vomiting. The final diagnosis of a splenic ectopic pregnancy was made based on anamnesis, elevated β-hCG levels, positive pregnancy test, transvaginal ultrasound that did not show an intrauterine pregnancy, and computed tomography (CT) examination findings of heterogeneous structure inferior to the spleen with hemorrhagic fluid in the pelvis. Selective angiography with coil embolization was performed to stop the bleeding from a small artery that branches off the lower pole of the spleen. The patient was treated conservatively with a two-dose regimen of methotrexate. The next day, the β-hCG level lowered to 2900 IU/L. The patient was followed up with monitoring of the dynamics of the hematoma. After two months, the β-hCG level normalized to 1.8 IU/L. CT scan was repeated after 7 months. The mass near the spleen had decreased, and the patient's recovery was uneventful.

Summary. Advancements in imaging and interventional radiology have shifted management towards minimally invasive approaches. Transcatheter arterial embolization has emerged as a key method to control bleeding while preserving the spleen [2,3]. Minimal invasive therapy combined with methotrexate minimizes surgical risks and supports better recovery outcomes.

Conclusions. A multidisciplinary approach and minimally invasive techniques can effectively manage splenic ectopic pregnancy, ensuring patient safety and optimal outcomes.

CASE REPORTS, CASE REPORT SERIES

INTERNAL MEDICINE II (GASTROENTEROLOGY, NEPHROLOGY, ENDOCRINOLOGY, RHEUMATOLOGY)

ATYPICAL TESTICULAR SEMINOMA METASTASIS IN THE THYROID GLAND AND SUBACUTE THYROIDITIS: A CASE REPORT OF A RARE CLINICAL PRESENTATION

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Keywords. Seminoma; Metastases; Thyroid

Introduction. Frequently, the initial symptom of testicular seminoma is a painless lump or swelling in the testicle. Typical metastatic sites are retroperitoneal lymph nodes. However, the thyroid is a rare site of metastases from any cancer, they account for 1.5-3% of all malignancies.

Case description. A 22-year-old man was referred to the Emergency department due to a painless mass on the left side of his neck that appeared three weeks ago, a decrease in appetite and acute upper respiratory tract infection with negative dynamics lasting for three days. The neck ultrasound showed an enlarged left thyroid lobe, with a mixed-structure nodule occupying almost the entire lobe. Enlarged lymph nodes were present in the left supraclavicular and posterior cervical areas. Due to suspected subacute thyroiditis, patient was urgently admitted to the Endocrinology department. On the 3rd day blood tests showed normal thyroid hormone levels, ESR 101 mm/h, inflammatory markers declining dynamically. Treatment with NSAIDs initiated according to subacute thyroiditis protocol. A biopsy of the thyroid mass and lymph nodes was performed, the results indicated a mixed germ cell tumor. After the CT scan of the chest, abdomen, and pelvic organs, advanced testicular neoplastic process was suspected. After a whole-body PET/CT scan, a metabolically active mass in the right testicle was observed, most likely with metastases in the liver, the left supraclavicular, mediastinal, left inguinal region, lungs and at the level of the crura of the diaphragm lymph nodes.

Summary. 22-year-old man palpated mass on the left side of his neck and complained of a decreased appetite. After conducting tests, testicular cancer was diagnosed with metastases of the thyroid, liver, and lymph nodes.

Conclusions. Testicular cancer with metastasis of the thyroid and subacute thyroiditis are an extremely rare occurrence, with hardly any information about it in medical literature.

HYPERSENSITIVITY TO BIOLOGICS: NAVIGATING THE CHALLENGES OF DIAGNOSIS

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Keywords. Hypersensitivity; Biologics; Excipients

Introduction. Biologics hold significant importance in treating rheumatoid arthritis (RA). Although hypersensitivity to biologics is generally considered due to their origin, other components of the drug formulation can be the actual cause.

Case description. A 71-year-old woman with seropositive RA presented to the daycare unit of the immunology and allergology department to evaluate a suspected allergy to adalimumab following an injection-site reaction (ISR). An intradermal allergy test using 5 mg/ml of the drug yielded a positive result. Before switching RA treatment to tocilizumab, allergy skin testing for this drug was performed. All tests with tocilizumab were negative, allowing the patient to proceed with the treatment. Additional skin testing with a polysorbate 80-containing agent was conducted during this visit to investigate a potential allergy to other drug components. Both skin prick and intradermal tests were negative. However, after the first injection of tocilizumab, another ISR occurred with a documented 15 cm diameter wheal. Subsequent intradermal testing with tocilizumab at 18 mg/ml revealed a positive reaction. One week later, the patient underwent allergy testing with a third biologic drug, rituximab, and again with the excipient. Both intradermal tests with rituximab and polysorbate 80-containing agent were confirmed as positive. Based on these results, it was determined that the hypersensitivity reactions were caused by the excipient polysorbate 80, a component shared by all the biological agents tested. Following this diagnosis, the patient's treatment was switched to JAK inhibitor baricitinib.

Summary. We report the case of a 71-year-old woman with recurrent ISRs to biological agents used for RA treatment. Allergy skin tests confirmed hypersensitivity to polysorbate 80.

Conclusions. In cases of hypersensitivity reactions to multiple biologics, healthcare professionals should consider hypersensitivity to excipients. Early identification of such allergies allows for selecting appropriate treatment options and avoiding drug-induced reactions.

MULTIDISCIPLINARY APPROACH IN TUBERCULOSIS INFECTION DIAGNOSIS CONFIRMED AS SIDE EFFECT OF TNFA TREATMENT FOR PATIENT WITH INTESTINAL CROHN'S DISEASE

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Keywords. Crohn's disease; TNFα inhibitors; Tuberculosis

Introduction. Treatments that target tumor necrosis factor alpha (TNFα) are widely used in Crohn's disease (CD) management but pose risks - potentially reactivate latent infections as Mycobacterium tuberculosis, which can lead to severe extrapulmonary or disseminated tuberculosis (TB).The presentation aimed to demonstrate side effect of anti-TNFα treatment - TB infection, successfully treated with first line TB therapy.

Case description. A 24-year-old male was diagnosed with CD in 2020 and initially treated with budesonide. At the end of 2023, an entero-enteric fistula was diagnosed. Colonoscopy showed a deformation of the ileocecal valve, no signs of TB in the biopsy. QuantiFERON test was negative. In February 2024, the patient started Adalimumab. By June he presented with persistent fever, weight loss, and sweating. On July the patient was hospitalized with shortness of breath and pericarditis, requiring pericardiocentesis to drain 1.3 litres. Bilateral pleural effusions were present, and thoracocentesis was performed. QuantiFERON test was negative. A PET/CT scan revealed diffuse, circular hypermetabolism in the pericardium, indicative of pericarditis. On August 2024, pleural drainage was performed, and GeneXpert testing for TB was conducted. Due to changes in the pericardium, lungs, and pleura, a bronchial lavage for GeneXpert testing was recommended, it was positive for MTB DNA. The patient was started on first-line TB therapy, which was well tolerated.

Summary. This CD case demonstrates the potential for TB reactivation on biologic therapy. It underscores the importance of maintaining a high index of suspicion for atypical TB presentations, utilizing advanced diagnostic tools and adopting a multidisciplinary approach for effective diagnosis and management.

Conclusions. Our case report showed side effect of TNFα treatment - TB infection as complicate diagnosis and role of multidisciplinary team management. Healthcare providers should be aware of the increased risk of tuberculosis reactivation in patients receiving biologics.

RECTAL CALCINOSIS WITH ULCERATION AS A RARE COMPLICATION OF PRIMARY HYPERPARATHYROIDISM. A CASE REPORT

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Keywords. Primary hyperparathyroidism; Rectal calcinosis; Hypercalcemia

Introduction. Primary hyperparathyroidism (PHPT) is characterized by excessive parathyroid hormone (PTH) secretion, leading to hypercalcemia. While often asymptomatic or mild, severe hypercalcemia can cause life-threatening complications, including calcinosis in unusual locations. Prolonged elevated calcium levels may result in tissue damage and ulceration. Early diagnosis and management are crucial to prevent such complications, particularly in patients with persistent, unaddressed symptoms.

Case description. A 73-year-old woman presented with progressive symptoms, including appetite loss, nausea, vomiting, constipation and weight loss (20 kg in one year). Fatigue, weakness and mild gastrointestinal discomfort had already started in 2022, but no electrolyte assessments were performed until the time of hospitalisation. She was diagnosed with severe hypercalcaemia (serum calcium 5,2 mmol/l), hyperparathyroidism (PTH - 1675 pg/ml) caused by a 5 cm parathyroid adenoma. Initial treatment included rehydration and haemofiltration to reduce calcium levels, followed by emergency parathyroidectomy, after which calcium and active vitamin D3 (calcitriol) replacement therapy was started. Two days post-surgery, she developed acute rectal bleeding due to rectal calcinosis with ulceration, a rare complication of hypercalcaemia. Conservative treatment, including ethamsylate, alpha caproic acid, cryoprecipitate, fresh frozen plasma and erythrocyte mass, along with supportive care, led to improvement, avoiding rectal surgery. The patient was discharged in stable condition with specialist follow-up.

Summary. This case highlights PHPT with severe hypercalcaemia and the rare complication of rectal calcinosis. Despite severe rectal bleeding, conservative treatment avoided rectal surgery with temporary creation of an anus praeter naturalis. Emergency diagnosis and treatment allowed normalisation of calcium levels and recovery.

Conclusions. Early recognition and treatment of PHPT are critical. Prolonged hypercalcaemia caused systemic symptoms and ischaemic changes in the rectal mucosa, contributing to calcinosis and ulceration. Early intervention could have prevented this complication, which was successfully managed conservatively in this case.

IGG4-RELATED HYPERTROPHIC PACHYMENINGITIS (IGG4-RHP)

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Keywords. IgG4-associated pachymeningitis; p-ANCA vasculitis

Introduction. IgG4-RHP is a rare immune-mediated condition identified by thickening of the dura mater of the cranium or spine, characterized by certain histopathological features. So far, only a handful of clinical cases have been reported worldwide.

Case description. In May 2021, a 52-year-old patient presented with a 3-week-long dry cough, sweating, musculoskeletal pain, elevated inflammatory markers, and a fever of 39°C. After antimicrobial therapy failure and extensive radiologic-immunologic evaluation, p-ANCA vasculitis was diagnosed based on high MPO titer and positive p-ANCA. No lung or kidney involvement was noted. Methylprednisolone and Mycophenolate mofetil therapy started. From June 2022 to May 2024, patient experienced recurrent flare-ups, presenting with sub-febrile temperature, general fatigue, musculoskeletal pain, headaches, and constantly elevated inflammatory markers. Symptoms were relieved after increasing GC dosage. Mycophenolate mofetil sDMARD was exchanged for methotrexate to optimize therapy efficacy by the end of 2022. Additionally, patient has steroid-induced osteoporotic bone changes, and arterial hypertension, chronic pansinusitis. May 2024, patient reported left-side vision impairment and recurrent headaches that were only alleviated by combined analgesic therapy. Once again, MRA for the head was performed, where thickening of meninges at the basal parts of the brain affecting the left optic nerve was visible. A resection and decompression surgery was performed, obtained material was analyzed histopathologically, confirming diagnosis of IgG4-RHP. August 2024, induction therapy with rituximab and pulsed methylprednisolone was started. Following exchange for high-dose oral GC with gradual tapering. Fever, headaches were alleviated, inflammatory markers rapidly improved.

Summary. This clinical case highlights the difficulties associated with managing and treating overlapping autoimmune conditions, giving insights into future considerations when diagnosing patients with similar clinical presentations.

Conclusions. Managing IgG4-RHP is a clinical challenge due to its rarity and each patient's different clinical presentations. Rituximab proved to be effective as a treatment for IgG4-RHP.

A SUCCESSFUL CASE OF SELECTIVE DECONTAMINATION OF DIGESTIVE TRACT IN A PATIENT WITH ACUTE MESENTERIC VEIN THROMBOSIS

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Keywords. Selective gut decontamination; Mesenteric vein thrombosis

Introduction. Mesenteric vein thrombosis is one of the possible causes of gut dysbiosis which in turn can result in elevation of inflammatory markers without a specified source of infection. Consequently, the recovery can be hindered, and the need of uncommon approaches may be required. Selective gut decontamination is a therapy that helps to normalize gut microflora which as a result has the possibility to accelerate patient's recovery.

Case description. 75-year-old man presented to the hospital with abdominal pain. Acute upper mesenteric vein thrombosis and colitis were identified on a CT scan. During the hospitalization the patient became drowsy, anorexic, developed abdomen distention and acute respiratory failure. Laboratory results showed ensuing infectious process. As a result, patient was transferred to the ICU. High flow oxygen therapy and parenteral nutrition were initiated, antibacterial therapy was corrected. The patient became delirious. After 14 days of treatment there were no signs of improvement in inflammatory markers, delirium and respiratory failure continued. It was decided (on the 16th day of ICU stay) to try and start gut decontamination with Colistin, Amphotericin and Gentamicin. A week later patient's symptoms started to get better – parenteral nutrition was changed to enteral nutrition, inflammatory markers decreased, oxygen therapy was delivered through a face mask, delirium symptoms improved.

Summary. The patient was hospitalized because of mesenteric vein thrombosis and unknown origin colitis. Empiric anticoagulation and antibacterial therapy was begun however patient's state worsened. The application of selective gut decontamination helped to improve patient's multi-organ failure, symptoms of delirium and inflammatory lab results.

Conclusions. Selective gut decontamination is not a widely used method, however, it is important to evaluate the benefit of its use in patients whose condition is not improving and are highly susceptible to dysbiosis and bacteria translocation in the digestive tract.

THE CONSEQUENCES OF CANCER MANAGEMENT WITH IMMUNE CHECKPOINT INHIBITORS IN A KIDNEY TRANSPLANT PATIENT – A CASE REPORT

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Keywords. Immune checkpoint inhibitors; Kidney transplantation; Acute kidney graft failure; Transplant rejection

Introduction. Immune checkpoint inhibitors (ICIs), like pembrolizumab, are monoclonal antibodies used in cancer therapy. However, their application in transplant patients, who face a high cancer risk, is limited due to the substantial risk of T cell-mediated transplant rejection, reported at 41-48%. Balancing immune activity to prevent both transplant rejection and cancer progression is challenging, and limited data underline the need for careful risk-benefit assessment in this population.

Case description. A 61-year-old male with a history of repeated kidney transplants (2012, 2014) was diagnosed with squamous cell lung cancer in March 2024. Treatment with pembrolizumab was initiated. Three days after the third infusion, he presented to the hospital with anuria and pain in the kidney transplant region. Laboratory tests showed acute kidney graft failure with GFR 4 ml/min/1.73m2 (creatinine: 1173 mmol/L), hyperkalaemia (potassium: 6.2 mmol/L), and metabolic acidosis, along with elevated inflammatory markers (CRP: 183 mg/L). The patient's last measured creatinine was 250 mmol/L three months before. Acute haemodialysis was started, ceftriaxone was initiated for initially suspected pyelonephritis of the kidney graft. However, due to unlikeliness of infection, clinical presentation, high risk of transplant rejection and suspected pembrolizumab-induced tubulointerstitial nephritis, high-dose methylprednisolone pulse therapy was administered, followed by oral corticosteroids. A transplant biopsy was not performed. The complaints resolved, but since the transplant function did not recover, chronic haemodialysis will be continued. The ICIs are continued in combination with docetaxel as chemotherapeutic agent.

Summary. A kidney transplant patient with lung cancer receiving ICIs developed acute kidney graft failure with suspected pembrolizumab induced acute tubulointerstitial nephritis and graft rejection, now requiring haemodialysis.

Conclusions. This case underscores the challenges of balancing cancer treatment with ICIs and transplant preservation, highlighting the need for careful monitoring and further research in this patient group.

SUCCESSFUL TREATMENT OF DISSEMINATED GRANULOMA ANNULARE WITH HYDROXYCHLOROQUINE: A CASE REPORT

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Keywords. Granuloma annulare; Hydroxychloroquine

Introduction. Granuloma annulare (GA) - a benign, chronic dermatological condition characterized by annular plaques and papules, often presenting on the extremities. Antimalarial agents could be a treatment option because they stabilize lysosomes, inhibit prostaglandins, supress lymphocytes, block DNA replication and protein synthesis.

Case description. A 41-year-old female, with no history of chronic illnesses, presented with spreading eruptions on the sun-opened areas, chest and back, unresponsive to topical dexamethasone and systemic corticosteroids. Skin biopsy revealed interstitial granuloma annulare with intracorneal abundant neutrophilic granulocytes, moderate lymphocytic infiltration in the dermis around the veins, granulomas formed by histiocytes, multinucleated giant cells. Direct immunofluorescence (DIF) revealed linear basement membrane luminescence (IgM+, IgA+/-, IgG+/-, C3+/). ANA, ANCA were negative. Patient was initiated on systemic treatment with hydroxychloroquine 200 mg daily, administered orally. After 3 months of medication use, the follow-up assessment indicated effective treatment tolerance and improved skin condition.

Summary. Localized granuloma annulare (GA) may resolve spontaneously, but disseminated forms often require systemic treatment. Our case showed effective results with hydroxychloroquine, despite limited reported GA cases with this treatment.

Conclusion. Although treatment responses can vary, our case has shown hydroxychloroquine effectiveness in managing generalized interstitial granuloma annulare with no relapses in one year upon discontinuation.

A PATIENT WITH CELIAC ARTERY COMPRESSION SYNDROME: A CASE REPORT

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Keywords. Celiac artery compression syndrome; MALS

Introduction. Celiac artery compression syndrome, commonly referred to as median arcuate ligament syndrome (MALS) or Dunbar syndrome, arises from the compression of the celiac artery, primarily due to the downward displacement of fibrous bands from the median arcuate ligament and the diaphragmatic crura. It is a rare condition predominantly affecting females, typically diagnosed in individuals between their third and fifth decades of life.

Case description. A 68-year-old patient presented with stabbing chest pain radiating to the shoulder, occurring three to four times weekly. The medical history revealed recurrent episodes of nausea, vomiting, abdominal pain, and notable weight loss, persisting for approximately two years. The patient also exhibited an elevated heart rate and low blood pressure. To evaluate cardiac function and coronary health, a cardiac ultrasound and a computed tomography (CT) scan of the chest were conducted. The CT scan disclosed significant coronary atherosclerosis and, importantly, identified 70-80% stenosis of the celiac trunk origin, with evidence of compression at the diaphragmatic crura, consistent with Dunbar syndrome. Follow-up abdominal ultrasound further confirmed the stenosis of the celiac trunk. Consequently, the patient was referred to gastroenterologist consultation, and based on the CT findings and medical history, a diagnosis of celiac trunk compression syndrome was established. Collaboration with abdominal surgeon led to the decision to proceed with laparoscopic decompressive surgery.

Summary. This case report demonstrates a rare condition frequently identified incidentally with nonspecific symptoms.

Conclusions. The diagnosis of MALS is often made through exclusion, as this syndrome is characterized by nonspecific symptoms, including postprandial epigastric pain, nausea, vomiting, and unexplained weight loss. Surgical intervention is advisable for symptomatic patients and for those who are asymptomatic but demonstrate over 50% stenosis of the celiac artery. The primary treatment approach is either open or laparoscopic decompressive surgery.

FROM GASTROENTERITIS TO HIV: A CASE REPORT OF DIAGNOSTIC CHALLENGES AND MANAGEMENT IN AN ELDERLY PATIENT

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Keywords. HIV infection; Gastroenteritis; Elderly patient

Introduction. Acute HIV infection can present with nonspecific and atypical symptoms, particularly in elderly patients, complicating timely diagnosis. This case highlights an 84-year-old man who initially presented with symptoms resembling gastroenteritis, ultimately diagnosed with HIV after a detailed diagnostic workup.

Case description. An 84-year-old male presented with appetite loss, low-grade fever, liquid stool, and dizziness. Initial investigations showed lymphocytopenia, mildly elevated CRP, and direct bilirubin levels. Abdominal ultrasound revealed enteritis and suspected renal neoplasm, prompting admission to the Gastroenterology department. A comprehensive workup excluded infectious gastrointestinal pathogens, and imaging studies revealed renal cysts and para-aortic lymphadenopathy but no acute cerebral pathology. Despite initial stabilization, persistent symptoms led to further serological testing, revealing high HIV RNA levels (572,000 copies/ml) with CD4 count 426 cells/μL, consistent with acute HIV infection. The patient admitted to potential exposure via casual sexual encounters. Antiretroviral therapy (ART) with Doravirine/Lamivudine/Tenofovir was initiated. Two months later, the patient developed a maculopapular rash and peripheral edema, attributed to an allergic reaction to ART. Treatment was discontinued, and the condition improved with supportive therapy. A new ART regimen with Bictegravir/Emtricitabine/Tenofovir alafenamide was initiated, resulting in significant viral suppression and improved clinical status.

Summary. This case highlights the diagnostic complexity of HIV in elderly patients presenting with nonspecific gastrointestinal symptoms. The timely identification of HIV and personalized ART adjustments led to favorable outcomes.

Conclusions. Clinicians should consider HIV in differential diagnoses for elderly patients with unexplained gastrointestinal symptoms. Early recognition and tailored management are critical for improving prognosis and quality of life in this patient population.

RECURRENT IGA NEPHROPATHY AFTER TRANSPLANTATION IN YOUNG ADULT

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Keywords. IgA nephropathy reccurence; Transplantation

Introduction. IgA nephropathy (IgAN) is a common cause of glomerulonephritis and kidney failure. Transplantation is the main treatment for progressive failure, but recurrence, both histologically and clinically, is common. For patients with rapidly progressing native kidney failure, recurrence often occurs early post-transplant.

Case description. Our patient in 2010 at 14 years old presented with persistent proteinuria and hematuria, biopsy revealed IgAN. Renal function remained stable, condition was managed with AH medication under family physician supervision. No pathogenetic treatment was administered, the patient was not referred to a nephrologist until end stage CKD. In 2017.09 patients kidney function critically declined, biopsy revealed advanced IgAN. On 2018.04.30 patient received live donor (father) kidney transplant. Post transplant laboratory results showed impaired graft function. 2 months post transplant, biopsy revealed a relapse of IgAN. In 2021.08 patient was hospitalised due to exacerbation of chronic transplanted renal insufficiency, laboratory results showed significant decline in graft function. Biopsy showed mixed damage to the transplanted kidney - aggressive IgAN and humoral rejection. Immunosuppresive and human IgC treatment was administered. Further post transplant period was complicated by active CMV infection, secondary diabetes mellitus and ongoing transplant rejection. In 2023.02 hemodialysis was resumed. On 2023.11.23 patient was hospitalised for live donor (grandmother) kidney transplantation. Surgery was complicated by bleeding from ruptured kindey, kidney thrombosis and clotting in the renal vein, which lead to graft nephrectomy. In 12.04 arteriovenous fistula was formed. On 2024.11.20 patient received a cadaveric kidney transplant.

Summary. This case highlights the complexities of IgAN in a young patient with recurrent disease and multiple transplant failures.

Conclusions. Early and close management of IgAN is crucial to prevent disease progression to end-stage kidney failure. Recurrence post-transplant is common, requiring close monitoring to preserve graft function and improve long-term outcomes.

A CASE REPORT: PHEOCHROMOCYTOMA AS THE CAUSE OF ECTOPIC ACTH SECRETION WITH THE DEVELOPMENT OF CUSHING'S SYNDROME

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Keywords. Pheochromocytoma; Ectopic ACTH secretion; Cushing's syndrome; Adrenalectomy

Introduction. Pheochromocytoma is a rare form of neuroendocrine tumor characterized by catecholamine production. In rare cases, it can serve as a source of ectopic adrenocorticotropic hormone (ACTH) secretion, contributing to the development of ectopic Cushing's syndrome. Such cases require timely diagnosis and treatment to prevent potential complications.

Case description. A 47-year-old female patient was hospitalized with decompensated diabetes mellitus, severe weakness, weight loss, hypokalemia (2.2 mmol/L), and arterial hypertension (170/95 mmHg). A computed tomography scan revealed a mass in the right adrenal gland measuring 4.8 × 3.9 cm. Hormonal analyses confirmed elevated levels of cortisol, ACTH, androgens, and 24-hour urinary catecholamines, leading to the diagnosis of pheochromocytoma with ectopic ACTH secretion and Cushing's syndrome. Based on the patient's condition, an emergency adrenalectomy was arranged. After the surgery, the patient developed transient adrenal insufficiency, which was managed with hydrocortisone therapy. This condition resolved, and further medical management was not required. After discharge, diabetes treatment was continued on an outpatient basis.

Summary. This case describes a patient with pheochromocytoma resulting in ectopic Cushing's syndrome. The diagnosis was confirmed visually and by laboratory analyses. A laparoscopic adrenalectomy was performed and led to stabilization of the condition. The patient was discharged to continue care on an outpatient basis.

Conclusions. This case demonstrates a rare form of pheochromocytoma with ectopic ACTH secretion causing Cushing's syndrome. Timely diagnosis and treatment ensured successful stabilization of the patient's condition.

DOES THE TYPE AND TIMING OF TRANSPLANT MATTER? TEN-YEAR OUTCOMES IN TYPE 1 DIABETES: A CASE SERIES

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Keywords. Type 1 Diabetes Mellitus; Chronic Kidney Disease; Renal Transplantation; Pancreatic Transplantation

Introduction. Type 1 Diabetes Mellitus (T1DM) with chronic kidney disease (CKD) presents significant challenges in management. Transplantation strategies, including kidney-pancreas and beta cell transplantation, offer potential solutions with varying risks and benefits. This report compares two patients with poorly controlled T1DM and similar diabetes duration, emphasizing how personalized management influences divergent clinical outcomes.

Case description. Patient 1: A 38-year-old woman with poorly controlled T1DM and advanced diabetic complications, including stage IV CKD, underwent simultaneous kidney and pancreas transplantation. Both grafts had primary function, but later she faced severe complications, such as pancreatic graft necrosis, requiring multiple surgical interventions, including pancreas graft ectomy, and recurrent infections. Over time, her glycemic control remained suboptimal (HbA1c >8%) and contributed to diabetic nephropathy reoccurrence in renal graft (eGFR 58 → 22 mL/min), diabetic retinopathy, diabetic foot gangrene, and eventual bilateral below-the-knee amputations. Patient 2: A 41-year-old woman with poorly controlled T1DM and early-stage CKD underwent beta cell transplantation to prevent diabetes-related complications, as optimal glycemic control was unattainable. Her postoperative course was largely uneventful, with stable beta cell function and glycemic control (HbA1c 5.7–7.2%) over several years. Renal function showed only mild decline (eGFR 81 → 61 mL/min), and she avoided major complications.

Summary. Despite both patients having a similar starting point and posttransplant immunosuppression, type and timing of transplants largely influenced contrasting results.

Conclusions. Tailored transplantation strategies are essential in managing T1DM with CKD. Kidney-pancreas transplantation benefits patients with advanced CKD but carries higher risks, while beta cell transplantation offers a less invasive alternative for those with better-preserved renal function. Personalized approaches are crucial for improving outcomes in complex T1DM and CKD cases.

A RARE CASE OF ADULT – ONSET STILL'S DISEASE ASSOCIATED WITH FEVER AND SKIN RASH

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Keywords. Adult – onset Still disease; Still disease; Hyperferritinaemia

Introduction. Adult – onset Still's disease is a rare polygenic autoinflammatory disease. It typically presents with fever over 39 °C, arthralgia or atritis, skin rash and leucocytosis. Still's disease is one of the causes of fever of unknown origin. It is characterised by hyperferritinaemia, but this feature is also common in other autoinflammatory diseases. Other diagnostic tests or biomarkers specific to this disease remain non-specific.

Case description. A 53-year-old man presented with an itchy rash that was considered to be urticaria. Subsequently, intermittent febrile fever, weakness, sore throat, one episode of vomiting and abdominal pain followed. Hyperferritinaemia (1162 mcg/l), high leucocytosis and neutrophilia was observed. Instrumental examination was performed in suspicion of pareneoplastic syndrome or intestinal diseases, but no evidence of cancer was found. Arthralgia was observed during the fever, but neurological examination did not reveal pathological findings, no abnormalities were found in brain CT scan, also no evidence of neuroinfection. Blood and faecal cultures, HIV and other infectious agents tested negative, but ANA was positive. Because of the persistence of cyclic fever, joint pain, sore throat, urticarial rash, leucocytosis with neutrophilia and hyperferritinaemia, adult – onset Still's disease was diagnosed. Treatment with methylprednisolone, tocilizumab was started, regression of symptoms was observed and the patient was discharged home for outpatient treatment.

Summary. We presented a case of a 53-year-old man with an itchy rash, both initially interpreted as urticaria, but after the onset of intermittent febrile fever, leucocytosis, and a highly elevated ferritin level, adult-onset Still's disease was diagnosed.

Conclusions. Although rare in adults, Still's disease can be misdiagnosed as urticaria or paraneoplastic syndrome due to intermittent fever of uncertain origin, and detailed examination should be performed to confirm the diagnosis.

A RARE CASE OF GRANULOMATOSIS WITH POLYANGIITIS ASSOCIATED WITH JOINT PAIN

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Keywords. Granulomatosis with poliangiitis; ANCA vasculitis; Reactive arthritis

Introduction. Granulomatosis with polyangiitis is a rare autoimmune disease belonging to the ANCA group of vasculitides, affecting 1.28 inhabitants per 100,000 population. The disease is characterised by inflammation of small and medium-sized blood vessels, which mainly affect the respiratory tract and kidneys, but may also affect other organs, especially joints. For some patients, haemodialysis may be required to correct kidney damage.

Case description. A 45-year-old man sought help for pain in his feet that had migrated upwards towards his knees which had become swollen shortly after. Later, pain began in hands and wrists followed by severe weakness. 3 months ago, he had pain in his soles, heels and shoulders, but the pain had disappeared. Suspecting reactive arthritis as the primary cause of the symptoms medical treatment was started, pain and swelling decreased, but the kidney function started to deteriorate, creatinine increased, inflammatory blood cells increased. X - rays of the joints did not show images characteristic of reactive arthritis. Blood pressure became elevated, anaemia, haematuria and proteinuria developed. A positive C-ANCA type glow was observed after a renal biopsy. On the basis of the history and biopsy results, granulomatosis with polyangiitis was diagnosed. Methylprednisolone, cyclophosphamide and haemodialysis due to kidney damage were administered. After treatment, the patient recovered and was discharged home for outpatient treatment.

Summary. We presented a case of a 45-year-old man with pain and weakness in his feet, knees, hands and arms, suspected to be reactive arthritis, but who underwent a detailed examination and was diagnosed with granulomatosis with polyangiitis.

Conclusion. Although granulomatosis with polyangiitis is a rare disease, the initial joint pain and temporary improvement of symptoms can make it misleading as reactive arthritis, a thorough testing should be performed to rule it out as early as possible.

BILE REINFUSION IN CRITICALLY ILL PATIENT WITH ACUTE SEVERE PANCREATITIS: A CASE REPORT

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Keywords. Bile drainage; Bile reinfusion; Bile refeeding; Severe acute pancreatitis; ERCP; Intensive care unit; Critical illness

Introduction. The most common cause of acute pancreatitis is biliary stones, which are normally treated with endoscopy. When endoscopy is not feasible, percutaneous bile drainage can relieve cholestasis, but the procedure carries the risk of bile acid depletion. Bile reinfusion is an effective solution to restore bile acids; however, its use in a patient with complicated pancreatitis has not been widely described.

Case description. A 34-year-old male was admitted to the intensive care unit with severe acute pancreatitis. CT imaging revealed necrotic pancreatitis and cholestasis likely due to peripancreatic inflammation, with no evidence of stones. There was limited resolution of cholestasis with medical management. ERCP was deferred due to the risk of perforation and bleeding, given the surrounding inflammation. Percutaneous bile drainage was performed, resulting in significant bile loss (up to 3 L per day) and was successfully managed with bile reinfusion via a nasogastric tube to prevent malabsorption and reduce bile acid depletion.

Summary. Our case demonstrates how combining bile drainage and reinfusion can successfully alleviate cholestasis and help maintain digestive functions and normal electrolyte balance in critically ill patients suffering from severe acute pancreatitis.

Conclusions. To conclude, bile reinfusion is a rarely reported yet feasible option for managing bile loss in critically ill patients suffering from severe acute pancreatitis. This case exemplifies the procedure's effectiveness in preserving digestive function and maintaining electrolyte balance - there were no signs of steatorrhea, electrolyte lab results showed insignificant deviations after reinfusion. Our patient received both enteral and oral, later, full oral nutrition. We aim to emphasize the potential importance of bile drainage and reinfusion in similar clinically challenging situations. Further research is needed to define its role and assess long-term outcomes within intensive care units.

INSULIN AUTOANTIBODY-MEDIATED HYPOGLYCEMIA IN A TYPE 1 DIABETES MELLITUS PATIENT

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Keywords. Antibodies; Autoimmunity; Hypoglycemia; Insulin

Introduction. Exogenous insulin therapy can induce the synthesis of anti-insulin antibodies typically without clinical implications. In rare cases, the antibodies lead to significant clinical manifestations, including hypoglycemia due to erratic insulin release from the immune complexes, which affects patient outcomes and increases mortality.

Case description. A 34-year-old woman with a 22-year history of type 1 diabetes mellitus and poor glycemic control (HbA1c – 9.2%) presented with recurrent episodes of hypoglycemia over the past week and a half, the most severe resulting in loss of consciousness (glucose - 0.7 mmol/L). Despite the discontinuation of intensive insulin therapy for a week, hypoglycemic episodes persisted. Laboratory and radiological investigations excluded insulinoma, IGF-2-mediated hypoglycemia, adrenal insufficiency, and hypothyroidism as potential causes of hypoglycemia. Elevated insulin levels (29.0 mU/L) with low C-peptide (0.02 ng/mL) suggested autoimmune hypoglycemia with anti-insulin antibodies. The presence of anti-insulin antibodies was confirmed, reinforcing the diagnosis of autoimmune hypoglycemia. Notably, the hypoglycemia episodes emerged one year postpartum, possibly linked to pregnancy-induced immunomodulation, with suppression of autoimmunity during pregnancy and subsequent post-delivery activation, leading to the development of paradoxical anti-insulin antibodies. Treatment with glucose infusions and oral prednisolone was started. Immunologist's consultation led to the initiation of mycophenolate mofetil for immunosuppression. The patient was discharged with stable glucose levels, insulin therapy was restarted with alternative preparations, treatment with prednisolone and mycophenolate mofetil was continued.

Summary. Prompt recognition of antibody-mediated hypoglycemia is essential to adjust therapy and prevent recurrent episodes affecting patient outcomes and quality of life.

Conclusions. Recurrent and unpredictable episodes of hypoglycemia in patients with type 1 diabetes mellitus, combined with elevated insulin levels and low C-peptide should raise suspicion of antibodies to exogenous insulin. Therapy with immunosuppressants or plasmapheresis and switching to an alternative insulin preparation must be considered as management strategies.

UNEXPECTED DIAGNOSIS OF ABDOMINAL TUBERCULOSIS MIMICKING MALIGNANCY: A CASE OF BOWEL OBSTRUCTION

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Keywords. Abdominal tuberculosis; Computed tomography; Bowel obstruction; Laparotomy; Malignancy

Introduction. Tuberculosis (TB) is an infectious disease that remains a worldwide public health concern. Abdominal TB is a rare form of TB, affecting the gastrointestinal tract, peritoneum and abdominal lymph nodes with a wide range of clinical presentations and no specific radiological signs, making the diagnostic work-up challenging as it could mimic gastrointestinal malignancies and other diseases.

Case description. We report a 29-year-old immunocompetent man presenting with abdominal pain, constipation, without fever. Clinically bowel obstruction was suspected. Abdominal computed tomography (CT) showed partial volvulus without signs of ischemia, with reactive lymphadenopathy, peritoneal thickening and ascites. A laparotomy was performed, where loops of small intestines attached to the anterior abdominal wall with multiple nodules were seen, similar nodules also throughout the peritoneum and the rest of the small intestine. A malignant disseminated tumor of unknown primary location or primary small intestine tumor was suspected, but TB could not be ruled out. A biopsy was taken from peritoneum and abdominal TB with small intestine, peritoneal and lymph node involvement was confirmed in histopathological examination. The patient went on to receive anti-tuberculosis treatment and his condition gradually improved.

Summary. This case highlights the clinical complexity of abdominal TB of a 29 year old immunocompetent patient leading to diagnostic challenges as the clinical picture and radiological examinations showed non-specific signs and symptoms leading to other differential diagnosis like gastrointestinal malignancies.

Conclusions. The management and ongoing care of abdominalTB involves a multidisciplinary approach as TB can mimic other diseases, including malignancies. Diagnosis of TB, especially in endemic areas or specific population groups, should be considered when a patient presents with vague or non-specific symptoms. TB is diagnosed based on the affected organ, treatment history, radiological examinations and confirmation through histopathological or bacteriological tests.

LIFE-THREATENING JEJUNAL ANGIODYSPLASIA IN A PATIENT WITH A MECHANIC PROSTHETIC HEART VALVE: A CASE REPORT

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Keywords. Jejunal angiodysplasia; Gastrointestinal bleeding; Enteroscopy; Anticoagulants; Mechanic prosthetic valve

Introduction. Angiodysplasias are common findings in the small intestine, however life-threatening bleeding is rare. Bleeding from the small intestine remains challenging both- in diagnosis and treatment.

Case description. A 61-year-old male presented to a regional emergency department with complaints of fatigue, weakness and presyncope. During hospitalisation patient also experienced a dark, tarry stool. Patient has had similar episodes for nine years with unknown source of bleeding. Patient has a mechanic prosthetic heart valve, and he takes Warfarin every day for many years. In the complete blood count haemoglobin 58 g/l was detected. INR was 3,26. Due to decrease in haemoglobin to 32 g/l, patient was then transferred to the intensive care unit. Patient had upper endoscopy and a CT scan with intravenous contrast performed but there were no data of bleeding. A colonoscopy later suspected bleeding from the small intestine. At the regional hospital patient had received 36 red blood cell, 12 plasma and two platelet transfusions. Patient was then transferred to a central hospital to perform enteroscopy. During upper enteroscopy there was an active, pulsatile bleeding from a jejunal angiodysplasia ~140 cm deep. With bipolar coagulation and three haemostatic clips haemostasis was achieved. At the central hospital the patient also received one intramuscular injection with long-acting Octreotide to reduce the risk of rebleeding.

Summary. A 61-year-old male with a mechanic prosthetic heart valve and long-term Warfarin use developed a life-threatening bleeding from an angiodysplasia in the jejunum.

Conclusions. Patients with angiodysplasias in the small intestine and the use of anticoagulants may develop recurrent, life-threatening bleeding, which can lead to frequent hospitalisations, massive blood component transfusions and many diagnostic procedures. The role of various medications, including long-acting Octreotide, in reducing the risk of rebleeding is increasingly being studied.

A RARE CASE OF EXTRAINTESTINAL INFECTION CAUSED BY NONTYPHOIDAL SALMONELLA

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Keywords. Nontyphoidal Salmonella; Salmonella Enteritidis; Intra-abdominal abscess; Extraintestinal infection

Introduction. Nontyphoidal Salmonella is one of the leading bacterial causes of diarrhea. Commonly identified serotypes include S.Enteritidis, S.Newport, and S.Typhimurium. While primarily an intestinal pathogen, Salmonella can occasionally cause extraintestinal infections, especially in immunocompromised patients. These cases are rare in immunocompetent individuals, posing diagnostic and treatment challenges.

Case Description. A 28-year-old woman presented with acute left-sided abdominal pain (VAS 6) and fever (38.8°C) without any other gastrointestinal symptoms. She reported no chronic illnesses, allergies, prior surgeries, or regular medication use. An abdominal ultrasound identified two cystic lesions in the left upper quadrant: a larger (11.8×10.6 cm) with dense, heterogeneous content and a smaller one (4.2×3.6 cm) surrounded by a 0.6 cm layer of free fluid near the spleen, with no evident connection to surrounding structures. No changes were observed in the abdominal organs. CT and MRI scans did not reveal any new information about the origin of the masses. Serological tests for echinococcal infection were negative. Empirical antibiotic therapy with cefuroxime and metronidazole was started. Persistent fever and poor response to initial antibiotics led to abscess drainage under ultrasound and CT guidance, yielding 1500 mL of purulent fluid, and culture confirmed Salmonella Enteritidis infection. Targeted antibiotic therapy with ciprofloxacin was initiated. Follow-up imaging showed significant improvement, and the patient was discharged with a referral to a surgeon to remove abscess.

Summary. This case highlights a rare instance of extraintestinal infection caused by nontyphoidal Salmonella within an intra-abdominal abscess, occurring without diarrhea in an immunocompetent individual. Although uncommon, such infections emphasize the importance of comprehensive diagnostic evaluation.

Conclusions. Nontyphoidal Salmonella can cause extraintestinal infection even in immunocompetent patients. A combination of precise imaging, microbiological identification, and surgical intervention ensures optimal management and recovery in such cases.

CASE SERIES OF 3 PATIENTS WITH HESX1 RELATED COMBINED PITUITARY HORMONE DEFICIENCY

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Keywords. HESX1; Combined pituitary hormone deficiency

Introduction. Combined Pituitary Hormone Deficiency (CPHD) is a condition characterized by deficiency in growth hormone and at least one other pituitary hormone. Affecting 1 in 4,000 to 10,000 births, it may result from trauma, tumours, or genetics. In over 80% of cases, no genetic cause is identified. The most common genetic cause is pathogenic variants in the PROP1 gene, while pathogenic variants in the HESX1 gene may be the rarest. Nevertheless, we present three apparently unrelated patients with this variant.

Case description. Three patients were diagnosed with CPHD: patients A (11 y.o. male), B (17 y.o. male) and C (13 y.o. female). Patients A and C were diagnosed in infancy, while patient B was diagnosed in 2021. Lab results for A and C showed deficiencies in somatotropin, adrenocorticotropin, thyrotropin, and gonadotropins, while patient B had low somatotropin, gonadotropins, and later thyrotropin. All patients showed pituitary hypoplasia on brain MRI. Patients A and C had hypoglycemia while B and C experienced prolonged jaundice. Patient A also had cryptorchidism and micropenis. Whole exome sequencing revealed homozygous pathogenic HESX1 gene variant NM_003865.3:c.326G>A, p.Arg109Gln in all three patients.

Summary. HESX1 encodes a conserved homeobox protein that represses transcription in the developing forebrain and pituitary. HESX1-related CPHD causes growth hormone deficiency in all described patients in literature, along with additional hormonal deficiencies in about 50% and septo-optic dysplasia in 30%. Pituitary hypoplasia occurs in 80% of cases. In our cases, all patients have multiple hormonal deficiencies and pituitary hypoplasia, but no septo-optic dysplasia. As the condition is inherited in an autosomal recessive manner, genetic testing enables sibling screening and planning for future children, with a 25% chance of inheritance.

Conclusion. Whole exome sequencing can identify the causes of CPHD, improving understanding of disease mechanisms and potentially improving future therapies.

MANAGEMENT OF RECURRENT DIVERTICULAR HEMORRHAGE

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Keywords. Diverticular hemorrhage; Embolization

Introduction. Diverticular bleeding is a common cause of lower gastrointestinal hemorrhage. The intensity of bleeding varies from occult to massive. While most cases resolve spontaneously, severe bleeding may necessitate various interventions.

Case description. The patient started bleeding profusely with fresh blood and clots from the rectum. Several days earlier, a woman experienced constipation and abdominal distension. The patient was admitted to the emergency department, where blood tests showed anemia, also elevated creatinine and urea levels. An urgent abdominal CT with contrast revealed no active extravasation. Objectively, the woman was in stable condition, her abdomen was distended but not painful. The patient was prescribed with tranexamic acid. Gastroscopy showed decreased gastric motility, hiatal hernia, and erosions in the esophagus's lower part and in the duodenal bulb's mucosa. A proctologist consulted the patient and hemorrhoids without active bleeding were detected. Colonoscopy demonstrated multiple diverticula with surrounding edema and erythema in the sigmoid colon. A biopsy from the sigmoid colon was taken. Microscopy revealed a few monomorphonuclear and polymorphonuclear leukocytes. The patient was suspected of low-activity superficial colitis and was prescribed mesalazine treatment. A general urine test demonstrated infection. The woman was discharged under the medical attention. Iron preparations, omeprazole, and antibiotics were recommended. A week later, the patient was readmitted to hospital for a recurrence of massive bleeding from the rectum. CT angiography was performed and showed no active extravasation, but the most expected branches of the inferior mesenteric artery were embolized. After the procedure, the bleeding stopped and the patient's condition was stabilized.

Summary. A patient with recurrent massive rectal bleeding due to diverticular hemorrhage was successfully managed with an embolization procedure after conservative methods failed.

Conclusions. This case demonstrates the need to prevent the recurrence of bleeding, and ensure timely intervention if complications arise.

THE COMPLEX SEARCH FOR THE CAUSE OF JAUNDICE

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Keywords. Autoimmune hepatitis; Plasma cell; Jaundice

Introduction. Autoimmune hepatitis (AIH) is a chronic inflammatory process, that can lead to liver failure or even cirrhosis. Blood markers, such as liver enzyme elevation, hypergammaglobulinemia, and autoantibodies, along with histological confirmation, are crucial diagnostic markers.

Case description. We report a case of a 64-year-old female with nausea, obstipation, jaundice, and fever. Comorbidities included arterial hypertension, B12 and Fe deficiency anemia, multinodular goiter. Objectively, jaundice, abdominal tenderness, and right-hand intention tremor. Laboratory work disclosed anemia, elevated liver transaminases, and cholestatic markers, positive autoantibodies (anti-M2-3E, anti-Scl-70, anti-CENPA). A mild liver insufficiency with hypoalbuminemia and impaired coagulation, no biliary obstruction or infection were found. For possible PBC, ursodeoxycholic acid was prescribed. Elevated IgM, IgG, total protein, Ig light chains (kappa; lambda), and IgG4 raised suspicion for hematopathy. However, with no signs of bone destruction, kidney injury, or hypercalcemia, considered secondary due to inflammation. In the bone marrow biopsy, erythropoietic hyperplasia was evident with 3% plasma cells. In the CT, signs of liver cirrhosis, pathological l/ns in the portal, paragastric areas were seen but no clear malignancy. EGD revealed multiple gastric polyps, biopsies were taken. Liver biopsy confirmed active hepatitis (HAI A(2)+B(0)+C(1)+D(4)=7) with fibrosis (Ishak-5, METAVIR-3), infiltration rich in plasma cells. For AIH treatment initiation, prednisone and azathioprine were used. Histopathology of stomach biopsies confirmed an unassociated neuroendocrine tumor. Multidisciplinary team decided to use PET/CT for a primary tumor search elsewhere. A metabolically active tumor in the left lung is suspected, the histological confirmation awaits. The AIH responds well to the given treatment.

Summary. This is a case of active plasma cell AIH that was differentiated from hematopathies with the findings of malignancy along the process.

Conclusions. Plasma cell AIH presenting with elevation of Ig light chains is a rare finding, leading to a complex differential diagnosis.

RESISTANCE TO THYROID HORMONE (RTHβ) PRESENTING WITH CLINICAL HYPERTHYROIDISM AND PARTIAL SECONDARY ADRENAL INSUFFICIENCY: A CASE REPORT

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Keywords. Resistance to thyroid hormone (RTH); RTH beta (RTHβ); Partial adrenal insufficiency; Irritative encephalopathy

Introduction. Resistance to thyroid hormone (RTH) is a rare endocrine disorder often misdiagnosed due to its similarity to hyperthyroidism. The β subtype (RTHβ) affects tissues such as the heart, liver, and pituitary while sparing the hypothalamus. In regions like Latvia, where genetic testing is limited, accurate diagnosis becomes challenging. This case emphasizes the importance of clinical awareness in diagnosing a rare condition like RTHβ.

Case Description. A 17-year-old female presented with a 1.5-year history of tachycardia, heat intolerance, and progressive hair loss. She had a history of anxiety and difficulty concentrating since age 12. Furthermore, the patient reported difficulty gaining weight despite increased appetite. Laboratory results revealed elevated free T3 and T4 levels with normal TSH, which, in conjunction with the clinical presentation, suggested RTHβ. Due to resource limitations, genetic testing could not be performed. Although an MRI of the brain was normal, ruling out TSH-secreting adenoma, an EEG revealed irritative encephalopathy, potentially related to the hormonal imbalance. Additionally, morning serum cortisol levels were low, and an insulin tolerance test confirmed partial secondary adrenal insufficiency. Management included beta blockers for tachycardia and hydrocortisone for cortisol insufficiency. The patient showed improvement, with a reduced heart rate and a greater sense of well-being. She remains under follow-up for genetic testing and endocrine evaluation.

Summary. This case highlights the diagnostic challenges of RTHβ. The patient's hyperthyroidism-like symptoms, and normal TSH, prompted suspicion of RTHβ. Further testing revealed partial secondary adrenal insufficiency and irritative encephalopathy. Treatment with beta-blockers and hydrocortisone led to symptomatic improvement. Ongoing evaluation is required for genetic confirmation.

Conclusions. This case emphasizes the need to consider RTH in patients with hyperthyroidism-like presentation and normal TSH. Careful clinical evaluation is vital to avoid misdiagnosis and mistreatment early on.

UNRAVELING A RARE DISORDER PRESENTING LIKE POLYCYSTIC KIDNEY DISEASE: CASE INSIGHTS AND TREATMENT

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Keywords. Polycystic kidney disease; Orofaciodigital syndrome; Systemic lupus erythematosus, Pulmonary valve replacement

Introduction. Although loss of renal function in polycystic kidneys is mostly caused by autosomal dominant polycystic kidney disease (PKD), it is important to consider the broader differential diagnosis for this finding.

Case description. A 41-year-old female patient (BMI 24.7 kg/m2) presented with unclear worsening of kidney function (eGFR 65->41 ml/min), arterial hypertension (148/93 mmHg) and a history of multiple kidney cysts identified with ultrasonography, congenital heart disease tetralogy of Fallot was surgically corrected in youth, seronegative rheumatoid arthritis, and negative family anamnesis for PKD. Initial evaluation revealed normal urinalysis, significantly elevated anti-dsDNA (>240 IU/mL) and ANA (11.5 IU/mL), suggesting PKD or systemic lupus erythematosus. A kidney biopsy showed non-specific findings of glomerular hypertrophy with focal segmental glomerulosclerosis and no immune deposits. To obtain a specific diagnosis, genetic testing was performed, and OFD1 gene mutation was identified, which confirmed the diagnosis of orofaciodigital syndrome type 1 - a rare X-linked genetic condition presenting with anomalies in oral cavity, face, and digits, as well as being associated with polycystic kidney disease. Progression of chronic kidney disease (eGFR 41->11 mL/min) over 4 years was attributed to the natural course of the syndrome and development of chronic heart failure due to longstanding pulmonary valve insufficiency (commissurotomy in 1986). Despite the risk of hastening the need for dialysis, surgical pulmonary valve replacement (SPVR) with a biological valve was performed in September 2024. It was successful and kidney function slightly improved (eGFR 11->14 mL/min). Initiation of dialysis could be postponed.

Summary. A rare case of PKD due to orofaciodigital syndrome 1, where SPVR improved kidney function and delayed dialysis initiation.

Conclusions. This case report emphasizes the comprehensive evaluation and choice of treatment strategy, even when the initial diagnosis and management appears straightforward.

WHEN PROTEASOME INHIBITOR TURNS TOXIC: A RARE CASE REPORT ON CARFILZOMIB-INDUCED THROMBOTIC MICROANGIOPATHY

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Keywords. Thrombotic microangiopathy; Carfilzomib; Multiple myeloma

Introduction. Thrombotic microangiopathy (TMA), caused by carfilzomib, a second-generation proteasome inhibitor, is an extraordinary rare, yet a grave condition. It may present with acute kidney injury, hemolytic anemia, thrombocytopenia and renal, neurological, cardiovascular symptoms. If not recognized quickly, it may be life-threatening.

Case Description. A 75-year-old woman with a history of multiple myeloma presented to the Vilnius University Hospital Santaros Klinikos with complaints of general weakness, disorientation, impaired balance, memory problems, nausea, arthralgias and oliguria. Laboratory tests showed decreased hemoglobin (78 g/l), thrombocytopenia (21 x 109/l), elevated creatinine (630 μmol/l), decreased glomerular filtration rate (< 15 mL/min/1.73 m2). Head CT was performed, no significant brain pathology was identified. An abdominal ultrasound revealed hyperechoic parenchyma and possible nephrosclerotic kidney changes. Because of the acute kidney injury and suspected TMA, hemodialysis, methylprednisolone and plasmapheresis therapy were started. Kidney biopsy was performed, it revealed the collapse of glomerular capillaries, presence of erythrocytes in the tubules and swelling of glomerular endothelium. Despite the initial treatment, thrombocytopenia, anemia, high levels of lactate dehydrogenase, impaired consciousness, disorientation persisted. Because of the suspected carfilzomib-induced TMA, eculizumab therapy was initiated. The patient's condition improved – stable renal function was achieved (creatinine – 82 μmol/l, GFR – 60 mL/min/1.73 m2), anemia (Hgb – 99 g/l), thrombocytopenia (62 x 109/l) improved to non-transfusion levels.

Summary. The patient, diagnosed with carfilzomib-induced TMA, which manifested mainly with neurological and renal symptoms, initially was treated with hemodialysis, methylprednisolone and plasmapheresis. After the initial treatment did not improve the course of the disease, eculizumab therapy was started and deemed successful.

Conclusions. This case highlights the clinical importance of early diagnosis of carfilzomib-induced TMA, as it is an exceedingly rare pathology and can be confused with other medical conditions. Early diagnosis is essential for better prognosis and reduced mortality.

CHILDHOOD ADRENAL INSUFFICIENCY OF UNKNOWN ETIOLOGY THAT 12 YEARS LATER AFTER THE DIAGNOSIS, WAS CONFIRMED AS ADRENOLEUKODYSTROPHY

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Keywords. Adrenoleukodystrophy; Adrenal insufficiency; DNA test

Introduction. Adrenoleukodystrophy (ALD) is a rare genetic disease that damages the peroxisomal beta-oxidation process, resulting in accumulation of very long-chain fatty acids in all tissues. It is X-linked recessive and more affects man. Common manifestations of ALD include adrenal insufficiency, neuron demyelination, leukodystrophy. This clinical case represents a young man with childhood-onset adrenal insufficiency that was later confirmed as adrenoleukodystrophy.

Case Description. An 8-year-old boy was referred to an endocrinologist for brown skin and neck, elbow, genital, periorbital hyperpigmentation. Hormone analysis showed a high ACTH level (>2500 pg/mL), low cortisol level (0.79 ug/L). The boy was hospitalized for further evaluation. Additional tests were performed - abdominal and thyroid USG was normal, HLA-27 and Mantoux tests were negative. A young patient was diagnosed with chronic adrenal insufficiency of unknown etiology and subclinical hypothyroidism. Hydrocortisoni and L-tiroxyni therapy was prescribed. Furthermore, it is known that the patient had bronchial asthma. Regular electrolyte analyzes always showed normal results. Fludrocortisoni was added to therapy at some point. At age of 20, patients DNA testing showed a likely pathogenic variant in the ABCD1 gene that confirmed X-linked adrenoleukodystrophy. The neurological state of the patient was normal, and brain magnetic resonance imaging did not show pathology. For a future prognosis, a measure of the level of very long-chain fatty acids is necessary.

Summary. This clinical case shows an example of adrenoleukodystrophy that manifests itself primary with adrenal insufficiency and is confirmed later with a genetic test of DNA.

Conclusions. This clinical case shows the significance of genetic testing in rare disorders for its diagnosis, monitoring strategies, and treatment options considerations. In addition, it reminds us that adrenoleukodystrophy is one of the differential diagnoses of childhood adrenal insufficiency.

COVID-19 VACCINE-INDUCED ACUTE AUTOIMMUNE PANCREATITIS: A CASE REPORT

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Keywords. Covid-19; Vaccine; Autoimmune pancreatitis; Vaccine-induced pancreatitis

Introduction. Autoimmune pancreatitis (AIP) is a rare chronic inflammatory condition of the pancreas, typically mediated by immune dysfunction. While AIP is commonly associated with systemic autoimmune diseases, recent evidence suggests that vaccinations, including COVID-19 vaccines, may act as potential triggers for autoimmune responses in susceptible individuals.

Case description. A 36-year-old male, with a history of ulcerative colitis diagnosed in 2015, with no significant exacerbations prior to April 2021, presented with acute symptoms of pancreatitis following COVID-19 vaccination. There were no other known etiological factors for pancreatitis. On April 9, 2021, the patient received the first dose of the Moderna Spikevax COVID-19 MRNA (CX-024414) vaccine. Within 30 hours, the patient developed typical vaccine-related side effects, including localized injection site pain, malaise, headache, and tachycardia, which resolved within 30 hours. However, on April 20, the patient experienced acute onset of severe upper left quadrant abdominal pain, nausea, and worsening fatigue. Laboratory tests revealed significantly elevated amylase and lipase levels, along with unusually high inflammatory markers, suggestive of autoimmune pancreatitis. Despite these events, the second dose of the Moderna vaccine was administered on May 7, 2021. Shortly thereafter, the patient experienced a recurrence of severe abdominal pain and systemic symptoms, prompting further evaluation. Imaging studies, including CT and MRI, showed multifocal pancreatic changes consistent with autoimmune pancreatitis. Repeated laboratory tests confirmed persistently elevated pancreatic enzymes and CA19-9 tumor marker, with gradual improvement noted over subsequent 5 months.

Summary. This is a rare case of acute autoimmune pancreatitis triggered by COVID-19 vaccination in a patient with ulcerative colitis resolved with conservative management, with no recurrence post-recovery.

Conclusions. While COVID-19 vaccines are essential for public health, rare autoimmune complications may occur in predisposed individuals, highlighting the need for awareness, personalized risk assessment, and further research.

RASH, FEVER AND JOINT PAIN ASSOCIATED WITH SWEET SYNDROME

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Keywords. Sweet syndrome; Febrile neutrophilic dermatosis

Introduction. Sweet syndrome (febrile neutrophilic dermatosis) is a disease of unknown etiology characterised by infiltration of mature neutrophils in the superficial layers of the dermis. The skin is most commonly affected (erythematous papules, nodules and plaques). Temporary symptoms include fever, general weakness, arthalgias. The disease is classified as a rare skin disease, there is a lack of information on the symptoms and no specific biomarkers.

Case description. A 67 year old man presented with episodic febrile fever of unknown origin lasting several days during which swollen and painful proximal interphalangeal joints were observed. The symptoms were intermittent for several months after a myocardial infarction. A purple rash with spots was observed on the face, legs and hands. Isolated painless red subcutaneous nodules were observed on the waist, later the rash disappeared. At the time of recurrent fever and rash, CRP 173,3 mg/l, procalcitonin 14,03 mcg/l, leucocytosis (13,2 x 10^9/l). Immunological and blood tests, blood and urine tests were insufficient to confirm infection. Instrumental examinations did not reveal a source of infection. Echocardiography ruled out the suspicion of infective endocarditis. Sweet's syndrome was confirmed by skin biopsy taken at the time of rash and fever in combination with clinical symptoms. The patient was discharged from hospital after regression of symptoms. In case of recurrence of the syndrome, it was decided to prescribe GCC.

Summary. We presented a case of a 67 year old man with intermittent febrile fever of unknown origin, joint pain and rash elements suspected to be sepsis, infective endocarditis or connective tissue disease, but a skin biopsy revealed Sweet syndrome.

Conclusions. The fever, rash and joint pain in Sweet's syndrome can be misleading as sepsis or other unspecified dermatological condition, thorough testing should be performed to diagnose it as early as possible.

CASE REPORTS, CASE REPORT SERIES

TRAUMATOLOGY, ORTHOPEDICS, TRAUMA & ORTHOPEDIC SURGERY, RADIOLOGY

RECONSTRUCTION OF FEMORAL DIAPHYSIS USING VASCULARISED FIBULA FLAP

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Keywords. Femur reconstruction; Vascularised fibula flap; Microsurgery; Osteomyelitis; Osteosynthesis

Introduction. Femoral bone plays a crucial role in locomotion, holding body weight and stabilising movement. For these reasons, reconstruction of the femoral bone is important for the quality of life of the patient.

Case report. A 32 year-old male presents with a 27 cm femoral diaphysis defect resulting from a high-impact car accident causing multiple fractures and complicated by osteomyelitis. Initial consultations with other physicians advised limb amputation as the sole approach due to the severity and potential complications. However, by using a vascularized fibular flap, they were able to save the limb. An external fixation device was used to perform osteosynthesis after a 30 cm fibula flap was harvested and transplanted to the femoral defect. Anastomosis was established between the fibular vessels and the descending branch of the lateral circumflex femoral artery, avoiding second anastomosis and thus minimising the risk of thrombosis.

Months after the surgery, imaging revealed fibula flap thinning and a subsequent fracture, which later healed and the flap hypertrophied.

At a ten-year follow-up, the patient remains ambulatory with limb shortening effectively managed using a custom shoe.

Summary. This case report presents a successful transplantation of a vascularised fibula flap that salvaged the leg with femoral fractures and osteomyelitis, enabling long-term mobility.

Conclusions. Even though the patient experienced limb-shortening, he retained his leg and remained ambulatory.

TREATMENT METHOD FOR A COMMINUTED FRACTURE OF THE DISTAL END OF BOTH HUMERUS

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Keywords. Endoprosthesis; Humerus; Arthrosis

Introduction. Fractures of the distal end of the humerus are usually treated with osteosynthesis. Sometimes the osteosynthesis procedure is too complicated, therefore endoprosthesis is suggested.

Case report. A 73 years old woman slipped and fell on the street. She presented to the hospital with complaints of severe pain in the left elbow joint and deformations of the visual joint. X-ray findings revealed a comminuted intraarticular fracture of the distal end of the left humerus with displacement.

The surgical manifestation was performed. The surgery included an arthrotomy of the left elbow joint and resection of a fragment and an endoprosthesis of the left elbow joint.

Next year, this woman fell down the stairs. She presented to the hospital with complaints of severe pain in the right elbow joint and deformations of the visual joint. X-ray findings revealed a comminuted intraarticular fracture of the distal end of the right humerus with displacement and damage to the articular surface.

Because of the arthrosis the surgical manifestation was performed. The surgery included an arthrotomy of the right elbow joint and resection of a fragment and an endoprosthesis of the right elbow joint.

During post-surgery period the patient received analgetics, anti-inflammatory drugs. A sling immobilization for 6 weeks was reccomended. Gentle passive movements in the wrist, elbow and shoulder joint were allowed during first 6 weeks post-surgery for 3-4 times a day. Full load for the left arm was allowed after 4-6 weeks.

Summary. The treatment of comminuted humerus fracture is complicated and requires endoprosthesis of elbow joint. Such cases have a higher risk of complications, therefore a patient should be carefully observed and treated by well-knowing specialists.

Conclusions. This study describes a method of surgical treatment (endoprosthesis) of a comminuted humerus fracture with dislocation of the both hands.

TREATMENT TACTICS, RESULTS, COMPLICATIONS, PATIENT COMPLIANCE IN THE TREATMENT OF HIP JOINT PATHOLOGY – REVIEW OF A CLINICAL CASE

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Keywords. Patient compliance; Hip joint pathology; Surgical decision making

Introduction. Complications from hip joint replacement are one of the leading pathologies in orthopedic surgery. The success of the treatment and the quality of it depend not only of the surgeon but also significantly on the patient's active participation. A combination of successful surgery and a patient who follows the therapy prescribed by the doctor promotes the best therapeutic outcomes.

Case report. The following case is about a 75-year-old male with a long medical history related to his left hip joint. The first operation took place in 1991 when he sustained a fracture that was treated with osteosynthesis using screws. In 2007, he underwent his first arthroplasty surgery due to osteoarthritis. Complications began after this procedure. Over the past 33 years, the patient has undergone 15 surgeries on his left hip joint. The main causes of these repeated surgeries are prosthetic infection, implant disassembly, and periprosthetic fractures. Due to multiple revision surgeries, complications and therefore, unsolvable problems, the patient's left leg is no longer functional. Ultimately, the only method to get away from infection is exarticulation.

Summary. The patient has a complex clinical history with numerous surgeries and complications that could have been avoided if the patient were complicit in the treatment, followed the instructions of the treating physician. Acceptance of shared, experience-based decisions could have also contributed to an improved outcome.

Conclusions. In treating the disease the key is not only successful surgery but also the patient's own involvement in the treatment process and adherence to the prescribed therapy. The best possible treatment results are achieved when these two aspects are strictly followed. However, deviations from these principles can lead to severe and long-lasting complications.

PROLONGED INTENSIVE CARE MANAGEMENT OF A PREGNANT WOMAN WITH SEVERE POLYTRAUMA FOLLOWING A MOTOR VEHICLE ACCIDENT: A CASE REPORT

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Keywords. Polytrauma; Pregnancy; Brain damage; C-section; Sepsis

Introduction. Trauma is one of the most common causes of non-obstetric maternal mortality. Managing polytrauma during pregnancy presents unique challenges, teratogenic risks, and fetal health concerns. This report highlights the multidisciplinary care of a pregnant patient with severe polytrauma and traumatic brain injury, focusing on the challenges and successful outcomes.

Case report. 19-year-old female was hospitalized following a motor vehicle accident. She was unresponsive (GCS 7), with anisocoria, an enlarged abdomen, and required intubation. An ultrasound confirmed a 13-week pregnancy. Laboratory tests showed elevated aminotransferases and hemoglobin of 9 g/dL. CT under the polytrauma protocol revealed diffuse axonal brain injury, left-sided pneumothorax, rib fractures, and a ruptured liver with massive hemorrhage. An emergency laparotomy with liver suturing and pleural drainage was performed. The patient spent 82 days in the ICU under gynecological supervision, battling persistent infections, including tetraparesis-related urinary tract infections and a week-long sepsis. Several medications potentially harmful to the fetus were administered, including 4 in FDA category D, 9 category C, and 16 category B. Despite the patient's severe neurological condition and recurrent infections, the fetus developed normally. A cesarean section was performed at 32 weeks and 6 days, and the child, now 2 years old, is developing appropriately for their age.

Summary. Polytrauma during pregnancy poses significant challenges. This case highlights the multidisciplinary care of a 19-year-old with severe injuries. Despite critical maternal conditions and high-risk treatments, the fetus developed normally, with a healthy delivery at 32 weeks and ongoing age-appropriate development.

Conclusions. This case highlights the critical importance of a multidisciplinary approach in managing severe polytrauma during pregnancy. Prioritizing maternal survival, even at the potential expense of fetal risk, can result in positive outcomes for both mother and child, demonstrating the resilience of advanced medical care in complex cases.

ASPERGILLUS SPONDYLODISCITIS IN IMMUNOCOMPETENT PATIENT

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Keywords. Aspergillus spondylodiscitis; Immunocompetent patient

Introduction. Aspergillus spondylodiscitis is a rare non-pyogenic fungal infection of the spine that is usually seen in immunocompromised patients. According to the Global Spine Journal, only a few case reports have been published of Aspergillus spondylodiscitis in immunocompetent patients.

Case report. A 61-year-old female patient with no known significant comorbidities apart for several arthropathies presented with increasing lower back pain for the past two months around surgical scar after L4-L5 microdiscectomy. No history of fever. Neurological examination showed no sign of pathology. Spine MRI suggested fluid collection around the lumbar region. Surgical revision was performed, and post revision cultures of two different samples confirmed Aspergillus fumigatus growth. Consequently, HIV, HCV, HBV, Aspergillus antigen tests were performed and yielded negative results, blood cultures showed no bacterial growth. There was no sign of aspergillosis on CT of the nasal sinuses and lungs. Treatment with IV voriconazole in standard dosing was initiated, and after 10 days due to hepatotoxicity continued in decreased dose. Switch to Amphotericin B was unsuccessful because of intolerance. Further on, patient continued to receive lower doses of voriconazole orally and liver enzymes normalised. One month later another surgery with L4-L5 resection was performed. Histological examination revealed purulent-granular inflammation. Patient continued to receive voriconazole orally in standard dosing.

Summary. After the third spine surgery patient was discharged and continued to receive voriconazole for six more months under the supervision of an infectious disease doctor with monthly visits closely monitoring liver function. After completing antifungal treatment patient was followed-up additional six months and no signs of relapse were observed.

Conclusions. Although rare, there is a possibility of fungal spondylodiscitis affecting immunocompetent patients. It is strongly recommended that tissue samples should always be sent for fungal cultures. Successful treatment usually involves surgical debridement and prolonged azole therapy.

A CASE REPORT OF POST-ARTHROSCOPIC OSTEONECROSIS OF THE KNEE

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Keywords. Osteonecrosis; Anterior cruciate ligament

Introduction. Knee osteonecrosis is a progressive condition that quickly advances to end-stage osteoarthritis and is categorized into three types: spontaneous, secondary, and post-arthroscopic. Post-arthroscopic osteonecrosis is the rarest form of osteonecrosis that most commonly occurs in patients over the age of 50. At first, surgical procedures focus on preserving patient‘s natural joint; however, if the disease progresses and conservative treatments does not work, total joint replacement may be necessary for some individuals. The purpose of the case report is to present a case about tibial osteonecrosis after arthroscopic surgery.

Case report. In 2023, a 51-year-old heavy smoker female was administered to hospital with right knee instability and pain. Physical examination and MRI confirmed rupture of the anterior cruciate ligament (ACL). Arthroscopic autologous ACL reconstructive surgery under spinal anesthesia was performed by autograft fixation with a TightRope in the femur and with a PullUp XL EndoButton in the tibia side. Rehabilitation was performed after 6 weeks after surgery. Eight months after surgery, in 2024, patient was complaining with pain, swelling, and reduced range of motion in operated knee. MRI was performed and collapse in the tibial proximal part medial condyle was revealed. Non weight bearing, exercises to improve knee mobility, hyperbaric oxygen therapy (HBOT) and NSAID were prescribed as a non-operative treatment of osteonecrosis. A three months later, control MRI revealed no positive signs of treatment in osteonecrosis. The decision to continue performing knee mobility exercises, use NSAIDs and HBOT was made. After 14 months of conservative treatment the patient had no symptoms of the pain and swelling. Patient is under supervision until now.

Summary. Case report demonstrates a rare complication after arthroscopic surgery.

Conclusions. Arthroscopic surgery is one of the safest ways to repair a knee injury, but it cannot prevent complications such as osteonecrosis.

WARTENBERG'S SYNDROME CAUSED BY A BENIGN TUMOR

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Keywords. Wartenberg's syndrome; Cheiralgia paresthetica; Lipoma; Pseudolipoma

Introduction. Wartenberg's syndrome is a distinct clinical condition characterized by compression of the superficial branch of the radial nerve (SBR), resulting in pain and sensory disturbances in the radial and dorsal aspects of the hand. Wartenberg's syndrome, also known as cheiralgia paresthetica (CP), was first described by Wartenberg in 1932. Symptoms can arise from blunt traumas, fractures, iatrogenic causes, tight wrist accessories. However, CP induced by a lipoma is an exceptionally rare phenomenon. In this context, we present a case exemplifying the diagnosis and management of lipoma -induced CP.

Case report. A 66-year-old male patient was referred to our center due to a six-month history of pain and paresthesia in the right hand. Physical examination demonstrated a palpable mass beneath a scar from childhood trauma. Sonoscopy revealed a non-encapsulated mass, measuring 6 cm at its largest diameter. A surgical excision of the lipoma combined with a decompressive fasciotomy was performed. The patient reported symptom relief within two weeks postoperatively.

Summary. This case highlights the importance of considering rare causes, such as lipomas, when diagnosing CP. Although lipomas are benign, their anatomical positioning can lead to significant nerve compression. Diagnostic imaging, combined with a detailed history, is essential for identifying these unusual cases. Surgical excision remains the definitive treatment, providing symptom relief and functional recovery.

Conclusions. Lipoma-induced CP is an extremely rare clinical entity, with few cases reported in the literature. In this case, surgical removal of the compressing lipoma, combined with decompressive fasciotomy, resulted in complete resolution of sensory symptoms and improved quality of life.

CHALLENGES IN EARLY DETECTION AND GENETIC TESTING: A CASE OF MISSED DIAGNOSIS IN BREAST CANCER

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Introduction. Breast cancer is the most common cancer in women. Genetic testing for hereditary forms is important for accurate diagnosis and treatment. In this case a 43-year-old female was diagnosed with breast cancer with a family history of breast and stomach cancers at young age. It highlights the importance of genetic testing and high-quality imaging for early diagnosis.

Case report. The patient underwent a mammogram, which showed no significant findings. However, a hypoechoic area was observed in the mammograms, suggesting a potential abnormality. Retrospective analysis showed the tumor was overlooked due to low-resolution imaging and smaller screens. The patient presented with a 10x10 mm mass on ultrasound in the right breast, classified as BI-RADS 5. MRI revealed a larger mass with a possible satellite lesion. No suspicious findings were noted in the axillary lymph nodes. Genetic testing showed no mutations despite the family history of cancer at young age, there remains the possibility that the disease-causing genetic variant is undetected due to the limitations of the technologies currently used for diagnosis. Neoadjuvant chemotherapy was started, resulting in a complete radiological response in MRI. Lumpectomy and lymph node biopsy were performed, revealing invasive ductal carcinoma and ductal carcinoma *in situ*.

Discussion. The missed diagnosis was likely due to low-resolution imaging or smaller screens, which impaired the detection of subtle findings earlier. High-resolution imaging and proper screen settings are essential for accurate diagnosis. Despite negative genetic testing, the patient's family history suggests a hereditary component. Neoadjuvant chemotherapy was effective, and the tumor was removed successfully.

Conclusions. This case shows the importance of high-quality imaging and the impact of inadequate technology on diagnosis. Despite negative genetic results, the patient's family history and treatment response highlight the value of personalized care. Continuous monitoring and further genetic testing for the patient and family are recommended.

CLAW SIGN AS A DIFFERENTIAL INDICATOR OF SPONDYLODISCITIS AND DEGENERATIVE SPINE CHANGES

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Keywords. Claw sign; Spondylodiscitis; Degenerative changes; Modic type 1; DWI

Introduction. Modic type 1 changes can mimic infection, prompting costly and invasive investigations in complex cases. The "claw sign," identified on diffusion-weighted imaging (DWI) during MRI, is a useful diagnostic feature to distinguish between these conditions. This pattern strongly predicts degenerative changes and has a strong negative predictive value for infection.

Case report. Patient 1: A 49-year-old male presented with severe lower back pain, previously radiating to the right leg but now limited to occasional morning stiffness. The patient denied any history of trauma. MRI findings revealed mixed degenerative changes of the lumbar spine, with a "claw sign," Modic type 1 and 2 changes in L4-L5 and L5-S1 vertebral endplates. Small amounts of fluid were observed in the intervertebral discs at these levels, indicating degenerative disc disease.
Patient 2: A 72-year-old male presented with a two-week history of malaise and back pain. Blood cultures identified Staphylococcus aureus. A CT of the thoracic spine showed a paravertebral mass from lower margin of Th7 to the midportion of Th9. MRI confirmed Th8-Th9 spondylodiscitis with mild anterior epiduritis causing moderate-to-severe spinal canal stenosis and spinal cord compression. Despite treatment, his condition worsened. Repeated MRI revealed Th8-Th9 spondylodiscitis with diffusion restriction observed transvertebrally on DWI, unlike Modic type I changes, with erosion of the Th9 vertebral body, a small epidural abscess, and signs of potential myelitis.

Summary. This case illustrates the importance of recognizing the claw sign in clinical practice as an effective tool for distinguishing infectious and degenerative spine conditions, enabling timely treatment.

Conclusions. The claw sign on DWI enhances traditional imaging features like disk signal, improving accuracy in distinguishing degenerative spondylosis and spondylodiscitis. Its routine use reduces costs by minimizing unnecessary tests and imaging for type 1 changes, easing infection concerns.

CHALLENGES IN PRIMARY TOTAL HIP ARTHROPLASTY OF PATIENT WITH A HISTORY OF DEVELOPMENTAL DYSPLASIA OF THE HIP JOINT

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Keywords. Developmental dysplasia of the hip; Total hip arthroplasty; Open reduction and internal fixation

Introduction. Patients with a history of developmental dysplasia of hip (DDH) and correction surgery pose a higher risk of intraoperative complications, such as challenging approach to acetabulum and increased likelihood of iliac fractures, during primary Total Hip Arthroplasty (THA). American society of Anesthesiologists (ASA) physical status classification might change when such complications occur.

Case report. 65 y.o. female with DDH, presented with severe osteoarthritis (OA), for which total hip arthroplasty was performed under general anesthesia (patient was classified as ASA II). Posterolateral approach was used and after soft tissue resection, capsulotomy and removal of osteophytes (extending over to inferior pubic ramus), during the reaming of the acetabulum a posterior acetabular wall defect was observed. To create a stable acetabular base for insertion of the acetabular component, a trabecular metal revision system (TMARS) with a posterior augment was chosen. Routine postoperative imaging identified a displaced comminuted fracture of the left iliac anterior column. The patient was reclassified as ASA III due to a significant iliac bone fracture, thereby increasing the overall perioperative risk of adverse reactions, hemodynamic instability, thromboembolic events, wound healing complications. Open reduction and internal fixation (ORIF) was performed to stabilize the iliac fracture to ensure proper healing and support the prosthetic components.

Summary. DDH progressively changes the hip, leading to secondary OA. In such patients, the main challenge is the reconstruction of deficient acetabular bone stock. When the anterior column of the iliac bone is fractured, ORIF is the preferred method of fixation. ASA classification changes when such intraoperative complications are present. To prevent fractures, a 3D CT templating and careful preoperative planning is required.

Conclusions. DDH causes hypoplastic acetabular bone stock, which leads to complicated THA approaches for a satisfiable outcome.

TREATMENT OF COMPLEX NONUNION FRACTURES OF THE SUPRACONDYLAR REGION OF THE FEMUR WITH AN AUTOLOGOUS SCAFFOLD AND BONE GRAFTS

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Keywords. Nonunion fractures; Scaffold; Bone grafts

Objectives. The objective of this study was to analyze the surgical results of the treatment of complex nonunion fractures of the supracondylar region of the femur with an autologous scaffold and bone grafts.

Case description. These cases involved fractures that failed to heal despite multiple surgical attempts. After implementing this scaffold during complex surgeries and conducting a 12-month follow-up, we observed highly promising results. Radiological evidence confirmed complete bone union, while patients achieved remarkable functional recovery, including pain-free and resumption of normal daily activities.

Summary. The primary aim of this study is to highlight the potential of fully autologous regenerative products—Bone Marrow Aspirate Concentrate (BMAC), cancellous bone autograft, Platelet-Rich Plasma (PRP), and autologous fibrin—in addressing severe orthopedic challenges

Conclusions. This is one of the few studies demonstrating the successful combination of these autologous products in treatment of nonunion supracondylar fractures.

CASE REPORTS, CASE REPORT SERIES

OPHTHALMOLOGY

DELINEATING PUM1-ASSOCIATED AND BRPF1-ASSOCIATED DEVELOPMENTAL DISABILITY SYNDROMES: A COMPARATIVE STUDY OF TWO RARE INTELLECTUAL DISABILITY CASES

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Keywords. PUM1-associated developmental disability syndrome; BRPF1-associated developmental disability syndrome; Intellectual disability; Developmental delay; Dysmorphic features; Whole-exome sequencing; Genetic heterogeneity

Introduction. PUM1-associated and BRPF1-associated developmental disability syndromes are rare intellectual disability (ID) syndromes marked by developmental delays and dysmorphic features. These syndromes highlight the genetic heterogeneity of neurodevelopmental disorders, requiring accurate diagnosis for appropriate management and genetic counseling. This report details the clinical and molecular profiles of two female patients, both 2.5 years old, with phenotypic similarities to Down syndrome but distinct genetic abnormalities.

Case description. The first patient showed significant developmental delay, achieving independent ambulation at 2 years and limited speech. Dysmorphic features included a short neck, narrow palate, flat nasal bridge, upslanting palpebral fissures, and small ears. Motor skill regression at 1 year and 3 months raised concerns about a progressive neurodevelopmental disorder. Family history revealed unaffected siblings, suggesting sporadic occurrence. Karyotyping excluded mosaic Down syndrome. Whole-exome sequencing (WES) identified a pathogenic heterozygous variant in the BRPF1 gene: NM_015255.4:c.3298C>T, p.(Arg1100Ter).

The second patient also experienced developmental delays, achieving independent walking at 2 years and 4 months, with recurrent respiratory infections indicating immune dysregulation. Dysmorphic features included upslanting palpebral fissures and small ears, resembling Down syndrome. MRI revealed ventriculus terminalis conus medullaris, emphasizing thorough phenotypic evaluation. Family history suggested a potential familial predisposition, as both older sisters had mild developmental delays. WES identified a pathogenic heterozygous variant in the PUM1 gene: NM_001083993.3:c.3261_3264del, p.(His1088ProfsTer16).

Summary. Both patients exhibited overlapping features but distinct pathogenic variants in BRPF1 and PUM1, highlighting genetic heterogeneity. Molecular diagnostics proved essential for accurate diagnosis and personalized genetic counseling.

Conclusions. This report underscores the importance of integrating clinical assessments with advanced molecular diagnostics. Whole-exome sequencing is vital for resolving complex neurodevelopmental cases with overlapping phenotypes, enabling targeted interventions and informed genetic counseling.

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INFECTIOUS DISEASES, MICROBIOLOGY, IMMUNOLOGY, ALLERGOLOGY, DERMATOLOGY, DERMATOVENEROLOGY

ALPHA-GAL SYNDROME: A DIAGNOSTIC CHALLENGE IN ANAPHYLAXIS TO MAMMALIAN MEAT

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Keywords. Alpha-gal syndrome; Mammalian meat allergy; Anaphylaxis

Introduction. Alpha-gal syndrome (AGS) is an exceptional allergic reaction to mammalian meat that is associated with tick bites and caused by a specific immunoglobulin E (IgE) antibody to the oligosaccharide galactose-α-1,3-galactose (alpha-gal). AGS is difficult to diagnose, partly because reactions are delayed 3–6 hours after exposure, and patients often tolerate red meat for many years before developing allergic reactions. AGS is frequently misdiagnosed as idiopathic anaphylaxis. This case highlights the importance of diagnostic and dietary interventions in the identification and management of AGS.

Case description. A 39-year-old woman presented with recurrent episodes of pruritus, urticaria and gastrointestinal symptoms (vomiting, abdominal cramping), accompanied by syncope 2-4 hours after consuming meat. The symptoms were initially non-specific and mild, but later progressed to severe. Tests for allergen-specific IgE to food molecular components shows sensitivity to mammalian meat. Positive skin prick tests with native allergens (gelatin, beef, lamb) were followed by the α-gal-specific IgE test, which yielded a positive result (13.2 IU/mL). Based on symptoms and laboratory findings, the patient was diagnosed with AGS and started on a strict mammalian meat elimination diet, which significantly reduced the rates of symptoms recurrence.

Summary. AGS is a rare and often misdiagnosed condition due to its delayed reactions. This case highlights the importance of detailed diagnostic tools, such as allergen testing and dietary interventions, in identifying AGS.

Conclusions. Diagnosing AGS requires careful evaluation due to its delayed reactions and non-specific symptoms. Diagnostic accuracy can be improved by the use of native allergen skin test and α-gal-specific IgE testing. Strict dietary elimination of mammalian meat has been shown to effectively reduce symptoms of related allergy.

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