



RĪGA STRADIŅŠ UNIVERSITY INTERNATIONAL STUDENT CONFERENCE 2022

Abstract Book

HEALTH SCIENCES



RĪGA STRADIŅŠ
UNIVERSITY

 **RSU SP**



Rīga Stradiņš University
**INTERNATIONAL STUDENT
CONFERENCE 2022**

March 24th-25th, 2022

Abstract Book

HEALTH SCIENCES



Rīga, Latvia

Rīga Stradiņš University International Student Conference 2022
(Rīga, March 24th-25th, 2022): Abstract Book – Health Sciences. – Rīga: RSU, 2022, 268 p.

Authors are responsible for their Abstracts.

Layout: Andris Strazdīts

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Rīga, Dzirciema Str. 16, LV-1007

ISBN 978-9934-8927-9-0

Preface

Dear students, dear professors, dear guests!

On behalf of Rīga Stradiņš University, it is my great honour and pleasure to welcome you all to Rīga Stradiņš University International Student Conference "Health and Social Sciences". Currently, it is the largest student scientific conference in Northern Europe.

We are meeting at a very stressful time for the whole world. However, our technological capabilities ensure that we can still proceed to carry out research.

Today, we welcome 295 students from 17 countries, for example, from Germany, Portugal, Poland, USA, Lithuania, Estonia and also from Ukraine. You will have the opportunity to present your studies, participate in workshops and master classes, as well as meet leading lecturers from all over the world. You are welcome!

You will present your theses in both medical and social sciences across the conference's 22 sections. In addition, 21 international jury members from 10 countries will participate in the conference. This testifies to the outstanding research capabilities of RSU students.

This conference is a significant event for each participant as it brings together students and experts from different fields. Rīga Stradiņš University aims to be a modern, prestigious university that is recognised in Europe and worldwide and that has the individual at its core – our students, professors, researchers and all academic and administrative staff are all essential to our team.

Dear students! I hope that you all will experience a conference where you will acquire many creative ideas and forge new professional contacts.

I wish you a productive and successful conference!

Professor Aigars Pētersons
RECTOR OF RĪGA STRADIŅŠ UNIVERSITY

Dear friends and guests of Rīga Stradiņš University,

As organizers, we are glad to have you with us during this difficult time that COVID-19 has brought. International Student Conference of Rīga Stradiņš University this year will be held both: online and onsite!

Despite all challenges we have faced, it is a pleasure that we received a huge amount of applications from more than 15 different countries. Our team has come a long way to provide you with the best of what hybrid conferences can provide! I hope you will enjoy our keynote speakers, plenary sessions, and workshops that will explore new horizons for all of you! Let's start this two-day-long journey with enthusiasm, curiosity, and hope that soon we will be able to meet in person!

Take care and stay safe!

Aija Tumova
CHAIR OF THE INTERNATIONAL STUDENT
CONFERENCE 2022 ORGANISING COMMITTEE

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ANAESTHESIOLOGY, REANIMATOLOGY, EMERGENCY MEDICINE

COMPARISON OF ADMINISTRATION METHODS OF OXYTOCIN DURING CAESAREAN SECTION

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Keywords. Oxytocin; Caesarean section

Objectives. Postpartum hemorrhage (PPH) is the principal cause of maternal mortality, accounting for nearly a quarter of the maternal deaths that occur worldwide. The typical cause of PPH is uterine atony, therefore increasing the use of uterotonic agents for all women during delivery has been a key component of worldwide efforts to decrease PPH-associated morbidity and mortality. The administration of exogenous oxytocin is the most typical method because it is thought that additional oxytocin further stimulates uterine contractility. The aim of this study is to compare the effect of oxytocin when it is administering by different routes during caesarean section.

Materials and methods. This retrospective study was conducted at LUSH KK. 20 patients were registered who were administrated to oxytocin during cesarean section between December 2020 and March 2021. Patients were randomly divided into two groups: the first group received oxytocin by infusion (N=10) and others received oxytocin through an automatic injection pump (AIS) (N=10). Data were analyzed in the SPSS. P-value less than 0,05 considered reliable.

Results. The total dose of oxytocin was found to be 2.5 times lower in the AIS group (15 ± 5.7 IU and 6 ± 2.1 IU respectively, $p < 0.001$). The need for additional oxytocin dose was higher in the infusion group ($n = 8$ respectively $n = 2$, $p = 0.023$). The greater amount of blood loss (1280 ± 181.353 and 460 ± 54.64 respectively, $p < 0.001$) and need for intravenous fluid (2300 ± 258.19 and 2000 ± 0 respectively, $p < 0.023$) were observed in the infusion group. There were no differences in heart rate or peripheral oxygen saturation between the groups, but changes in systolic and diastolic blood pressure are more affected by oxytocin infusion.

Conclusions. The initial prophylactic dose of oxytocin is lower when it is delivered by an automatic syringe pump.

COMPARISON OF THE VOLUME OF TRANSFUSED ERYTHROCYTES AND HOSPITALIZATION DURATION IN GENERAL OR REGIONAL ANAESTHESIA FOR MICROVASCULAR FLAP SURGERY

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Keywords. Microvascular flap surgery; Regional and general anesthesia, Hospitalization; Transfused erythrocytes

Objectives. For challenging repairs and significant deformities, microvascular flap surgery is a viable option. The best type of anesthesia for successful flap surgery is still up for dispute. The purpose of this study is to compare the differences in the duration of hospitalization and the volume of transfused erythrocytes between patients with regional anesthesia (RA) and general anesthesia (GA).

Materials and methods. A total of 59 adult patients who had elective extremity microvascular flap surgery were included in this retrospective cohort research. The study was carried out with the agreement of Riga Stradins University's Ethics Committee. All patients were eligible for some form of regional anesthesia, however the definitive approach was determined by the anesthesia team based on the surgical requirement of each patient. The patients were split into two groups: RA(N=23) and GA(N=36). The amount of transfused erythrocytes, the length of intensive care stay, and the overall length of hospitalization were all acquired as postoperative outcomes.

Results. Gender, age distribution, ASA score weren't significantly different amongst the groups. The volume of transfused erythrocytes didn't statistically significantly differ between RA and GA groups (RA= 381.70;241.04-522.47;GA=819.75;497.18- 1142.32,p=0.301). The average length of stay in intensive care for GA group was 4.0 days (CI95% 2.53-5.47). RA group had a significantly lower mean intensive care stay duration of 0.26 days (0.1-0.42;p=0.016). GA group had a mean hospitalization duration of 28.06 days (CI95% 23.48-32.64). RA group had a significantly shorter hospitalization length of 14.52 days(12.32-16.72;p=0.01).

Conclusions. The volume of transfused erythrocytes in microvascular flap surgery is equal for both groups. Patients who undergo GA spend more time in intensive care and remain longer in the hospital. When surgically possible, a meticulously delivered regional anesthesia may be favorable. Further research is required before unambiguous recommendations on the best form of anesthesia can be made.

A SURVEY OF THE CHOICE CONSIDERATIONS OF GENERAL ANAESTHETIC AGENTS IN LATVIA

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Keywords. Survey; General anaesthesia; Volatiles; Nitrous oxide; Propofol; Environment

Objectives. Strategies to reduce the adverse environmental costs of anaesthesia include choice of agent and fresh gas flows. The current preferences of Latvian anesthetists are unknown. We aimed to identify the relative usage of, and reasons for, different general anaesthetic agents, the frequency of the use of N₂O in general anaesthesia and the lowest tolerated maintenance fresh gas flow. We were particularly interested in knowing whether anaesthetists considered environmental and financial factors when making choices about what general anaesthetic agent they used.

Materials and methods. We surveyed Latvian anesthetists with the online platform Survey Monkey. We calculated proportions and percentages for all quantitative results. For proportions we estimated 95% confidence intervals (CIs).

Results. The survey was answered by 88 anesthetists. Sevoflurane was preferred by 64/88 (77%, 95% confidence interval (CI) 62%–81%), followed by propofol, 6/88 (8%, 95% CI 3%–15%), desflurane 2/88 (3%, 95% CI 0%–9%) and isoflurane 2/88 (3%, 95% CI 0%–9%). Faster induction/awakening times was the most common reason given (48/88 (46%, 95% CI 34%–57%) for sevoflurane and 4/6 (67%, 95% CI 24%–94%) for propofol). Nitrous oxide was used by 41/88 (47%, 95% CI 36%–57%) of respondents in 0–30% of general anaesthetics. Low fresh gas flow rates for sevoflurane were used by 70/88 (80%, 95% CI 69%–87%) Automated end-tidal control was used by 28/88 (32%, 95% CI 22%–42%).

Conclusions. A standard general anaesthetic used in Latvia is with sevoflurane, at flows of 1–2 litres/minute and without N₂O. Most respondents would choose a general anaesthetic agent according to familiarity and faster induction/awakening times, although uncommonly (7%) for environmental reasons.

OPTIMAL FENTANYL ANALGESIA IN EARLY POSTOPERATIVE PERIOD WITH AND WITHOUT ADDITION OF NSAIDS IN CARDIAC SURGERY

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Keywords. Postoperative; Multimodal; Analgesia; VAS; Fentanyl; NSAIDs

Objectives. Opioid analgesia, even though holds several unwanted side effects, is used as standard postoperative analgesia in cardiac surgery patients. Multimodal therapy is proposed as the best option for decreasing postoperative pain and NSAIDs are among the commonly used agents.

Materials and methods. The research was done in the Latvian Centre of Cardiology. Total of 50 cardiac surgery patients participated. Postoperative VAS score, weight, fentanyl dose, NSAID use, meteorism, breakthrough pain, nausea in the 2nd, 4th, 6th postoperative hour were registered. All patients received fentanyl 0,2 mg/h during the first 4 hours, with some additionally receiving NSAIDs. Two groups were created: significant (≥ 4 VAS) (SP), no-significant (≤ 3 VAS) (NSP) pain. 4th hour SP patients were divided into NSAID (A) and no-NSAID (B) groups. 4th-hour moderate pain (4-5 VAS) (MP) in A and B was evaluated.

Results. Most side effects and highest VAS score is recorded in 4th hour with 46% nausea, 28% breakthrough pain, 10% meteorism, SP 56%, NSP 44%. According to ROC curve analysis, at 0,2516 mcg/kg/h sensitivity of SP is ~78,6% (false-positive ~9%), sensitivity in patients with nausea is ~87% (false-positive ~22%). VAS in A and B is significantly different in 4th ($p=0,001$) and 6th ($p=0,016$) hour. Results show VAS median (Q1-Q3), 4th hour A=6,0 (7,0-5,0), B=4,0 (4,0-5,0), 6th hour A=2,0 (1,0-3,0), B=1,0 (0,5-1,5). MP VAS in A, B is insignificant ($p=0,776$).

Conclusions. The most common side effects are nausea, breakthrough pain. Fentanyl 0,2516 mcg/kg/h is the optimal analgesia dosage and has high nausea probability, therefore antiemetics can be given when starting fentanyl therapy. 6th hour A and B was <4 VAS and therefore proving adequate therapy, though A has initially higher 4th hour VAS scores, therefore, need for NSAIDs cannot be properly assessed. Evaluation should be focused on MP in both groups, which in this case was not significant, possibly due to insufficient data count.

COMPARISON OF TIE TECHNIQUES FOR SECURING ENDOTRACHEAL TUBES

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Keywords. Intensive care; Intubation; Intraoperative safety; Endotracheal tube

Objectives. Endotracheal tubes (ETT) are widely used for securing patients airway in critically ill. Unintentional extubation happens up to 16% of cases. Therefore, securing ETT is as important as intubation itself. In clinical practice three options are used. Most common is twill tape with gauze scroll tied to it. There is little information about which knot technique is most adequate in securing ETT.

Materials and methods. Three knots were chosen for the experiment. Each was tested five times on three sizes of ETT – 7.0, 7.5, 8.0 –, in dry and wet conditions. 1cm wide twill tape was used in each test. When knot was tied, leftover tape side was fixed to immovable object. Travel scale was looped underneath knot. Travel scale was also fixed to solid object. Force was applied to ETT still it was enough to cause constant ETT movement. Time of slippage and applied mass in kg was noted. Afterwards force was calculated. Student's t test was used to compare knots under wet and dry conditions and one-way ANOVA to compare force required for knot slippage between knots.

Results. In dry conditions average force required to cause slippage of ETT secured with double common knot was 47 N. In wet condition it decreased to 25 N ($p < 0.001$). For constrictor knot, dry conditions required 98 N, but wet – 36 N ($p < 0.0001$). Clove hitch knot required 105 N in dry, but only 48 N in wet conditions ($p < 0.0001$). Clove hitch knot was the most secure knot under both conditions ($p < 0.0001$).

Conclusions. The most widely used knot for securing ETT, double common knot, is the least secure under all conditions. The most secure knot is clove hitch knot which we recommend for use in securing ETT in critically ill patients.

FREQUENCY OF HYPOALBUMINEMIA IN PERIOPERATIVE PERIOD FOR PATIENTS HAVING ELECTIVE OPEN-HEART SURGERY IN CARDIOPULMONARY BYPASS AND FACTORS INFLUENCING IT

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Keywords. Hypoalbuminemia; Cardiopulmonary bypass time; Fluid balance, pre-operative factors, Intra-operative factors

Objectives. The presence of postoperative hypoalbuminemia may be associated with worse outcomes and long-term scenarios. The aim of this study was to estimate the frequency of hypoalbuminemia in patients before and after elective open-heart surgery in cardiopulmonary bypass (CPB) and analyze possible factors influencing it.

Materials and methods. Data of 120 patients who were admitted to Pauls Stradins Clinical University Hospital, Center of Cardiac Surgery for elective open-heart surgery in CPB between 1st November 2021 and 28th December 2021 were retrospectively analyzed. We analyzed patients gender, age, BMI, co-morbidities, planned surgery type, pre-operative blood tests, intraoperative variables, and postoperative blood tests 6 and 12 hours after surgery. For statistical analysis, IBM SPSS Statistics 27.0 was used.

Results. Of 120 patients, 23 were excluded due to a lack of available data. Of 97 patients, only 1 (1.03%) had hypoalbuminemia when admitted to the hospital. Hypoalbuminemia developed in 38 (39.2%) patients 6 hours after surgery and in 50 (51.5%) patients after 12 hours. There was no statistically significant influence by pre-operative factors (gender, age, BMI, co-morbidities, blood tests) on hypoalbuminemia. 50 patients developed hypoalbuminemia 12 hours after surgery from which none had severe serum albumin deficit (<25g/L), 4 had moderate (25-29.9g/L), 46 had low deficit (30-34.9g/L). In intra-operative values, statistically significant correlation was found for patients with longer CPB time (Median (Q1-Q3). 90 (74-119) for hypoalbuminemia vs 82 (69-102) min for normal albumin level; ($r=-0.207$, $p=0.042$) as well as higher intra-operative fluid balance (853 (77-1100) vs 647 (181-1065) ml; $r=-0.200$, $p=0.049$)) had lower albumin levels 6 hours after surgery.

Conclusions. Hypoalbuminemia in patients before elective open-heart surgery is not common. However, 51.5% of patients develop hypoalbuminemia 12 hours after surgery. Pre-operative factors do not significantly affect hypoalbuminemia's frequency. Hypoalbuminemia is mainly associated with intra-operative factors, like CPB time and intra-operative fluid balance.

EFFECT OF CALCULATED COLLOID OSMOTIC PRESSURE ON THE FREQUENCY OF NORADRENALINE USE AFTER CARDIAC SURGERY IN CARDIOPULMONARY BYPASS

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Keywords. Colloid osmotic pressure; Vasopressors; Postoperative; Cardiopulmonary bypass

Objectives. Colloid osmotic pressure (COP) is important in maintaining hemodynamic stability and albumin is the main blood protein that influences COP. In cardiopulmonary bypass due to haemodilution and blood loss, COP decrease. Noradrenaline (NA) is commonly used for hypotension treatment. The impact of COP changes on blood pressure need to be assessed for therapy improvement.

Materials and methods. Study was done in Pauls Stradiņš Clinical University Hospital, Centre of Cardiac Surgery from 02.11.2021. to 04.01.2022., 91 patients were included (51.6% women), median (Q1-Q2) age 67 years (60.75-73.00). We recorded albumin and total-protein levels before surgery, 6h and 12h after surgery. Further we measured intraoperative and postoperative noradrenaline usage, maximal dosage ($\mu\text{g}/\text{kg}/\text{min}$) and infusion time (min). COP (mmHg) was calculated using formula $(4.0814 \cdot A/G \cdot TP)/(A/G + 0.0153 \cdot TP)$. Preoperative and 6h postoperative COP difference was calculated (COPP6). Changes in COP, NA usage are assessed.

Results. NA use intraoperatively is 23.1%, 6h-postoperatively 35.2%, 6-12h-postoperatively 26.4%. COPP6 and NA6h-use ($p=0.031$), median of COP difference when NA was used in 6-postoperative-hours 6.13 (4.39-7.65) vs NA not used=4.95 (3.24-6.49). COPpreop and NAintraop-use ($p=0.044$), median of COPpreop when NA is intraoperatively used =26.77 (24.99-28.21), NA not used =27.45mmHg (26.55-28.65). COP6h and NA6h-use ($p<0.001$), median of COP6h when NA in 6-postoperative-hours is used =20.58 (19.81-21.70) vs NA not used =22.22mmHg (21.34-23.87).

Conclusions. COPP6 in case of NA used in 6-postoperative-hours is significantly bigger than when NA is not used. Preoperative COP is significantly lower when NA is used intraoperatively, though significance is not attributed to maximal dosage or time, it could be helpful in risk assessment. 6th-hour COP is significantly lower in NA used in 6-postoperative-hours. As COP is easily calculated and significance with lower COP and concomitant higher frequency of NA use is established, use of albumin in lower COP patients is proposed to reduce the usage of NA.

ANAESTHESIA FOR CAESAREAN SECTION IN WOMAN WITH HYPERTROPHIC CARDIOMYOPATHY WITH DYNAMIC LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION

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Keywords. Hypertrophic cardiomyopathy; LVOT; Caesarean Section; Spinal anaesthesia

Objectives. Hypertrophic cardiomyopathy with dynamic left ventricular outflow tract obstruction (LVOT) is associated with increased risk of perioperative complications and requires careful EchoCG examination during pregnancy, proper selection of anaesthesia method, and hemodynamic maintenance with phenylephrine. The aim of this case report is to analyze the management of Cesarean Section and postpartum complications of patient with hypertrophic cardiomyopathy with LVOT obstruction.

Case description. 30 years old pregnant women at 38 weeks of gestation age with hypertrophic cardiomyopathy were admitted to Pauls Stradins CUH, hemodynamic parameters were stable. At 34 weeks of gestation EchoCG showed left ventricular hypertrophy without LVOT obstruction, MRI-II, TRI, EF55%. On the 3rd day at 8:35 am Caesarean Section was performed under spinal anaesthesia. After required level of anaesthesia was achieved, BP shows slight decrease from 170/100mmHg to 100/50mmHg, maintenance of systemic blood pressure was accomplished using crystalloid infusion (total volume 2l) and repeated ephedrine 7.5mg boluses. After surgery at 9:45am hypotension progressed, BP dropped to 90/40mmHg and norepinephrine infusion was initiated. Patient showed signs of lung edema and emergency EchoCG performed in OR showed dynamic LVOT obstruction development, RV dilatation, MRIII, TR II-III. Patient was admitted to the cardiac ICU where lung edema was managed and the general condition of patient stabilized with later discharge to the maternity ward. On the 7th day patient discharged from hospital.

Summary. Hypertrophic cardiomyopathy with dynamic LVOT obstruction can become life-threatening. Careful investigation and choice of anaesthesia method before Cesarean Section can be crucial to prevent postpartum complications. Patients with dynamic LVOT obstruction has high risk of hemodynamic deterioration and require repeated EchoCG examinations, because cardiovascular changes during pregnancy can worsen underlying disease. Epidural or general anaesthesia is method of choice due to less vasodilation effect compared with spinal anaesthesia. Phenylephrine is first choice vasopressor for this group of patients. Infusion of intravenous fluid volume must be controlled.

BASIC & PRECLINICAL SCIENCE (MORPHOLOGY, PATHOLOGY, GENETICS)

EVALUATION OF MORPHOLOGICAL CHANGES IN THE TUNICA ADVENTITIA OF THE ASCENDING AORTA IN ALTERED AORTIC VALVE PATIENTS

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Keywords. Collagen fibers; Fat deposits; Altered aortic valve

Objectives. Aorta is the largest artery in the body. It can be structurally changed if congenital bicuspid aortic valve, altered tricuspid aortic valve, age-related changes or hypertension is present. Inflammation and fat cell deposits as well as morphological alternations in collagen fibers can cause aortic dissection, aneurysms, or stenosis. Largest of the collagen bundles are in the tunica adventitia (TA) and they play an important role in preventing aortic rupture. The aim of the study was to evaluate collagen bundle changes and fat cell deposits occurring in the TA in altered aortic valve (AAV) and control patients.

Materials and methods. The study used surgical material from 28 patients with altered aortic valve (mean age 63), and 13 controls (mean age 81) obtained at autopsy. Histological samples were stained with SiriusRed and Masson's trichrome. A semi-quantitative analysis of fat cell deposits, relative thickness, fragmentation, and organization of collagen bundles by a light microscope was done. The statistical analysis was performed using SPSS v28.

Results. More pronounced collagen fiber fragmentation ($p = 0.005$) and an increase in collagen bundle thickness ($p = 0.042$) was observed in the controls compared to the AAV patients. The AAV patients showed more pronounced fat cell deposits ($p < 0.001$) compared to controls. A significant correlation was found between relative collagen thickness and fat cell deposits ($r = -0.293$, $p < 0.001$), age and thickness of collagen bundles ($r = 0.156$, $p = 0.009$), age and organization of collagen bundles ($r = -0.228$, $p < 0.001$).

Conclusions. In the TA, AAV patients have increased fat cell deposits but less pronounced changes in fragmentation or an increase in the thickness of collagen fiber bundles compared to the control group. More pronounced alterations in collagen fibers in the controls suggests that age could be a more significant factor compared to patients with AAV.

EVALUATING THE MORPHOLOGICAL INTERACTIONS BETWEEN GLIAL CELLS AND VULNERABILITY OF ALCOHOLICS' BASAL GANGLIA

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Keywords. Basal ganglia; Alcohol; Microglia; Astrocytes; GFAP; Iba-1

Objectives. It is known that astrocytes are critical regulators of addiction machinery. Microglial cells are phenotypically heterogeneous immune sentinels that orchestrate a potent neuroinflammatory response. However, the glial networks associated with alcohol dependence are only partly understood. The aim of the study was to evaluate the distribution of GFAP and Iba-1 immunopositive cells in subcortical grey (GM) and white matter (WM), evaluating both diffuse and perivascular cell location of microglial cells.

Materials and methods. The study included 19 autopsies from basal ganglia, which were divided in young alcohol (YA) (mean age 30) and chronic alcohol (CA) users' (mean age 55) groups. The tissue sections were stained by anti-Iba-1 and anti-GFAP antibodies to detect microglia and astrocytes. IBM SPSS 27.0 and GraphPad Prism9 was used for statistical analysis, non-parametric tests were performed.

Results. In the GM, more Iba-1 positive (Iba1+) cells were diffusely located in YA in comparison with CA group ($p < 0.001$). More diffuse Iba-1+ cells were observed in the WM of CA group compared to YA group ($p < 0.001$). More astrocytes were found in the WM in CA group ($p < 0.001$) in comparison with GM of both groups and WM in YA group. In the GM, stronger correlation between GFAP positive astrocytes and Iba-1+ diffuse microglial cells were observed in YA users' group ($r = 0.740$, $p < 0.001$) than in CA users' group ($r = 0.443$, $p < 0.001$). In the WM, correlations were found between astrocytes and diffuse Iba-1+ cells in both chronic ($r = 0.517$; $p < 0.001$) and young ($r = 0.371$, $p < 0.001$) alcohol users' groups.

Conclusions. The larger number of Iba-1+ cells diffusely located in basal ganglia WM in CA group than in YA group proves the role of microglial cells in neuroinflammation due to ethanol induced chronic damage. Correlation between diffusely located WM microglial cells and GFAP expressing astrocytes in WM indicates the neuroimmune communication between glial cells.

MORPHOLOGICAL ANALYSIS OF INFECTED LIVER PARENCHYMA WITH HUMAN HERPESVIRUS-6

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Keywords. HHV-6 infection; Liver; Cell tropism

Objectives. The aim of the study was to define the HHV-6 prevalence in infected liver tissue. Primary infection with human herpesvirus-6 (HHV-6) is widespread in the human population. HHV-6 is a lymphotropic virus and it also has a potential to become hepatotropic. Studies have shown that HHV-6 is a cause of various hepatobiliary diseases. However, little is known about its *in vivo* cell tropism.

Materials and methods. 58 autopsy materials were analysed, of which 15 were young alcohol users, 32 were chronic alcohol users (alcoholics) and 11 were from a control group. A quantitative counting of both HHV-6-immunopositive and viral protein negative liver lobules was done by the light microscope with a magnification 400×. Further, the HHV-6 positivity found in the liver parenchyma was assessed using semi-quantitative method. Apart from inflammation, HHV-6 positivity in hepatocytes, endothelium of central veins and bile duct cells were evaluated. Statistical data analysis was done by GraphPad Prism v.9 program.

Results. We found that 64% of lobules in the control group, 75% of lobules in young alcohol users and 69% of lobules in alcoholics were 100% infected with HHV-6. We detected that endothelium of central veins was 100% positive in case of infected parenchyma. We found statistically significant ($p < 0.001$) correlations between HHV-6 positive hepatocytes and cells in the bile duct, central vein endothelium and inflammation in all study groups (in alcoholics, $r = 0.792$, $r = 0.833$, $r = 0.494$, respectively; in young alcohol users, $r = 0.354$, $r = 0.660$, $r = 0.197$, respectively; in controls, $r = 0.797$, $r = 0.797$, $r = 0.552$, respectively). The similar observation was done between HHV-6 positive bile ducts and inflammation (in alcoholics, $r = 0.588$, young alcohol users, $r = 0.469$; in controls, $r = 0.587$).

Conclusions. HHV-6 was widely spread in infected liver tissue. Hepatocytes, epithelial cells of the bile duct and central vein revealed immunohistochemical positivity. HHV-6 positivity correlated with inflammation in liver tissue.

FGFR1, FGFR2 AND FOXO1 POTENTIAL ROLE IN THE OROFACIAL CLEFT-AFFECTED TISSUE

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Keywords. FGFR1, FGFR2, FOXO1, Orofacial cleft

Objectives. Cleft lip with or without cleft palate (CL/P) is one the most common congenital anomalies worldwide, with the incidence ranging from 1 in 500 to 2500 births. However, the morphopathogenesis of non-syndromic orofacial clefts is still unclear. Many candidate genes have been proposed to play a causal role, unfortunately, only a few have been confirmed. Leaving many genes, such as from FGF and FOX families, still to be assessed. Taking into account the significance of FGFR1, FGFR2 and FOXO1 in embryogenesis, the aim was to examine the appearance, distribution and potential intercorrelations between the three genes in cleft affected lip and palatine tissue.

Materials and methods. The study group consisted of 10 children. The soft tissue samples were taken during cheiloplasty and veloplasty. Three control lip tissue samples were obtained during superior labial frenectomy, and three control palatine tissue samples were obtained from cadavers. The potential signals of the candidate genes were visualized using Chromogenic in-situ Hybridization. Nonparametric statistics, Mann-Whitney U and Spearman's tests were used.

Results. No statistically important difference in the distribution of FGFR1, FGFR2 and FOXO1 genes between the patients' lip and vomer mucosa nor the control group and lip or palatine mucosa was observed. Statistically significant very strong and strong correlations were found between genes in the lip and palatine tissue (17 and 9 pairs out of 36, respectively).

Conclusions. The expression of FGFR1, FGFR2 and FOXO1 in cleft affected lip and vomer mucosa seems to be highly individual. Numerous intercorrelations between the genes do not exclude their role in the possible complex morphopathogenesis of facial clefts.

EXPRESSION OF MYOEPITHELIAL IMMUNOHISTOCHEMICAL MARKERS IN DIFFERENT BREAST CANCER SUBTYPES

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Keywords. Breast cancer; SOX10; Immunohistochemistry

Objectives. Breast cancer is the second most common cancer in Latvia, in spite of many research in immunohistochemistry, triple-negative breast cancer still remains one of the least understood cancer subtypes morphologically, which puts a challenge for its treatments and prognosis. The aim of the current study is to investigate the expression pattern of SOX10 in histological subtypes of invasive breast carcinoma in Latvian population

Materials and methods. Retrospective study analysis comprised of 47 consecutive patients who were diagnosed with morphologically confirmed breast cancer, of which included 5 patients with Luminal A breast cancer subtype, 32 patients with Luminal B subtype and 10 patients with triple-negative breast cancer subtype. SOX10 was identified using immunohistochemistry on fully automated Ventana Benchmark ultra slide staining system. Statistical analysis was performed using IMB SPSS Statistics 27.0. Fisher-Freeman-Halton and Cramer-V tests were performed.

Results. Statistically significant correlation was found between breast cancer subtype and expression of SOX10 marker ($P < 0.001$). The association between these subtypes and expression of SOX10 marker was substantial ($V = 0.873$). Among 3 subtypes- Luminal A showed 100% negative SOX10 expression, Luminal B was associated with 97% negative expression, however triple-negative breast cancer subtype demonstrates 90% positive results of SOX10 expression.

Conclusions. SOX10 proves to be highly sensitive and distinctly specific immunohistochemical marker for triple-negative breast cancer. This shows possibilities of using SOX10 immunohistochemistry marker for effective diagnosis of histological triple-negative breast cancer subtype.

EVALUATION OF CLAUDIN-1 EXPRESSION IN GASTRIC CANCER

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Keywords. Claudin-1; Claudin-1 protein expression; Gastric cancer

Objectives. The Claudin-1 protein is a membrane protein that exhibits the character of an antioncogene. It takes part in creating tight junctions between cells. Normal cells of the gastrointestinal epithelium show a high expression of this protein, while its reduced or absent expression may occur in neoplastic lesions. The aim of the study was to assess the expression of the Claudin-1 protein in tissue preparations and the correlation with clinical and histopathological parameters.

Materials and methods. The study was conducted on a group of 87 patients with gastric cancer. The research material consisted of tissue specimens collected during gastric resection. An immunohistochemical method was used to evaluate the protein expression in the neoplastic tissue. Protein expression was counted in 100 tumor cells and for statistical analyzes it was determined that expression >20% of positive cells would be considered as positive reaction.

Results. Claudin-1 protein expression was shown to be lower in women than in men with gastric cancer ($p < 0.02$). Moreover, lower expression was found in adenocarcinomas with a mucous component ($p < 0.001$) and in the diffuse gastric cancer according to Lauren classification ($p < 0.001$). On the other hand, higher expression of Claudin-1 was observed in tumors with a diameter of ≥ 5 cm ($p < 0.001$).

Conclusions. Decreased expression of the Claudin-1 protein may indicate the development of a histological gastric cancer with a worse prognosis. Moreover, tumor growth (tumor volume) may be related to the expression of Claudin-1 protein.

TRACHEAL HYALINE CARTILAGE VARIATIONS IN HEALTHY HUMANS

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Keywords. Trachea; Hyaline cartilage; Interleukin 10; Human beta defensins; Human cathelicidin

Objectives. Trachea is an important part of the respiratory system, however little is known about its hyaline cartilage structure, protective tissue factors and variations in healthy humans, thus making it harder to find possible molecular targets for the investigation of tracheal pathologies and replacement options. Our aim was to research the appearance of specific anti-microbial defense molecules and cytokines in healthy tracheal hyaline cartilage tissues.

Materials and methods. The tracheal tissue material was obtained from 10 cadavers of the Riga Stradins University Institute of Anatomy and Anthropology archive. The inclusion criteria used in this study were male gender, age from 30 to 60 years and that the obtained tissue sample contains the whole tracheal wall. Exclusion criteria were findings of any pathology in the tissue material. Tissues were immunohistochemically stained for HBD-2, HBD-3, HBD-4, IL-10 and LL-37 and the slides were inspected by light microscopy. To evaluate correlations between studied factors, Spearman's rank correlation coefficient was used.

Results. All of the anti-microbial defense molecules and cytokines were found in moderate number of cells, except in the mature cell zone with around few positive cells for these factors. Commonly, there were slight variations in positive cell numbers of tracheal hyaline cartilage. Spearman's rank correlation coefficient revealed strong positive correlation between HBD-3 and IL-10 and HBD-4 and LL-37. Moderate positive correlation was observed between HBD-3 and HBD-4, HBD-3 and LL-37, as well as IL-10 and LL-37.

Conclusions. Tracheal hyaline cartilage is an important defense structure that contains moderate number of antimicrobial defense protein and cytokine immunoreactive cells in normophysiological conditions. The correlations between the protective tissue factors (HBD-2, HBD-3, HBD-4, IL-10 and LL-37) confirm the synergistic activity of them in order to support the baseline immunity and protect the organ from possible pathogens.

THE USE OF HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL METHODS FOR DETERMINING ISCHEMIC STROKE ETIOLOGY IN PATIENTS WITH LARGE VESSEL OCCLUSION

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Keywords. Thrombus; Histology; Stroke; Thrombectomy

Objectives. Determining the etiopathological source of ischemic stroke is essential for choosing appropriate secondary prophylaxis, however, in up to 39% the source of embolism cannot be determined using conventional investigation methods. The aim of our study was to investigate histopathological differences of emboli retrieved during mechanical thrombectomy.

Materials and methods. A total of 40 acute ischemic stroke patients were included in the study. The recovered thrombi underwent Hematoxylin-and-Eosin staining and were characterized according to the overall appearance into erythrocytic, leukocytes, fibrin and microscopically measured their area into mm². All thrombi were stained immunohistochemically for CD3 positive T cells, CD68 positive monocytes, von Willebrand factor positive thrombocytes, and CD15 positive leukocytes. The results were compared in supposed etiopathological stroke subtype groups as cardioembolic, atherothrombotic, and unspecified etiology based on the patients' comorbidities.

Results. There were 26 cardioembolic thrombi, 7 atherothrombotic, and 7 thrombi of unspecified etiology. Atherothrombotic thrombi had a higher percentage of the fibrin area versus total thrombi area than unspecified etiology thrombi (87,4% and 66,4% respectively; $P=0,038$) and similar tendency compared with cardioembolic thrombi (87,4% and 75,9% respectively; $P=0,099$). Unspecified etiology thrombi had a statistically lower fibrin/leukocytes ratio than atherothrombotic thrombi (10,7 and 27,7 respectively; $P=0,026$) and a similar tendency compared with cardioembolic thrombi (10,7 and 14,7 respectively; $P=0,067$). There were no significant differences in the proportion of other thrombus components between the three mentioned groups.

Conclusions. Tracheal hyaline cartilage is an important defense structure that contains moderate number of antimicrobial defense protein and cytokine immunoreactive cells in normophysiological conditions. The correlations between the protective tissue factors (HBD-2, HBD-3, HBD-4, IL-10 and LL-37) confirm the synergistic activity of them in order to support the baseline immunity and protect the organ from possible pathogens.

CHRONIC EFFECT EVALUATION OF UNFLAVOURED ELECTRONIC CIGARETTES REFILL LIQUID WITH DIFFERENT NICOTINE CONCENTRATIONS ON LIVER FUNCTION

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Keywords. Electronic cigarette; Flavour; Refill liquid; Nicotine

Objectives. Nicotine and flavour in electronic cigarette (EC) refill liquid have demonstrated cytotoxic effects on hepatocytes through inflammation and oxidative stress in acute exposure. The chronic effects of unflavoured and with or without nicotine in EC refill liquid on liver function has not been evaluated. This study purposed to evaluate the chronic effect on liver function in rats after exposure to unflavoured EC refill liquid at different nicotine concentrations.

Materials and methods. A total of 28 male Wistar rats were randomly distributed into four groups of seven each. Control, as a control group. Nic 0, Nic 6, and Nic 12 groups were exposed to unflavoured EC refill liquid for eight weeks with different nicotine concentrations of 0, 6, and 12 mg/mL, respectively. EC exposure in rats carried out an exposure instrument adjusted to real-life exposure to humans. Liver function markers including alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels as well as antioxidant enzyme catalase (Cat) activity in plasma were assessed. One-way ANOVA with Tukey's post hoc was performed for statistical analysis. This study ethic was issued by the Ethics Committee of the Faculty of Medicine of Universitas Islam Indonesia, Yogyakarta, Indonesia (Number: 14/Ka.Kom.Et/70/KE/VIII/2021).

Results. Unflavoured EC refill liquids were disrupted liver function by significantly increasing ($P < 0.001$) ALT and AST levels in all exposed groups compared to control, except in AST levels of Nic 0 group ($P > 0.05$). The significant impairment ($P < 0.001$) of Cat in all exposed groups also occurred. These results demonstrated that the higher nicotine concentration further disrupts liver function.

Conclusions. Chronic exposure to unflavoured EC refill liquids with or without nicotine disrupts liver function by decreasing antioxidant enzymes (Cat) in a concentration-dependent manner. Thus, these findings highlight the potentially harmful effect of EC use even without nicotine and flavour.

MORPHOLOGICAL SPECTRUM OF SURGICALLY TREATED NON-TUMOROUS CENTRAL NERVOUS SYSTEM FORMATIONS AMONG PAEDIATRIC PATIENTS IN LATVIA (2016-2020)

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Keywords. CNS; Neurosurgical disorders; Epilepsy; Cortical dysplasia

Objectives. Central nervous system disorders in the paediatric age group are challenging and might require surgical treatment. They include various non-tumorous abnormalities such as focal cortical dysplasia, that may cause drug-resistant epilepsy. The study is aimed to summarise morphological spectrum of surgically treated non-tumorous central nervous system formations in the Children's Clinical University Hospital, Latvia (2016-2020).

Materials and methods. Clinical data was retrospectively collected from histological reports accessed through the Children's Clinical University Hospital system "Dialab". Additional information regarding diagnosis was accessed through the clinical information system "Andromeda". Only newly diagnosed abnormalities were enlisted, excluding repeated surgical interventions. The groups were allocated according to the 11th Revision of the International Classification of Diseases. Data was analysed using descriptive statistics.

Results. In total 109 CNS histological reports were collected, of which 36 non-tumorous formations were identified. The most common group was cerebral structural developmental anomalies (47.22%;n=17) with focal cortical dysplasia type IIb predominance (25.00%;n=9), of which 5 cases (13.89%) were additionally associated with tuberous sclerosis complex. Followed by focal cortical dysplasia type IIa (8.33%;n=3) and type III (2.78%;n=1). No focal cortical dysplasia type I was identified. Cortical malformation with oligodendroglial hyperplasia was registered in 2 cases (5.56%). Other registered formations - arachnoid cyst, gliopendymal cyst (both 2.78%;n=1). The second and third most common groups were intracranial vascular malformations (22.22%;n=8) and gliosis (11.11%;n=4). The less common formations included hippocampal sclerosis ILAE type 1, cerebral abscess, lipomeningocele, lymphocytic infiltration of brain tissue, non-specific inflammatory reaction (all 2.78%;n=1). In 2 cases (5.56%) the material size was insufficient to establish a diagnosis.

Conclusions. The most common neurosurgically treated non-tumorous central nervous system formation was focal cortical dysplasia, which is often associated with drug-resistant epilepsy in paediatric patients. The focal cortical dysplasia type IIb comprised most of the diagnosed cases.

IDENTIFICATION OF NOVEL ENDOGENOUS REFERENCE GENES IN 2D AND 3D CULTURES OF MDA-MB-436 BREAST CANCER CELL LINE FOR RT-qPCR NORMALISATION

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Keywords. Reference genes, MDA-MB-436; QPCR, Breast cancer cell lines

Objectives. One of the most commonly employed methods to study gene expression is the real time quantitative PCR (RT-qPCR). To avoid sampling errors and adequately interpret the results from qPCR, a panel of reference genes is used, which are thought to have a stable expression across various cell lines, tissues, and conditions. However, recent literature demonstrates that the currently used conventional reference genes might not be as stable as expected. Therefore, identification of more stable reference genes is critical to avoid inaccuracies in normalization and prevent misinterpretation of the results from qPCR. MDA-MB-436 cell line represents triple negative BC and is amongst the most frequently used cell lines in breast cancer research.

Materials and methods. The laboratory protocol was standardized using the MIQE guidelines to limit inter- and intra-replicate variations due to differing methods of preparation. Six biological replicates of MDA-MB-436 cell line were cultured in DMEM/F12, supplemented with 10% FBS, cholera toxin and insulin. Each replicate culture was passaged through six passages and from every second passage six lysates (three lysates – 50% confluence; three lysates – 90% confluence) were collected. We used 34 reference genes for qPCR (13 conventional genes from literature, 12 identified from our previous study in SK-BR-3 cell line, and nine remaining genes were identified using TCGA analysis for TNBC samples). Three genes of interest were used. The collected data were analyzed using NormFinder, geNORM and RefFinder.

Results. After statistical analysis, the five most stable reference genes were tested, and all normalized the chosen genes of interest as proof of concept.

Conclusions. The heterogeneity in the gene expression across different passages during long-term culturing emphasizes the need for identifying the most stable reference genes to avoid inaccuracies in interpretation of the qPCR results and to allow more precise conclusions.

MORPHOLOGICAL ASPECTS OF THE GUINEA PIG SUBMANDIBULAR SALIVARY GLAND STRUCTURE

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Keywords. Guinea pig; Submandibular salivary gland; Morphological aspects

Objectives. Involvement of submandibular salivary glands in pathological processes during laboratory research requires more detailed and refined knowledge of the structural organization of their structure.

Materials and methods. The object of this study was left submandibular salivary glands of guinea pigs in order to save the lives of experimental animals, in strict accordance with the biotic standards of experimental studies. The test material was fixed in 12% neutral formalin for 7 days. The gland biopsies were compacted into paraffin according to the conventional method. Then thin histological sections 4-5 mkm thick were obtained from paraffin blocks and stained with hematoxylin and eosin, according to van Gieson's staining.

Results. It was found that the structure of the glands is complex alveolar-tubular. The terminal secretory divisions are represented by protein and mixed acinuses. Protein acinuses contained serous glandulocytes, which have a conical shape. Mixed acinuses consist of serocytes, mucocytes and myoepitheliocytes. Guinea pig duct system was represented by: intercalated, striated, interlobular ducts. Intercalated ducts were covered with cubic or squamous epithelium. Striated ducts were formed by cylindrical epitheliocytes. Interlobular ducts were lined first with double-row and then multi-row epithelium, behind which the basement membrane was visualized. Also, guinea pigs have a histotopographic difference in the location of microvessels. Arterioles and venules were located only periportally in the connective tissue stroma, and capillaries exclusively periacinar.

Conclusions. After analyzing the guinea pig submandibular salivary glands morphology, it is possible to conclude that the structural organization and morphological features of the glands is very complex and not fundamentally different from humans' one. Guinea pigs can be used to model different pathological processes. The results can be implemented in the human body.

THE DIAGNOSTIC VALUE OF WHOLE EXOME SEQUENCING IN NON-OBSTRUCTIVE AZOOSPERMIA PATIENTS

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Keywords. Azoospermia; WES; Male infertility

Objectives. The purpose of this study was to investigate the potential of exome sequencing in idiopathic azoospermia cases. Male infertility is a multifactorial pathology with genetic causes suggested as the underlying factors in majority of cases of severe male infertility. Non-obstructive azoospermia (NOA) is a disorder that leads to infertility in men. Various genetic variants have been discovered as causes of NOA. The recent emergence of next generation sequencing (NGS) offers an opportunity to analyze many genes at once. There is still a lack of reports on WES implementation in routine clinical diagnostics.

Materials and methods. Whole exome sequencing was performed on 17 non-obstructive azoospermia patients. A gene set of interest was compiled. Samples were sequenced using the Twist Comprehensive Exome Panel. The resulting sequences were mapped against the human genome GRCh38 reference sequence using BWAMEM. Copy number variations (CNV) were annotated using AnnotSV. Samples were analyzed and filtered with the Illumina's BaseSpace Variant Interpreter. Variants considered as pathogenic and likely pathogenic were confirmed by Sanger sequencing.

Results. We detected four genetic variants of unknown significance (VUS) in genes, affecting the hypothalamic-pituitary-gonadal axis - NR5A1, FGFR1, GNRHR and KISS1R. Clinical investigation did not demonstrate hypogonadism in the subject group. NM_004959(NR5A1):c.763C>T was interpreted at first as likely pathogenic (LP), according to ACMG guidelines. The patient's phenotype did not reflect the expected phenotype. This genetic variant was considered as a variant of unknown significance (VUS). No previously described known pathogenic genetic variants were identified.

Conclusions. We identified four genetic variants in WES, based on a preselected diagnostic gene panel. These findings can add supporting information to the knowledge base of infertility diagnostics. WES as a routine diagnostics method in azoospermia investigation remains questionable. Genetic counselling for idiopathic azoospermia patients should be considered to ensure appropriate investigation of possible inherited infertility causes.

BIOCHEMISTRY, PHYSIOLOGY, PHARMACY, PHARMACOLOGY

THE POTENTIAL USE OF HERBAL FINGERPRINTS BY MEANS OF HPLC AND TLC FOR CHARACTERIZATION AND IDENTIFICATION OF HERBAL EXTRACTS

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Keywords. Herbal medicine; Fingerprinting; HPLC; TLC; Chemometrics; Multivariate analysis

Objectives. Herbal medicine has made a comeback in the 21st century with a broad spectrum of new products, and the safety, quality and identification of these products have become an important issue. Medicinal plants have a very complex composition with hundreds of chemical components, which can be affected by growth conditions, storage, processing methods and other factors. For a comprehensive characterization of herbal materials, a fingerprinting method can be used. The aim of this study was to determine the advantages, disadvantages and practical utility of herbal fingerprinting by means of high performance liquid chromatography (HPLC) and thin layer chromatography (TLC) in conjunction with chemometrics for characterization and identification of herbal extracts.

Materials and methods. A phylogenetic tree of 16 medicinal plants was generated using PhyloT v2 software. Based on evolutionary relationships and whether or whether not the medicinal plant is native to Latvia a total of 25 commercial tea samples from 4 different medicinal plants (*Hibiscus sabdariffa* L., *Calendula officinalis* L., *Matricaria recutita* L., *Achillea millefolium* L.) were collected, 3 ethanol extracts from each tea sample were made. To establish the chromatographic fingerprints HPLC-UV and TLC were used. Data processing, multivariate and similarity analysis was performed on SpectraGryph 1.2.14, SIMCA 14 and Origin 10 software.

Results. Data shows distinctive chromatographic patterns with great similarity for each inspected medicinal plant. In multivariate analysis, these medicinal plants form separate, compact clusters, and the chemical composition correlates with their evolutionary relationships. TLC should be used as an initial screening tool that is followed by other methods for more precise results.

Conclusions. Herbal fingerprinting by means of HPLC and TLC in conjunction with chemometrics shows promising results for the identification and characterization of herbal extracts. Future research should be conducted with other chromatographic methods for a more comprehensive analysis of herbal extracts.

THE EXTREMELY LOW-FREQUENCY ELECTROMAGNETIC FIELD EFFECT ON EXTRACELLULAR VESICLE SECRETION

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Keywords. EVs; MSC; ELF-EMF

Objectives. It has been shown that Mesenchymal stem cell (MSC) extracellular vesicles (EVs) have the same therapeutic properties as MSC but do not suffer from their disadvantages. However, their application in the clinic is severely hampered by the low production of EVs. Approaches used so far to induce secretion in bioreactors and in vitro are based on genetic engineering and alteration of the composition of the culture medium, which affects the physiology of the cells and the therapeutic properties of their EVs. Therefore, there is an urgent need to improve MSC EV production. An extremely low-frequency electromagnetic field (ELF-EMF) can induce higher EV production; however, there are no data if this is a universal phenomenon and if the functionality of these EVs is changed. Therefore, this study aimed to test ELF-EMF for MSC EV production and functionality.

Materials and methods. Our experimental model used an 8-50 Hz ELF-EMF stimulation setup with magnetic field intensity 0 - 8 mT. In a series of experiments, MSC was stimulated with ELF-EMF for two days, followed by EV extraction. EVs were analyzed by Nanoparticle Tracking Assay, Western Blot, and transmission electron microscopy. Further, functionality tests were performed of ELF-EMF exposed MSC EVs and control to breast carcinoma cell lines, and cell proliferation and apoptosis were evaluated.

Results. A total of 25 experiments were performed with different testing exposures. EVs secretion was dependent on stimulation frequency with a peak at 20 Hz for MSC, with an average increase of EV by 61% ($p < 0.05$), but not field intensity. No change in EV size or morphology was noticed, and no significant effect on EV functionality ($p > 0.05$) after functional tests were monitored.

Conclusions. We have shown that MSC reacts to ELF-EMF by the increase of EVs production without effects on its functionality.

CHEMICAL COMPOSITION AND BIOLOGICAL ACTIVITY OF GALIUM ODORATUM EXTRACTS

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Keywords. *Galium odoratum*; Aqueous ethanolic extract; Total phenolic content; BMDMs

Objectives. The aim of the study was to analyse the chemical composition of wild-grown and cultivated *Galium odoratum* extracts and test their effect on macrophage polarization towards pro- (M1) and anti-inflammatory (M2) phenotypes.

Materials and methods. Aqueous ethanolic extracts from aerial parts of *Galium odoratum* (GO) collected in wild and cultivated in an organically certified experimental field of the Institute for Environmental Solutions (Priekule parish) were analysed. The qualitative and quantitative analysis of the extracts was performed by LC-MS methods. The total phenolic content (TPC) of the extracts was tested by the Folin-Ciocalteu method. MTT assay was used to measure cell viability. Bone marrow-derived macrophages (BMDMs) were isolated from C57BL/6J mouse femurs. The cells were stimulated with 5 ng/ml LPS/10 U/ml IFN- γ for macrophage polarization toward the M1 phenotype and 10 ng/ml IL-4 for the M2 phenotype together with GO extracts for 24 h. Flow cytometry was used to assess the expression of cell surface markers.

Results. The main bioactive compounds found in GO extracts are chlorogenic acid, coumarin and flavonoid glycosides. The TPC in GO extracts varied from 66.23 to 105.64 mg GAE/g of extract. The GO extract was not toxic to BMDMs when applied for 24 h at concentrations ranging from 50 to 750 μ g/ml. The percentage of CD80 and CD86 double-positive cells treated with LPS/IFN γ was 23%. GO extract at both concentrations (250 μ g/ml and 500 μ g/ml) significantly reduced the population of M1 macrophages after 24 h to 16% and 13%, respectively. The percentage of CD206 and CD301 double-positive cells stimulated with IL-4 was 15%. Treatment with 250 μ g/ml and 500 μ g/ml GO extract increased the macrophage population to 16% and 17%, respectively.

Conclusions. *Galium odoratum* extracts are a source of coumarin and chlorogenic acid and induce immunomodulatory effects in macrophages.

INVESTIGATING ENHANCED PERMEABILITY-RETENTION EFFECT IN CANCER WITH STEALTH NANOPARTICLES

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Keywords. Stealth nanoparticles; Pharmacokinetics; Biodistribution; Cancer

Objectives. Nanoparticles (NPs) have the potential to improve cancer treatment. However, when NPs come into contact with biofluids, they are rapidly opsonized, forming a protein corona that unpredictably alters their properties. This leads to poor pharmacokinetics and inefficient accumulation of NP in tumors. This study aimed to create stealth NPs of different sizes and demonstrate that long circulation time is essential for improved biodistribution and tumor accumulation.

Materials and methods. Unimolecular NPs with D_H 18, 29, 54 nm rich in polyethylene glycol were prepared and characterized by dynamic light scattering. *In vitro* biocompatibility was assessed in NIH3T3 fibroblasts. NPs were labeled with near-infrared AlexaFluor dyes. Pharmacokinetic and biodistribution studies were conducted in healthy Balb/c mice (i.v. and i.p. administration routes, n=6) and in the 4T1 TNBC model (i.p., n=6). Fluorimetry-based methods were developed to determine NP concentrations in collected samples. Systemic toxicity was evaluated by analysing ALAT, ASAT and BUN levels 2 weeks post-administration.

Results. NP showed no *in vitro* toxicity at concentrations up to 1000 µg/mL and did not alter blood chemistry panel. NP concentrations in blood were determined with high sensitivity (LOD of 0.04 mg/mL for 18 nm NPs). All tested NPs avoided rapid clearance and demonstrated unprecedented elimination half-lives exceeding 3 days. NPs showed broad biodistribution in healthy Balb/c mice and were identified in all tested tissues and organs except brain, with the highest concentrations found in adipose tissue, liver and spleen. In 4T1 model, the highest NP concentration was found in the tumor, albeit the presence of tumor only minimally influenced the pharmacokinetic profile.

Conclusions. The stealth nature of NP leads to long circulation and broad biodistribution in healthy mice. In 4T1 triple-negative breast cancer model, NPs passively accumulated in tumors, confirming the existence of EPR in the absence of NP opsonization but casting doubt on its efficiency.

TRIMETHYLAMINE N-OXIDE VASTLY ACCUMULATES IN RENAL TISSUE WITHOUT AFFECTING KIDNEY FUNCTION IN INSULIN-RESISTANT MICE

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Keywords. Trimethylamine N-oxide; Nigh-fat diet; Insulin resistance; Kidney injury

Objectives. Recently, the microbiota metabolite trimethylamine N-oxide (TMAO) has been associated with impaired renal function in diabetes patients; however, the mechanisms involved are still unclear. This study investigates how TMAO consumption affects the development of kidney injury in insulin-resistant mice.

Materials and methods. C57Bl/6NCrL male mice were divided into three groups and fed either standard chow (Control), a high-fat diet (HFD), or HFD with 0.2% TMAO (HFD+TMAO). Animals were weighed weekly, and a glucose tolerance test was performed after 12 weeks. At the endpoint, plasma, urine and tissue samples were collected. Biochemical markers of kidney injury were measured in plasma (BUN, creatinine) and urine (KIM-1, Cystatin-C, NGAL). The expression of genes associated with inflammation, renal damage, ROS production and mitochondrial function was assessed in kidney tissue by quantitative PCR. TMAO tissue and plasma concentrations were determined by UPLC/MS/MS. Statistical analysis was performed using the Mann-Whitney test.

Results. A significant increase in body weight and impaired glucose tolerance were observed in the HFD and HFD+TMAO groups, indicating the advancement of insulin resistance. Both groups fed HFD showed significantly increased levels of urinary KIM-1, an early marker of kidney injury; however, supplementation with TMAO did not exacerbate the condition. The data from kidney gene expression analysis suggested that some genes responsible for mitochondrial function (MFN1, TFAM) were upregulated in the HFD+TMAO group. Surprisingly, in all experimental groups, the tissue accumulation of TMAO was the highest in kidneys (at least 3.8-fold higher than in other tissues).

Conclusions. TMAO accumulates in renal tissue at significantly higher concentrations than in other tissues; however, it does not aggravate the initial stage of kidney injury in an experimental model of diet-induced insulin resistance. Nevertheless, the impact of TMAO on mitochondria-related gene expression could potentially result in functional changes.

DETERMINATION OF CEFAZOLINE CONCENTRATION IN SYNOVIAL FLUID

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Keywords. Antibiotics; High-performance liquid chromatography; Synovial fluid; Cefazolin

Objectives. Cefazolin, a cephalosporin, a thiadiazole class antibiotic, is commonly used for the treatment of infections caused by various streptococcus group bacteria, especially during surgical joint, knee, bone, and other operations. For that the aim is to determine the concentration of cefazolin in synovial fluid – the fluid between your joints and discover the most accurate methods for determination along with effective concentrations of the drug.

Materials and methods. Samples of synovial fluids acquired from the Traumatological and Orthopedic hospital were used and analyzed using high-performance liquid chromatography. First, a method for the most accurate determination of concentration was developed and then used along with in the work. The principle of HPLC separation is based on the distribution of the sample between the mobile and stationary phases, analyzing the chemical structures as they cross the stationary phase.

Results. After analysing various samples through the HPLC method the mean concentration of cefazolin in synovial fluid would be 25 micrograms per milliter of fluid, with the smallest determined concentration being 17 micrograms and largest 28.

Conclusions. The research proved that the administration of cefazolin for joint and bone surgeries does show up in the synovial fluid. Cefazolin still remains a useful antibiotic for the treatment and prophylactics of bacterial infections after surgery. Using HPLC as a diagnostics method was sensitive enough to determine the concentrations in low dosages.

SCREENING OF LATVIAN HONEY ON GRAM-POSITIVE BACTERIA

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Keywords. Monofloral honey; Latvian honey; Antibacterial activity; Gram-positive bacteria

Objectives. Honey has many scientifically proven beneficial properties such as wound healing, anti-inflammatory and antimicrobial activity. The study's objectives were to evaluate the antibacterial activity on Gram-positive bacteria of 35 monofloral honey samples collected from the beekeepers in the territory of Latvia, and to compare their efficacy to commercial Manuka honey.

Materials and methods. 35 different monofloral honey samples were collected from the beekeepers in the territory of Latvia. The antimicrobial activity of Latvian honey samples was compared with commercial Manuka honey. Each honey sample dilution was prepared from an 80% honey solution (w/v Muller Hinton Broth (MHB)) by further dilution with the MHB. The Gram-positive bacteria were tested against reference culture of *Staphylococcus aureus* (ATCC 29213) and clinical isolate of *Methicillin-resistant staphylococcus aureus* (MRSA). To evaluate antibacterial properties well diffusion method was used. Bacterial suspensions were made according to 0,5 McFarland optical density. On each Muller Hinton agar plate tested bacteria were inoculate with sterile cotton swab, 4 wells were made, 60 µl of the honey sample were inserted in each well, to let it diffuse through agar. After 24 hours of incubation at 37°C, the diameter of inhibition zone around every perforation was measured.

Results. Buckwheat and Clover honey samples exhibited a greater antibacterial effect than other honey samples. The highest antibacterial activity was exhibited by Buckwheat (inhibition zone diameter 15,0 - 20,5 mm) and Clover (inhibition zone diameter 15,0 -16,0 mm) honey samples against *Methicillin-resistant staphylococcus aureus*. Buckwheat and Manuka honey are equally effective on MRSA.

Conclusions. Buckwheat and Clover honey samples shows excellent antibacterial activity against Gram-positive bacteria. Therefore, further studies with more Buckwheat and Clover samples like MIC (Minimum Inhibitory Concentration) and MBC (Minimum Bactericidal Concentration) are needed to characterise the effect of Latvian honey on Gram-positive bacteria and to draw definite conclusions.

THE ANTIBACTERIAL ACTIVITY OF LATVIAN HONEY AGAINST GRAM-NEGATIVE BACTERIA

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Keywords. Monofloral honey; Latvian honey; Antibacterial activity; Gram-negative bacteria

Objectives. Honey is a natural product with many beneficial properties attributed to it, including anti-inflammatory and anti-microbial activity. The objectives of this study were to evaluate the antibacterial activity of 35 Latvian monofloral honey samples against Gram-negative bacteria, and to compare their efficacy to commercial Manuka honey.

Materials and methods. 35 different monofloral honey samples were collected from Latvian beekeepers. Their antimicrobial activity was compared with commercial Manuka honey. Each sample dilution was prepared from an 80% honey solution (w/v Mueller Hinton broth (MHB)) by further dilution with the MHB. The samples were tested against reference culture of *E.coli* (ATCC 25922), *P.aeruginosa* (ATCC 27853) and clinical isolate of extended-spectrum beta-lactamases (ESBL) producing *E.coli*. To evaluate antibacterial properties well-diffusion method was used. Bacterial suspensions were made according to 0.5 McFarland optical density. On each Mueller Hinton agar (MHA) plate the tested bacteria were inoculated, four wells were made, 60 µl of the honey sample were inserted in each well, to let it diffuse through agar. After 24 hours of incubation at 37° C, the diameter of the inhibition zone around every well was measured.

Results. The antibacterial response was categorized according to inhibition zone diameters: strong (16-26 mm), moderate (10-15 mm), weak (6-9 mm) and not detected (0 mm). Most samples exhibited a weak or moderate effect. Effect against *P. aeruginosa* was mostly weak. One sample of buckwheat honey and one of linden honey exhibited strong effect against *E. coli* (average diameter 17,0 and 17,5 mm respectively). Manuka honey exhibited moderate effect against both types of *E. coli*, and weak effect against *P.aeruginosa*.

Conclusions. Honey possesses some antimicrobial activity against the tested gram-negative bacteria. Further research should focus on Buckwheat and Linden honey, which exhibited the strongest effect, including more samples and a wider range of bacteria species.

THE IMPACT OF WEARING A FACE MASK DURING EXERCISE ON OXYGEN CONSUMPTION IN ADULTS

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Keywords. Oxygen consumption; Face mask; Physical exercise; Ebbeling walking test

Objectives. For challenging repairs and significant deformities, microvascular flap surgery is a viable option. The best type of anesthesia for successful flap surgery is still up for dispute. The purpose of this study is to compare the differences in the duration of hospitalization and the volume of transfused erythrocytes between patients with regional anesthesia (RA) and general anesthesia (GA).

Materials and methods. The prospective experimental study included 25 participants (aged 20-39) who completed the Ebbeling walking test numerous times to measure oxygen use during physical exercise. Measurements were made four times overall - without a mask, with a surgical mask, with cotton two-layered mask and with an FFP2 respirator. Finally, we conducted a poll after the test to see how much the face masks affected the level of comfort. SPSS statistics was used to perform descriptive and analytical statistics, with a significance threshold of $p < 0,05$.

Results. A non-parametric test (Related-Samples Friedman's Two-Way Test) was used to describe the oxygen consumption between 4 related groups. There were 6 unique pairs for comparing all oxygen consumption measurements with each other. There was no statistically significant difference in any of the 5 pairs. The only statistically significant difference between using an FFP2 respirator (median 44,91 ml/kg/min) and not wearing one (median 45,71 ml/kg/min) was oxygen consumption ($p = 0,011$). According to survey participants' subjective experiences, the FFP2 respirator is the most irritating to the skin and the most uncomfortable to use during strenuous activity.

Conclusions. There was no statistically significant difference in oxygen consumption ($p < 0,05$) except for one (FFP2 respirator vs. wearing no mask). Compared to no mask settings, the FFP2 respirator had the most significant effect on oxygen usage during exercise.

INFECTIOUS DISEASES, DERMATOVENEROLOGY, MICROBIOLOGY, IMMUNOLOGY, ALLERGOLOGY

ANAPHYLAXIS AND DRUG HYPERSENSITIVITY CAUSES AMONG HOSPITALIZED PATIENTS IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Anaphylaxis; Drug hypersensitivity

Objectives. Anaphylaxis is a systemic, life-threatening hypersensitivity reaction. Our goal was to evaluate and describe the prevalence, reasons and outcomes of anaphylaxis and drug hypersensitivity among hospitalized patients in Pauls Stradins Clinical University Hospital.

Materials and methods. Retrospective review, based on ICD-10 electronic medical records from Pauls Stradins Clinical University Hospital archive from 2015 to 2021. SPSS statistical software was used for analysis of the received data.

Results. A total of 83 episodes of hypersensitivity reactions were analyzed of which 43 cases (51.8%) were anaphylaxis, and the rest of the patients (48.2%) had a drug hypersensitivity reaction. 65 patients (78.3%) were women and 18 (21.7%) were men. The mean age of patients was 51.93 ± 16.12 (19–84) years old. The most frequent causes of all hypersensitivity reactions were drugs (83.1%) such as anesthetics, NSAIDs, antibiotics, antimigraine drugs, antiemetics and antihypertensive drugs followed by insect stings (12.0%) and foods (7.2%). The most common symptoms were urticaria (43.4%) and dyspnea (31.3%) followed by angioedema (30.1%), hypotension (10.8%), bronchospasm (10.8%) and loss of consciousness (10.8%). All the patients were hospitalized and received an injection of epinephrine. 9 (10.84%) of the patients had previous anaphylactic reactions for the same reasons. There was one case of a patient's death due to anaphylaxis at the age of 68.

Conclusions. Drugs are the main trigger of anaphylaxis and other hypersensitivity reactions among analyzed cases. The most common drugs, which caused anaphylaxis and drug hypersensitivity, were anesthetics, nonsteroidal anti-inflammatory medication, and antibiotics. The incidence of anaphylaxis and hypersensitivity reactions appeared more often in women than in men. Respiratory symptoms and skin involvement occurred frequently.

PREVALENCE OF CANDIDA ALBICANS DRUG RESISTANCE IN ASYMPTOMATIC MEDICAL STUDENTS

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Keywords. *Candida albicans*; Drug resistance; Medical students

Objectives. *Candida albicans* is an opportunistic pathogenic commensal fungus, which under certain circumstances can cause a life-threatening systemic infection. It is the most common and fatal fungal infection. According to ECDC, it can be detected in the mouth of 60% young adults. An increase in antimicrobial resistance has been noticed recently. The aim of this work is to identify the prevalence of *C. albicans* among asymptomatic medical students and assess its antimicrobial resistance.

Materials and methods. Using a sterile cotton swab, samples were taken from the tongues of first- and third-year Vilnius University medical students, cultured in Sabur glucose agar medium containing Chloramphenicol for 48 h at 37°C. To identify the strains isolated during the study, the colony growth in the differential-diagnostic nutrient medium HiChrome Candida Agar was evaluated. The susceptibility of the isolated strains for antimicrobial agents (Caspofungin (5 µg), Fluconazole (25 µg), Posaconazole (5 µg), Voriconazole (1 µg), Amphotericin B (20 µg), Ketoconazole (10 µg), Flucytosine (1 µg), Nystatin (100 IU)) was identified using the disc diffusion method. For control *C. albicans* ATCC 10231 strain was used.

Results. Two hundred seventy-six samples of medical students were investigated. The majority of participants were females (n=197, 71.4%) and the number of first- and third-year medical students was similar (n=134, 48.6%, n=142, 51.4%, respectively). Thirty-four carriers of *C. albicans* were identified. Prevalence of *C. albicans* was significantly higher among third-year students (n=28, 19.7%, p=0.0001), but did not differ by gender (males n=8, 10.1%, females n=26, 13.2%, p=0.431). All strains were susceptible to Nystatin, Caspofungin, Amphotericin B, 65.4% to Ketoconazole. Most of the strains were resistant to Fluconazole (79.4%), Posaconazole (80.8%), Voriconazole (80.8%).

Conclusions. The high prevalence of antimicrobial-resistant strains of *C. albicans* in asymptomatic carriers should be considered as a serious problem.

MOLECULAR ANALYSIS OF THE MICROBIOME OF TONSILS AND PUS IN THE PERITONSILLAR ABSCESS PATIENTS

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Keywords. Peritonsillar abscess; Microbiota; Streptococcus pyogenes; Fusobacteria; Next generation sequencing

Objectives. Peritonsillar abscess (PTA) is a commonly occurring deep neck space infection caused by bacteria. However, the list of microbes causing the infection and the best specimen for their detection remain unclear. The aims of the study were to determine the microbes present in both tonsils and pus in order to determine the most probable pathogen(s) causing PTA, and the best specimen for their detection.

Materials and methods. The tonsils and pus samples of 91 participants with PTA were analysed by using next generation sequencing. Statistical significance was determined using descriptive statistics, Mann-Whitney, chi-square and Spearman correlation test. The level of statistical significance was considered to be $p < 0.05$.

Results. Microbes were found in all samples. Altogether 880 different species were identified. Compared to tonsils, more species were detected in pus (65 ± 19 vs. 78 ± 33 ; $p = 0.002$). The most frequently identified bacteria in tonsils were *Chryseobacterium hominis* and *Sphingomonas faeni* (both 96.7%) and *Prevotella oris* (91.2%) in pus. *Fusobacterium nucleatum* had the highest median relative abundance in both materials (2.6% and 2.1% respectively). In terms of both incidence and relative abundance, tonsils yielded more non-pathogenic *C.hominis* and *S.faeni* than pus (all $p < 0.001$). The most frequently dominating microbes in both materials were *Streptococcus pyogenes* (both 27.5%), *Fusobacterium necrophorum* (29.6%, 27.5%) and *F.nucleatum* (16.5%, 15.4%). The microorganisms' incidence and relative abundance obtained from both materials were similar. Negative correlation in tonsils and pus was shown between *F.necrophorum* and *S.pyogenes* ($r = -0.266$; $p = 0.011$, $r = -0.443$; $p < 0.001$) as well as between *F.necrophorum* and *F.nucleatum* ($r = -0.519$; $p < 0.001$, $r = -0.480$; $p < 0.001$).

Conclusions. The most likely pathogens are *S. pyogenes*, *F. necrophorum*, and *F. nucleatum*. The study demonstrated an antagonistic relationship between *F. necrophorum* and the other mentioned microbes, so they should be considered as pathogens individually. The best material for detecting the PTA-causing microbes is pus due to easier processing in the laboratory and lower presence of non-pathogenic bacteria.

PRESENCE OF CRYPTOSPORIDIUM SPP. AND GIARDIA SPP. IN HUMAN POPULATION IN LATVIA

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Keywords. Retrospective and prospective study; Children; Adults; Latvia

Objectives. Protozoan parasites *Cryptosporidium* spp. and *Giardia* sp. are important causes of diarrhea and other enteric diseases in humans and are among the leading causes of moderate to severe diarrhea in children under 2 years. Because not all patients who have severe symptoms seek medical care there is a hypothesis that cases of *Cryptosporidium* and *Giardia* are currently underestimated and underreported in official registers in Latvia. The aim of present study was to combine retrospective data with the data from prospective *Cryptosporidium* spp. and *Giardia* sp. prevalence study in children in Latvia.

Materials and methods. Retrospective data of officially reported cases were collected from 2000 to 2020 (Latvian Centre for Disease Prevention and Control). While, for the prospective study children (n=582; 0-18yr old) faecal samples were collected from a clinical diagnostic laboratory from January to February, 2021 and analysed by fluorescent microscopy.

Results. During the 20yr period there were officially reported 71 cases (0-24 per year) of *Cryptosporidium* with mean prevalence 9.0% (95%CI 6.4-22.0) per year and 1020 cases (5-144 per year) of *Giardia* with mean prevalence 34% (95%CI 23.5-45.7) per year. The highest prevalence of *Cryptosporidium* was observed in age group 30-39yr (33.8%) and for *Giardia* in age group 7-14yr (14.1%). Meanwhile, within the prospective study in children (mean age 4.5yr) *Cryptosporidium* prevalence reached 6.1% (95%CI 4.3-8.2, n=35) and *Giardia* prevalence reached 7.2% (95%CI 5.3-9.5%, n=42). The highest prevalence of *Cryptosporidium* spp. was in the age group of 1-6 years (8.4%) and for *Giardia* in age group 15-17yr (20.0%). Five of the analysed children had mix infection with both parasites. There were no significant difference between the prevalence in females and males for both parasites as well.

Conclusions. The results of the present study confirms that *Cryptosporidium* and *Giardia* cases are underestimated and underreported, especially in children.

OCCURRENCE OF CRYPTOSPORIDIUM SPP. OOCYSTS IN UNTREATED WASTEWATER IN LATVIA: PRELIMINARY RESULTS

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Keywords. Cryptosporidium; Immunofluorescence; Wastewater

Objectives. Cryptosporidium is a protozoan parasite that infects the epithelial cells of a wide range of hosts and has a zoonotic potential. Oocysts are environmentally robust and can survive in the environment for several months. Cryptosporidium is highly infective with minimum infectious dose being 1 oocyst, which can result in an infection, causing frequent and watery diarrhoea, nausea, vomiting and abdominal cramps. Symptoms usually last about 1 to 2 weeks in immunocompetent patients and can be fatal in immunosuppressed patients. Untreated wastewater has been recognized as a potential source of Cryptosporidium spp., and discharge in the environment may result in waterborne or foodborne Cryptosporidium outbreaks. The aim of this study is to determine the occurrence of Cryptosporidium spp. oocysts in wastewater in Latvia and estimate potential risk for human and animal infection.

Materials and methods. Untreated wastewater samples (1.5l) from 11 Latvian municipality wastewater treatment plants were collected twice a week and stored in +4 oC until further analyses. Wastewater samples (n=91) were concentrated, and purified material was prepared for further analyses by fluorescent microscopy using Aqua-Glo™ kit (Waterborne, USA). For enumeration, brightly green oocysts with typical morphology (4.5×5.5µm Ø) in size were counted and calculated per one gram of concentrated sample.

Results. Overall, Cryptosporidium oocysts were detected in 5.5% (n=5) of wastewater samples from different municipalities (45.4%). In positive samples Cryptosporidium prevalence varies from 9.1% to 12.5% (95% CI 7.3-14.7%) per municipality. Viable oocysts were found in three out of five (60%) positive samples. In positive samples, Cryptosporidium oocyst concentration varies from 9.0 – 18.1 (95% CI 5.8- 20.9) oocysts per gram.

Conclusions. This preliminary result provides substantial evidence that Cryptosporidium spp. oocysts are present in untreated wastewater, which could provide a potential risk for human and animal health.

KNOWLEDGE ABOUT ULTRAVIOLET RADIATION AND TANNING BEHAVIOUR AMONG UNIVERSITY STUDENTS: COMPARISON OF HEALTHCARE AND NON-HEALTHCARE RELATED STUDY PROGRAMS

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Keywords. UVR; Tanning; Skin cancer

Objectives. Ultraviolet radiation (UVR) is a known risk factor for melanoma and non-melanoma skin cancers. Healthcare students are the next health professionals who will educate society about UVR and the prevention of skin cancer. The objective of this study was to compare tanning behavior and UVR knowledge among students and to evaluate whether the background of education in the field of healthcare has an impact on tanning behavior.

Materials and methods. An anonymous, formerly validated survey was conducted among 112 university students. Study participants were compared in two groups: students who are studying in the field of healthcare (healthcare group, N=66) and students who are not studying in the field of healthcare (non-healthcare group, N=46).

Results. The study participants were mainly female (79 %), mean age 23.6 years. Almost all study subjects (99%) were aware that UVR is a risk factor for skin cancer, however, 38% in the healthcare group and 57% in the non-healthcare group agreed that the tan is healthy. Both study groups demonstrated high incidence of intentional tanning (79 % of healthcare group, 67% of non-healthcare group). The healthcare group applied sunscreen more regularly (63%) compared to the non-healthcare group (41%) and had a higher motivation to use sunscreen for the prevention of skin cancer (81% vs 51%) and premature ageing (60% vs 41%). Healthcare group was performing self-examinations more regularly (25%) and checking their skin more often by dermatologist (29%) compared to non-healthcare group (13 % and 11% respectively). In total, 8% of health-care students had done mole-mapping, versus 0% in non-healthcare group.

Conclusions. Healthcare students demonstrated better knowledge about UVR, more favorable sun protective behavior, and better understanding of the importance of skin examination compared to non-healthcare students. However, healthcare group demonstrated more risky tanning behavior in spite of their knowledge.

GENETIC TESTING OF PATIENTS WITH SUSPICIOUS NON-C1-INH HEREDITARY ANGIOEDEMA

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Keywords. Non-C1 inhibitor HAE; Sanger; WES

Objectives. To test genetic diagnostics protocol for the diagnosis of non-C1-INH-HAE in highly suspicious patients. Hereditary angioedema (HAE) is a rare inborn error of immunity disease. The first two types of HAE are easily diagnosed by C1 inhibitor (C1-INH) and complement 4 (C4) level and/or functional activity. In non-C1-INH associated HAE C4 and C1-INH level and function are normal and no other diagnostic marker besides clinical picture and causative genetic variants if identified is known.

Materials and methods. A prospective study took place during 2020–2022 time period and included 13 patients with suspected HAE with normal C1-INH level and activity. The genetic testing was started with Sanger sequencing for coding part of the SERPING1 gene, exon 9 PLG, exon 2 of ANGPT1, exons 9 and 10 of the F12 and whole exome sequencing (WES) and variant annotation for the genes SERPING1, PLG, ANGPT1, HS3ST6, KNG1, MYOF were used.

Results. 13 patients (12 females and 1 boy from 13 different families) in age from 9 to 64 years were examined. Clinically they had recurrent angioedema in different parts of the body, without response to antihistamines and corticosteroids. Allergy, autoimmune and lymphoproliferative diseases were excluded. C4, C1-INH level and activity were in normal ranges. No pathogenic variations in tested genetic regions were identified.

Conclusions. At present is not possible to identify sporadic non-familial cases of non-C1-INH-HAE due to the lack of laboratory tests to confirm the diagnosis. This type of HAE should be diagnosed by clinical symptoms and excluding other causes, as standard genetic testing is not confirmatory.

GIARDIA DUODENALIS PREVALENCE IN WASTEWATERS: PRELIMINARY RESULTS IN LATVIA

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Keywords. *Giardia duodenalis; Cysts; Viability; Wastewater*

Objectives. *Giardia duodenalis* is an intestinal protozoan, that predominantly causes malabsorptive diarrhea. It can infect both humans and animals, which makes *G. duodenalis* an important zoonotic parasite. The presence of *Giardia* cysts in wastewater can result in waterborne giardiasis outbreaks. The aim of the study was to determine the prevalence of *G. duodenalis* cysts in wastewater in Latvia.

Materials and methods. A preliminary study was made including 91 wastewater samples, each of 1.5 l volume, from 11 Latvian municipalities. Samples were collected twice a week from August 10th - December 16th, 2021. Wastewater samples were concentrated, and purified material was prepared for further analyses by fluorescent microscopy using AquaGlo kit and DAPI staining. For enumeration, brightly stained cysts with typical morphology (7–10 µm Ø) in size were counted. Data and results were analyzed by IBM SPSS Statistics version 27.0.

Results. *Giardia duodenalis* cysts were found in 71.4% (95% CI: 61.1% – 80.4%) of 91 wastewater samples. Prevalence of *G. duodenalis* per municipalities ranged from 50% to 100%. Mean number of *G. duodenalis* cysts in positive samples was 2.1 ± 2.1 cyst per gram and it ranged from 0.3 to 10.6 cysts per gram of wastewater sediment. Viable cysts of *G. duodenalis* were detected in 43.1% (95% CI: 30.8% – 55.9%) out of 65 positive samples. Prevalence of viable cysts ranged from 16.6% to 100%. Mean concentration of viable cysts was 0.8 ± 0.7 cyst per gram of wastewater sediment. Mean concentration of non-viable cysts was 1.9 ± 1.9 cyst per gram of wastewater sediment.

Conclusions. Presence of viable *Giardia* cysts in wastewater can reflect fecal contamination from both humans and animals and may indicate the potential risk of waterborne infection transmission if contaminated wastewater enters surface and drinking waters.

SERUM FERRITIN AND D-DIMER AS PREDICTING BIOMARKERS FOR DURATION OF HOSPITALISATION OF COVID-19 PATIENTS

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Keywords. COVID-19 patients; Serum ferritin; D-dimer; Hospitalisation

Objectives. Due to the higher rate of hospitalised COVID-19 patients in Latvia it is important to find reliable markers for severity of the disease. Many studies suggested that increased levels of serum ferritin and D-dimer in these patients might indicate a more severe form of the infection. The study was aimed to evaluate the association between these biomarkers and the length of hospitalisation of patients.

Materials and methods. 22 patients hospitalised in Ludza Medical centre with Sars-CoV-2 infection were enrolled in a retrospective study. The laboratory parameters of serum ferritin and D-dimers were taken on the first day of hospitalisation and correlated with the length of hospital stay. All data were analysed using SPSS version 23. Spearman's rank non parametric data correlation and $p < 0.05$ was considered statistically significant.

Results. In our study 6 males and 16 females participated; average patients' age was 66 years; average hospitalisation length was 14 ± 2.37 SEM days. Mean serum ferritin level was 795 ng/ml with ± 205 SEM; mean D-Dimer level was 1378 FEU/mL ± 474.29 SEM. The plasma results of serum ferritin and duration of hospitalisation ($Rho = 0.096$; $p = 0.722$) showed no statistically significant correlation. Levels of D-dimer and length of hospitalisation ($Rho = 0.675$; $p = 0.001$) were statistically significant.

Conclusions. Levels of D-dimer showed significant association with the length of hospitalisation, suggesting it as a potential biomarker in predicting severity of COVID-19 infection on the first day of hospitalisation and proving the data from international studies.

E. COLI BIOFILM FORMATION AND ITS ASSOCIATION WITH ANTIBIOTIC RESISTANCE

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Keywords. Escherichia coli; Biofilm production; Antibiotic resistance

Objectives. Escherichia coli (E.coli) infections are becoming a major health care concern because of the increase in multidrug-resistance (MDR) which leads to difficulties in effective treatment with antibiotics. One of the reasons for difficult-to-treat E.coli infections can be biofilm formation – biofilm helps bacteria to survive in harsh conditions, including protection from antibiotic exposure to some extent. The aim of this study is to assess the ability of E.coli to form a biofilm and its association with antibiotic resistance.

Materials and methods. This study analysed 387 E.coli cultures isolated from various patient materials from stationary “Gaiļezers” (September 2021 – January 2022). Biofilm formation activity was determined by crystal violet binding assay and results were obtained by measuring optical density with ELISA Reader at 540 nm wavelength. Antibiotic susceptibility testing was done with Kirby-Bauer disc diffusion method. Five different antibiotics were used for analysis – ciprofloxacin (5ug), gentamicin (10ug), augmentin (30ug), trimethoprim-sulfamethoxazole (25ug) and imipenem (10ug). Interpretation of susceptibility results was based on the newest EUCAST breakpoint guidelines.

Results. From 387 E.coli samples, strong biofilm producers were 7%, moderate – 20%, weak – 46% and 27% did not show any biofilm production activity. Highest antibiotic resistance rates were observed for trimethoprim-sulfamethoxazole – 26,1%. Resistance for ciprofloxacin, augmentin and gentamicin was 22,7%, 12,4% and 10,3% respectively. None of the samples were resistant to imipenem. Altogether 35 samples out of 387 (9%) were MDR. Statistically significant association was observed between biofilm production activity and resistance for gentamicin ($p=0.007$) and MDR ($p=0.018$).

Conclusions. Biofilm production is an important concern for E.coli infections and to some extent can be associated with antibiotic resistance. This research also shows that carbapenem group antibiotics could be the most effective in treating multidrug-resistant E.coli infections, since none of the samples showed resistance to imipenem.

KNOWLEDGE ON THE EFFECTS OF UV RADIATION AND BLUE LIGHT ON THE SKIN, THE PROPER USE OF PROTECTIVE COSMETICS AND USAGE PATTERNS

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Keywords. UV radiation; Sun protection; Blue light; Knowledge; Latvia

Objectives. UV radiation is a significant risk factor for the development of skin cancers such as melanoma, basal cell carcinoma, and squamous cell carcinoma, and can contribute to other skin lesions. The aim of the study was to find out knowledge on the effects of UV radiation and blue light on the skin, correct use of protective equipment, and their using habits in the Latvian population.

Materials and methods. This was a descriptive cross-sectional study, spread over a period of 2 months (November 2021 - December 2021) in Latvia. An anonymous questionnaire was used, which included 31 questions and 307 participants in the age group from 18 to 60 years, randomly selected. (243 - women, 64 -men). Data were summarized using MS Excel and analyzed with SPSS 25. Parametric and non-parametric tests were used to determine statistically significant differences ($p < 0.001$).

Results. Comparing the knowledge about the effects of UV radiation and the blue light on the skin between the age groups, a statistically significant difference was found between the age groups 21-25 and 51-60 ($p < 0.001$), as well as between 26-30 and 51-60 ($p < 0.001$). 52,4% of respondents do not know that blue light causes skin cell damage. Only 21,2% of respondents are using SPF protective creams daily. 8.1% of respondents believe that the effects of tanning on the skin are negative.

Conclusions. The level of knowledge about UV radiation, blue light and proper use of protectives are influenced by age, gender and occupation in the Latvia population. Older people have less knowledge than younger people and also didn't use sun protectives as often as the younger part of Latvia's population. The results showed a need for continuing people's education campaigns, about UV radiation and the blue light impact of skin.

NGS-BASED METHODOLOGY FOR AN ANALYSIS OF THE ANTI-TUBERCULOSIS TREATMENT-ASSOCIATED PHARMACOGENES: GENE SELECTION AND AMPLIFICATION STEP

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Keywords. Tuberculosis; Pharmacogenetics; Next-generation sequencing

Objectives. This study aimed to select anti-TB treatment-associated genes of pharmacogenetic importance and develop targeted amplification step in the NGS-based workflow. Pharmacogenetic studies often target only limited numbers of genetic variants associated with interindividual variability in anti-tuberculosis (anti-TB) treatment response. The next-generation sequencing (NGS)-based approaches enable simultaneous analysis of multiple genomic regions of interest, thus facilitating the discovery of genetic variants with clinically relevant consequences.

Materials and methods. The genes with a confirmed or putative relationship with anti-TB drug pharmacokinetics or side-effect occurrence were derived from publicly available databases (PharmaADME.org, PharmGKB) and literature. Primers were designed using the Primer-BLAST tool to target exons including flanking intron sequences (≥ 100 bp) and untranslated regions with ≥ 500 bp sequence fragments. Primer performance was evaluated by PCR of human DNA samples ($n=48$) received from the Genome Database of the Latvian Population. Obtained PCR products were identified using Sanger sequencing method.

Results. In total, 11 genes of interest (AADAC, CES2, SLCO1B1, SLCO1B3, ABCB1, XDH, NAT2, GSTM1, GSTT1, G6PD, and PXR) along with full-length mitochondrial genome were considered for the pharmacogenetic analysis. Overall, 80 primer pairs were designed to amplify 1141-5854 bp long fragments, and the total target size was 268 kb. PCR amplification resulted in specific products within the expected fragment length. For primer pairs generating additional fragments, amplicon pre-treatment step prior to NGS library preparation should be introduced. Nevertheless, Sanger sequencing results proved that amplification products correspond to target genes, therefore verifying the accuracy of the developed protocol.

Conclusions. The proposed protocol can provide a strong basis for the NGS-based sequencing workflow used in a comprehensive pharmacogenetic analysis aiming to clarify the role of human genetic factors in anti-TB treatment response.

PREVALENCE OF HEPATITIS C VIRUS INFECTION ANTIBODIES AND ASSOCIATED RISK FACTORS IN PATIENTS OF PSYCHIATRY AND NARCOLOGY CENTERS OF LATVIA

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Keywords. Hepatitis C; Antibodies; Screening; Prevalence

Objectives. The aim of this study was to review collected data from patient screening of psychiatry and narcology centers (PNC) of Latvia for hepatitis C infection (HCV) antibodies and analyze the possible risk factors. According to previous studies there is 2.4% prevalence of anti-HCV in Latvia. HCV can lead to liver cirrhosis and hepatocellular carcinoma (HCC). There is an effective HCV treatment available. The goal set by the WHO - eliminate HCV as a public health threat by 2030.

Materials and methods. Data were obtained by performing survey and rapid blood antibody tests. The questionnaire included demographic information and 10 questions on infection risk factors. Study was done from May till October 2021 by HIV Prevention Point workers in PNCs of Riga, Daugavpils, Liepaja, Strenči, Gintermuiza, Akniste and Vecpiebalga. Data were analyzed using MS Excel and IBM SPSS.

Results. 795 patients were tested, including 57.1% males and 42.9% females. The mean age was 49 years (range 18 - 93). 24.8% of patients noted, that they have been sexually active in the last year, but only 9.9% admitted using condoms. 3.8% noted, that they are or have been using IV narcotics. 11.2% of patients have a history of incarceration. 6% of performed tests were positive for anti-HCV. There is statistic significance that individuals, who were previously incarcerated, and individuals, who use or have used intravenous (IV) narcotics, are at a higher risk of being anti-HCV positive.

Conclusions. This study provides valuable data to better identify groups of individuals with higher risk of HCV infection. The screening highlighted that the population of PNCs has a 2.5 times higher prevalence of anti-HCV than the standard population of Latvia. PNC patients should further be tested, especially individuals who have been incarcerated, use or have used IV narcotics.

OBESITY AND ITS EFFECTS ON THE SEVERITY OF PSORIASIS

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Keywords. Psoriasis; Severity; Obesity

Objectives. Psoriasis is a very common autoimmune disease in almost all age groups. The correctly planned treatment, diet and healthy lifestyle improves the symptoms (irritation, redness, scaling) and reduces affected area. The main aim is to find correlation between obesity or overweight and severity of psoriasis, furthermore, to improve treatment strategy and ease patient's life.

Materials and methods. In this study we used an oral questionnaire, which included questions about weight control, diet, physical activity, family anamnesis, symptoms and other diseases. We measured patients and determined their weight and height, calculated the body mass index and checked their current therapy. Study included 40 patients (31 men, 9 women), who are observed in Pauls Stradiņš Clinical University Hospital during 8.12.2021 – 4.01.2022.

Results. 32 participants(80%) of 40 have problems with weight – 15(47%) of them are overweight, 17(53%) have obesity in different stages: I stage – 9 patients, II stage – 17 and III stage – 3. 20 participants(63%) of this group have mild (PASI<5) to moderate (PASI>10) clinical features. The “control hotspot” with scaling, rash and mild infiltration is commonly found in 11 participants(55%). Others 9 participants(45%) have mild clinical features (PASI score<5). Almost all patients with weight problems have other diseases – arterial hypertension, 2nd type diabetes, liver problems. 8 participants with normal weight is divided in a half: one half don't have any symptoms (PASI=0), others have moderate-to-severe symptoms (PASI>10) (their therapy have just started)

Conclusions. Overweight and obese patients have continuous clinical features of psoriasis despite well-controlled therapy which lasts for a long time. Patients admit that weight affects their symptoms. Patients have “control hotspot” and their PASI score fluctuate (from <5 to >10). That proves the correlation. For more precise results, we need to get bigger patient group whose therapy is controlled and not in its initial stage.

INVESTIGATION OF THE EFFECT OF GALLIC ACID ON STREPTOCOCCUS MUTANS BIOFILM FORMATION AND ACIDOGENICITY

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Keywords. Gallic acid; Streptococcus mutans; Biofilm; Acidogenicity

Objectives. The main cause of tooth decay is the bacterial biofilm that forms on the surface of tooth. Streptococcus mutans is one of the principle microorganisms involved in the formation of cariogenic biofilm on tooth surface. The effect of one of the natural chemicals found in plants, gallic acid, on the virulence of S. mutans has not been fully investigated. Thus, the aim of this work was to evaluate the effect of gallic acid on the formation of Streptococcus mutans biofilm and its acidogenicity in vitro.

Materials and methods. The effect of gallic acid on S. mutans biofilm was studied by forming the biofilm on solid surfaces – polystyrene and glass. The biofilm formed on polystyrene was evaluated by colorimetry, and the biofilm formed on glass was evaluated by optical profilometry. The pH of the biofilm growth medium was measured using a microelectrode. Plate wells filled with medium alone were used as a blank control, and S. mutans bacteria untreated with gallic acid were used as experimental control.

Results. Biomass of bacterial biofilm was reduced by 82% compared to the control group using 0.25 mg/ml gallic acid. Gallic acid decreased surface roughness and thickness of biofilm, compared to the control group, by 91% and 85%, respectively. The pH of the biofilm growth medium of S. mutans treated with 0.25 mg/ml gallic acid increased by 1.65-fold compared to the control group.

Conclusions. Gallic acid is an effective agent for inhibiting S. mutans biofilm formation and acidogenicity.

RESEARCH OF MYCOBACTERIUM TUBERCULOSIS LOCAL OUTBREAK TRANSMISSION NETWORKS IN LATVIA USING WHOLE GENOME SEQUENCING APPROACH

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Keywords. Tuberculosis; Whole genome sequencing; Disease transmission

Objectives. According to the WHO data, tuberculosis (TB) is among top 10 global causes of disability-adjusted life years in 2019. The last reported data about TB situation in Latvia shows that infection distribution rate per 100 000 people was 28.3 in 2017, which was third highest number in EU/EEA countries. To better understand the transmission of TB, whole genome sequencing (WGS) is used worldwide to trace epidemiological contacts. The aim of this study was to determine transmission routes of several local outbreaks using WGS.

Materials and methods. Six clusters of 8 (A), 4 (B), 12 (C), 5 (D), 6 (E) and 3 (F) TB patients diagnosed in 2002–2019 were included; 3 patients (cluster B, C and F) had a recurrent episode of TB. All clusters reflect the outbreak within the household, and in C and E clusters the infection also spread at school. WGS of *M. tuberculosis* (Mtb) isolates was conducted using Ion Torrent technologies, and bioinformatic analysis was performed on Galaxy web platform. Transmission networks were created in PopArt software using the WGS data of the Mtb isolates and the most recent common ancestor as a reference sequence.

Results. The following spoligotypes were identified: SIT3340 (A), SIT283 (B), SIT254 (C, D) and SIT53 (E, F). Only isolates from cluster B showed resistance to isoniazid. Low number of SNP differences (0–6) in all clusters were detected, which confirms the genetic relatedness. Although the evolution of mutations largely corresponded to the time of sampling, the reliably assumptions about the first infected person can be made only for two outbreaks. Despite the small number of SNPs (0–4), cases of recurrent TB were considered as reinfections due to close contact with involved persons.

Conclusions. WGS is an important tool to detect recent TB transmission, providing an opportunity to better understand microevolution of Mtb.

DOES CIGARETTE SMOKING PREVENT FROM SEVERE ALLERGIC REACTIONS TO HYMENOPTERA VENOM?

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Keywords. Hymenoptera venom allergy; Smoking

Objectives. Hymenoptera venom allergy (HVA) is an allergic reaction to a sting from insects such as a honeybee, vespidae and ant. Allergy symptoms range from mild to severe. Our objective was to assess the prevalence of cigarette smoking among patients diagnosed with HVA. Cigarette smoking may lead to the development of various diseases. There are studies suggesting possible protective effects of cigarette smoking on allergic and autoimmune diseases. Risk factors of severe or fatal shock reaction to Hymenoptera stings are raised levels of basal serum tryptase and wasp sting (vs. honey bee). Smokers have an increased number of mast cells and nicotine might activate its degranulation.

Materials and methods. Data from 64 patients admitted to the University Hospital in Opole (2018-2021), because of Hymenoptera venom allergic reactions (grade III and IV according to RING and Messer) were studied. The group was divided according to the severity of HVA and cigarette smoking as well as wasp and bee venom allergy. The chi-square test was used in statistical analysis.

Results. Among the studied group, there were 2 smokers allergic to bee venom and 10 non-smokers, 12 smokers allergic to wasp venom and 40 non-smokers. No statistically significant differences were found in the incidence of individual degrees of severity of anaphylaxis and in the percentage of wasp or bee sensitization between smokers and nonsmokers.

Conclusions. The prevalence of cigarette smoking among patients allergic to Hymenoptera venom with a diagnosed severe allergic reaction is lower than in the general population of Poland (21.9% vs. 26%). This might support the surprising concept of possible protective effects of cigarette smoking, but it should be verified on a larger group of patients.

ASSOCIATION BETWEEN C-REACTIVE PROTEIN AND SERUM FERRITIN IN PATIENTS WITH COVID-19 INFECTION

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Keywords. C-reactive protein (CRP); Serum ferritin; COVID-19; Hospital stay length

Objectives. CRP is an acute phase protein produced by the liver, elevated levels of which indicate inflammation, cardiovascular disease or infection. Ferritin is a serum protein that maintains iron homeostasis and modulates immune response. High ferritin levels are present in an ongoing infection. Studies showed that elevated serum CRP and ferritin levels are associated with a more severe form of COVID-19 infection and that these biomarkers may be useful for monitoring the progression and efficiency of treatment. The aim of the study was to analyse the association between these biomarkers in patients with COVID-19 and evaluate their role in monitoring the infection.

Materials and methods. The retrospective study enrolled 22 patients hospitalised with COVID-19 infection in Ludza medical centre. Data from patient medical records that included laboratory parameters (CRP, serum ferritin) was obtained and analysed using SPSS version 23. Spearman's rank non parametric data correlation and considering $p < 0.05$ statistically significant.

Results. 16 females and 6 male participated; average age was 66 years. Mean serum ferritin level was 795 ng/ml with ± 205 SEM, CRP levels showed mean value of 169 mg/l ± 62.70 SEM. Mean length of patient hospital stay was 14 ± 2.37 SEM days. The association between C-reactive protein and serum ferritin ($Rho = 0.531$; $p = 0.034$) was statistically significant. Correlations between hospital stay length and CRO ($Rho = 0.194$; $p = 0.401$) as well as hospitalisation and serum ferritin ($Rho = 0.096$; $p = 0.722$) were not statistically significant.

Conclusions. In COVID-19 patients C-reactive protein correlated with serum ferritin levels, suggesting both biomarkers for evaluation of the infection. Although these markers showed no significant correlation with duration of hospitalisation.

GENETIC DRIFT SARS-COV-2 STRAINS MUTATIONS AMONG UKRAINIAN POPULATION

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Keywords. SARS-COV-2; Strains

Objectives. The goal of investigation: assess the prevalence of mutations SarS-CoV-2 genome among the population of Ukraine. COVID-19 was declared a public health emergency of international concern. Genomic sequencing of SarS-CoV-2 structure of the virus allows to detect transmission chains, track contacts and identify new strain variants, namely variants of concern (VOC) and variants of interest (VOI), which are responsible for increasing the transmission of the virus, the formation of immune evasion and reducing the susceptibility of vaccinated individuals to infection with new strains. However, the analysis of the spread of mutations in the SarS-CoV-2 genome in Ukraine remains completely unexplored.

Materials and methods. Data on COVID-19 epidemiology trends of cases of infection and death in Ukraine were obtained on the open platform Google Public Data. Analysis of meta-data of all SARS-CoV-2 genomes from Ukrainian population (n = 534) submitted to the GISAID database was performed from 2020 to 2021. The analysis include data about the type and subline of the genome identified GISAID database. Genome evolution analysis was performed on the Nextstrain web platform. Statistical analysis.

Results. Ukraine ranks 8th among all European countries in terms of prevalence (n=3,696,468) and mortality (n=97,088) from COVID-19. It was revealed 3 peak increases in new daily cases of morbidity and mortality. The strain GRY ("Alpha") was circulated from 01 to 06.2021 with 3 maximal peaks of spread. Currently dominated the strain GK ("Delta"), which has 4 peaks of growth. Since from 12.2021, the first cases of the GRA virus strain ("Omicron") have been registered in Ukraine.

Conclusions. It was shown high levels of Alpha, Gamma and Delta strains of Sars-CoV-2 virus mutations during 2020-2021 among Ukrainian population. Currently, the Omicron strain poses a new potential threat. The emergence of new strains in the country coincided with a new peak of COVID-19.

INFLUENCE OF THERAPEUTIC FACTORS ON TREATMENT ADHERENCE IN DERMATOLOGICAL PATIENTS

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Keywords. Treatment adherence; Therapeutic factors; Dermatology

Objectives. To determine the prevalence and determinants of medication adherence of dermatological patients, we conducted a prospective study in the Riga 1st hospital dermatology clinic. To identify the most common therapeutic factors causing noncompliance would help to improve patient compliance and treatment effectiveness.

Materials and methods. An anonymous self questionnaire was used, which included 18 questions related to therapeutic factors and the patient's demographic data. Participants were sampled purposefully from all patients with chronic or long standing (more than 6 weeks) skin or skin derivate disease, who attended dermatologist at Riga 1st hospital dermatology clinic. Statistic analysis was performed using MS Excel and IMB SPSS.

Results. We included 81 patients in the age above 18, 31% of whom were males. In the patient group, 83% of patients used the treatment after initiation properly and always asked additional questions appropriate to treatment. Patients' experiences showed various therapeutic factors that could cause noncompliance. The gender was not consistently related to adherence. The most common factors, that affects therapy, are the severity of the disease (72%), medication side effects (65%), and the history of treatment (53%).

Conclusions. In the practice of a dermatologist, patients are often exposed to therapeutic factors, that may affect their equivalence. The data collection needs to be continued to analyze problem more broadly.

THE pH OF MICELLAR WATERS AND THEIR COMPATIBILITY WITH THE PROPERTIES OF NORMAL SKIN

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Keywords. Micellar water; pH; Facial skin care

Objectives. Using micellar water is a popular cleansing strategy among women. Most of the micellar waters on the market claim to have a no-rinse formula, encouraging consumers to leave them on the skin for a prolonged period of time. The pH of the skin plays a vital role in maintaining the integrity of the skin's moisture barrier. Impaired barrier function can make the skin prone to irritation, contact dermatitis, and infection. The purpose of this study was to investigate the pH of commercially available micellar waters, evaluate their compatibility with normal skin pH, and compare the results between micellar waters available in pharmacies and department stores.

Materials and methods. The pH of 12 different commercially available micellar waters was examined, 6 of which were from a pharmacy and 6 from a department store. The pH was determined by using Vernier LabQuest2 pH meter at room temperature. The normal skin pH range for comparison was taken from the available scientific literature.

Results. Of the 12 samples, 3 were shown to be above the neutral pH of 7, 1 was in the range of 6 to 7, 3 were in the range of 5 to 6, and 5 were in the range of 4 to 5. 3 samples from a department store and 1 sample from a pharmacy had the pH above 6. Physiological pH of facial skin typically ranges from 4.1 to 5.8, meaning 66.7% of the tested micellar waters are compatible with normal skin (3 from a department store, 5 from a pharmacy).

Conclusions. The micellar waters carried by pharmacies tend to have, on average, a lower pH that is especially compatible with healthy skin. Most available micellar waters on the market are in line with the physiological pH of facial skin.

ATTITUDE AND KNOWLEDGE ABOUT ORAL ISOTRETINOIN AMONG ACNE VULGARIS PATIENTS

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Keywords. Acne vulgaris; Isotretinoin; Side-effects

Objectives. Acne vulgaris is one of the most common dermatological conditions, requiring long-term management, and has substantial negative impact on patients quality of life. Oral isotretinoin is an effective method counteracting all pathogenic factors in acne. Use of isotretinoin is relatively long-term and associated with multiple adverse effects which may reduce the compliance. The objective of this study was to evaluate knowledge, personal experience and attitude towards oral isotretinoin.

Materials and methods. A cross-sectional study was performed in dermatology out-patient clinic among 22 acne patients who have received isotretinoin. An anonymous survey was distributed among patients consisting of four sections: sociodemographic data, experience with acne therapy, attitude towards adverse-effects and knowledge about isotretinoin.

Results. Mean age of study participants was 23.9 years, majority having acne lesions on face (95%) and back (45%), and 86% had received local therapy beforehand. Most of the patients (86%) believe that isotretinoin is the most effective acne treatment method and evaluate their experience as successful. Most concerns regarding adverse effects were about skin dryness, liver damage and elevated cholesterol levels (41%). Patients were least concerned about adverse gastrointestinal (23%) and psychiatric, eye, musculoskeletal and respiratory adverse-effects (27%). Patients demonstrated a good level of knowledge regarding isotretinoin treatment basic principles. 37% of patients reported that they don't know whether isotretinoin prevents new scar formation. Main source of information regarding isotretinoin was reported to be the treating physician (82%).

Conclusions. Overall patients reported successful experience with isotretinoin and demonstrated a good level of knowledge. This study highlights the importance of good communication. Issues regarding teratogenicity, therapy outcomes and management of side-effects should be explained to patients through the counselling or educational materials.

DETECTION OF FIRST-LINE ANTITUBERCULOSIS DRUG RESISTANCE ASSOCIATED MUTATIONS IN PULMONARY TUBERCULOSIS PATIENT ISOLATES FROM LATVIA

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Keywords. Tuberculosis; Whole genome sequencing; Drug resistance

Objectives. The high prevalence of drug resistant tuberculosis (TB) cases remains a global public health problem. Mycobacterium tuberculosis (Mtb) whole genome sequencing (WGS) allows to detect known resistance associated mutations for all anti-TB drugs simultaneously and provides strain genotyping possibilities. The aim of this study was to identify strain spoligotypes and first-line anti-TB drug resistance associated mutations in clinical isolate group from Latvia.

Materials and methods. In total, 36 Mtb isolates obtained from pulmonary TB patients in 2013–2014 were studied. Mtb DNA samples were sequenced on Illumina MiSeq. Bioinformatic data analysis was performed on Galaxy web platform, and resistance associated mutations were detected using TBProfiler tool. Additionally, SpoTyping (v2.1) software and SITVIT2 database were used for sample spoligotyping.

Results. 8 different spoligotyping patterns were found, and one of them was not included in the database. The most common spoligotypes were SIT1 (22) and SIT42 (8). All studied isolates were isoniazid- and rifampicin-resistant. Only Ser315Thr mutation in katG gene was related to isoniazid resistance. Rifampicin-resistance associated mutations were observed in two genes – rpoB (36) and rpoC (4). Ser450Leu (19) and Asp435Val (10) mutations in rpoB prevailed among studied isolates. Gly332Arg (3) and Ile491Thr (1) found in rpoC gene were present in a combination with rpoB Ser450Leu mutation in SIT1 isolates. Ethambutol-resistance (32) was associated with SNPs in embB gene. Met306Val (11) was prevalent among SIT1 isolates, while Tyr319Ser (4) was only detected in SIT42 samples. Resistance to pyrazinamide was relatively less common (19), and it was related to variety of SNPs in pncA gene.

Conclusions. SIT1 and SIT42 spoligotypes are more common among drug resistant isolates, and associated mutation pattern tends to vary between them.

GYNAECOLOGY, GYNAECOLOGICAL SURGERY, OBSTETRICS, PERINATOLOGY

COMPARISON OF THE OUTCOME OF SPONTANEOUS AND INDUCED VAGINAL BIRTHS IN WOMEN WITH A SINGLE UTERINE SCAR

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Keywords. Vaginal birth after caesarean section; Spontaneous labor; Labor induction

Objectives. According to World Health Organisation the incidence of caesarean section and induced vaginal births is increasing, so the aim of the study is to evaluate the frequency of successful vaginal births after caesarean section and the risk of complications that would make it easier for the doctor to decide on the most appropriate type of birth.

Materials and methods. Retrospective study evaluating the archive data of the Pauls Stradiņš Clinical University Hospital maternity ward from 2016 to 2022. The histories of 75 patients diagnosed with vaginal birth after caesarean section were obtained and analyzed.

Results. Between 2016 and 2022, out of all 75 patients diagnosed with vaginal birth after caesarean section, 70 (93.3%) births were resolved vaginally, and 5 (6.7%) underwent repeated caesarean section. Indications for reoperation were uterine dysfunction in 4 cases (5.3%) and uterine scarring in 1 case (1.3%). Of all births, 62 (82.7%) were spontaneous and 13 (17.3%) were induced. In patients with spontaneous deliveries, the only complication during delivery was excessive blood loss in 3 (4.8%) cases, whereas there were no complications in the postpartum period. Patients with induced labor had no complications during or after labor.

Conclusions. With a history of caesarean section, there is a high chance of successful vaginal births, and the induction of labor does not increase the frequency and risk of complications during childbirth and the postpartum period.

THYROID DYSFUNCTION IN HIGH- AND LOW-RISK PREGNANT WOMEN IN AN IODINE-DEFICIENT REGION (BEIRA INTERIOR)

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Keywords. Thyroid Disease; Pregnancy Outcomes; Thyroid Screening; Hypothyroidism; Hyperthyroidism

Objectives. Thyroid pathology is the second most prevalent endocrine complication in pregnant women, resulting in numerous complications during pregnancy and childbirth. However, no specific surveillance protocol is implemented in Portugal. The aim of this study is to investigate the influence of programmed, continuous and effective surveillance of thyroid function on a lower incidence of gestational and postpartum complications.

Materials and methods. Retrospective observational study that included 1194 pregnant women, whose pregnancy was monitored and followed up at the Obstetrics Consultation at CHUCB, between January 2017 and May 2021. Clinical and laboratory data (TSH, FT₄ and FT₃) were consulted with subsequent analysis of 594 pregnant women undergoing thyroid screening versus 600 without thyroid screening, followed by the evaluation of predictors of gestational and postpartum complications by logistic regression.

Results. There was statistical significance in the occurrence of Premature Membrane Rupture ($p=0.002$), Anemia ($p<0.001$), Hypertension in Labor ($p=0.006$), Uterine Atony ($p=0.001$) and Fetal Malformations ($p=0.002$), and these outcomes were also more prevalent in the group without screening for thyroid diseases. There are statistically significant differences in the type of delivery ($p<0.001$), with a higher incidence of abortion (6%), medical termination of pregnancy (1.8%) and fetal death (1.3%) in the group without thyroid analysis. Pregnant women who underwent thyroid screening, 7.2% had abnormal values and were later diagnosed with Hypothyroidism (65.1%), Subclinical Hypothyroidism (30.2%) and Hyperthyroidism (4.79%). According to the logistic regression model, the group without thyroid screening is associated with an increased probability of occurrence of general complications.

Conclusions. Failure to perform thyroid function analysis in pregnancy is associated with an increased likelihood of pregnancy and postpartum complications. Therefore, the introduction of thyroid surveillance protocols to be implemented during pregnancy should be promoted, in order to prevent adverse outcomes in this period.

EXPERIENCE AND PATIENT PROFILE OF DEAF AND HARD-OF-HEARING WOMEN IN AN OB/GYN SETTING IN LATVIA

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Keywords. Deaf-awareness; Ob/gyn; Healthcare; Communication

Objectives. Several studies have confirmed that people with hearing-disabilities have worse health outcomes in general, however there are only few studies in ob/gyn-setting. We aimed to discover the quality and main problems of gynaecological-care for deaf and hard-of-hearing (D/HH) women in Latvia and to find out whether D/HH-women have a higher prevalence of various gynecological diseases and unfavourable perinatal results, as well as what improvements should be proposed to promote health-care accessibility and quality for D/HH-patients.

Materials and methods. This was a case-control study conducted May-November 2021, based on an online-questionnaire about socioeconomic situation, communication experience in gynaecology-departments (GD) and obstetrical-departments (OD), as well as prevalence of different ob/gyn health conditions. The study-group consisted of 103 D/HH-women and the control-group - 314 women with no-hearing-disabilities (NHD). The study was approved by the Ethics Committee of Rīga Stradiņš University. The data was processed using IBM SPSS Statistics-27, comparing case-control cases in different age-groups: 1) ≤ 30 ; 2) 31-40; 3) ≥ 41 .

Results. The mean value of quality-of-communication in GD was 7.53 ± 1.1 among NHD-patients and as 6.2 ± 1.9 among D/HH-patients, whereas communication in OD - 7.03 ± 1.6 (NHD-patients) and 6.4 ± 1.4 (D/HH-patients). 42.3% of D/HH-patients in the age-group-Nr.1 and 41.9% in the age-group-Nr.2 vs 4.2% and 1.7% of NHD-patients, respectively, weren't informed about the cervical-cancer-screening. 7.7% in age-group Nr.1 and 9.7% in age-group Nr.2 of D/HH-patients vs 0% and 0.9% of NHD-patients, respectively, in the last-3-years haven't visited gynaecologist. In age-group-Nr.2 the prevalence of premature labour was higher among D/HH-patients (16.1%) vs NHD-patients (4.3%). All p-values ≤ 0.05 .

Conclusions. In this study D/HH-patients were less informed about the available prophylactic measures and less willing to participate in them, particularly due to communication struggles. The prevalence of premature labour was significantly higher among D/HH-patients aged 30-41. Clearer written therapy-plan-instructions and sign-language-interpreter should be established in the ob/gyn-healthcare.

THE PROGNOSTIC ROLE OF FIRST TRIMESTER LIPID PROFILE AND LIFESTYLE FACTORS IN DIAGNOSIS OF GESTATIONAL DIABETES

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Keywords. Lipid profile; Gestational diabetes; Prognostic factor

Objectives. The prevalence of gestational-diabetes (GD) is increasing, and some studies show that GD can be diagnosed in women without any risk-factors, however, it is not clear whether all pregnant women in the first trimester should be tested to confirm glucose and/or lipid-metabolism-disorders. The aim of the study: investigate the relationship between lipid-disturbances during early pregnancy, lifestyle factors and GD-status.

Materials and methods. This was a prospective case-control study conducted October 2020 - December 2021, based on a questionnaire about lifestyle factors in the first trimester and on medical records, including the 9th-gestational-week lipid/glucose analysis, and the 24th-gestational-week OGTT. 47 participants were enrolled in the study, of which 19 were later excluded, leaving 9 patients with GD (study-group) and 19 patients without-GD (control-group). The study was approved by the Ethics Committee of Rīga Stradiņš University. The data was processed using IBM SPSS Statistics-27 (Chi-Square).

Results. The mean age was 29.69 ± 4.04 and $28.75 \pm$ of GD-patients and NGD-patients, respectively. In the GD-group prepregnancy-BMI >30 was 37.5% vs in the NGD-group - 15.8% ($p=0.3$). Physical activity 150-300-min/week in GD-group was 25%, and in NGD-group - 27.2% ($p=0.3$). Increased non-high-density-lipoprotein (NHDL) was prevalent in 37.5% cases of GD-group vs 20% - in NGD-group ($p=0.5$). Increased low-density-lipoprotein (LDL) - in 50% cases of GD-group vs 26.3% - in NGD-group ($p=0.4$). Increased triglycerides - 12.5% in GD-group vs 5.3% - NGD-group ($p=0.8$). Moderate positive correlation (>0.5) was observed between prepregnancy-BMI and LDL, NHDL triglycerides, systolic blood-pressure, as well as between triglyceride value and OGTT-result after 2 h. All $p<0.01$.

Conclusions. In this study prepregnancy-BMI >30 could be better prognostic-factor of GD than physical activity and age. Laboratory: increased 9th gestational week LDL, triglycerides, NHDL may indicate a higher risk of GD. More extensive studies should be done to determine whether these factors can predict the development of GD in early pregnancy.

GESTATIONAL AGE DIFFERENCE AS PROGNOSTIC FACTOR FOR SUCCESSFUL MISOPROSTOL TREATMENT OF MISSED ABORTION

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Keywords. Missed abortion; Misoprostol; Gestational age; Miscarriage

Objectives. Standard protocols have been used for the treatment of miscarriage, but there are still unknown prognostic factors for successful medication management of missed abortion (MA). To investigate gestational age (GA) calculated by transvaginal ultrasound (TVUS) and its difference from GA according to last menstrual period (LMP) as prognostic factor for treatment success using misoprostol for missed abortion.

Materials and methods. The prospective study included 61 women presenting to the Department of Obstetrics and Gynaecology, Pauls Stradins Clinical University Hospital from February 2021 to January 2022 with MA. Patients were divided in 2 groups by misoprostol treatment efficiency – Complete treatment group and Incomplete treatment group, which required additional curettage and in 2 groups according to their gestational age, Group 1- where gestational age by LMP differed 14 days or less compared to gestational age by TVUS at the time of hospitalisation, Group 2- gestational age differed ≥ 15 days compared to TVUS gestational age at the time of hospitalisation.

Results. The mean age of the participants was 32,9 ($\pm 6,1$) years, gestational age was 68,7 ($\pm 9,8$) days and gestational age by TVUS was 51,94 ($\pm 8,47$) days. The efficacy of misoprostol administration in both groups was assessed at the end of follow-up. Medical treatment was effective in 49% (n=25) patients, 51% (n=26) of patients required surgical treatment. More frequently surgical treatment was required in Group 1 (similar GA) compared to Group 2 (different GA) (69,6% vs. 35,7%, p=0.016).

Conclusions. Gestational age difference ≥ 15 days assessed by TVUS comparing to LMP could be a prognostic factor for successful medical treatment of MA.

EFFECTS OF INTRAOPERATIVE ROPIVACAINE INFILTRATION TO REDUCE POSTOPERATIVE PAIN AND ANALGESIC REQUIREMENT BY ASSESSING PHYSIOLOGICAL REACTIONS

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Keywords. Ropivacaine; Gynaecological laparoscopy; Postoperative pain

Objectives. Early postoperative pain during the first 24 hours after surgery can delay patient recovery and impact overall satisfaction with surgical procedure. To evaluate postoperative pain and analgesic requirement in patients after gynaecologic laparoscopy and ropivacaine infiltration. To evaluate physiological pain reaction after surgery. To compare preincisional and preclosure wound analgesia together with intraperitoneal instillation in reducing pain and analgesic requirement.

Materials and methods. The prospective, randomized study included women undergoing standard gynaecological laparoscopy (excluding endometriosis and hysterectomy) with the time limit of 1 hour who received wound analgesia with 10ml 7.5mg/ml ropivacaine undiluted for port-site and diluted intraperitoneally 10ml 7.5mg/ml ropivacaine with 10ml 0.9% normal saline in Latvian Maritime Medicine Centre and were randomized into three groups. Group1 Pre-incisional (n=13), Group2 Pre-closure (n=15), Group3 Control group (n=15). Pain and a need for analgesic was assessed using visual analogue scale (VAS), pulse, blood pressure at 2, 6, 12, 24h after surgery.

Results. A total of 43 patients with mean age 32.73 (± 8.62) were scheduled for gynaecological laparoscopic surgery. VAS score after surgery revealed no significant difference between groups. Pulse and blood pressure revealed no significant correlation between patient pain and need for analgesics. Patient requirement of additional painkillers was lower in all groups receiving analgesia comparing to control group in all periods after surgery except after 6 hours. Significantly fewer patients required painkillers for analgesia in the ropivacaine groups compared to the control group- 2h after surgery ($p=0.001$), 6h after ($p=0.209$), 12h after ($p=0.001$), 24h after ($p=0.009$). 26% of patients in ropivacaine group did not require any additional analgesia at all compared to Control group ($p=0.019$).

Conclusions. Ropivacaine infiltration lowers need of postoperative analgesic requirement. Physiologic body reaction in this study did not correlate with the severity of pain. No difference in time of ropivacaine administration during surgery was observed in our study.

THE IMPACT OF PHYSICAL ACTIVITY DURING PREGNANCY ON GESTATIONAL DIABETES MELLITUS

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Keywords. Gestational diabetes mellitus; Physical activity; Pregnancy

Objectives. Pregnant women are recommended at least 150 minutes of physical activity per week to reduce the risk of excessive gestational weight gain, gestational diabetes, preeclampsia. Gestational diabetes mellitus (GDM) is a common complication in pregnancy. It is more common among women who have overweight, history of GDM or macrosomia, family history of diabetes or lack of physical activity. The study aimed to detect the impact of physical activity during pregnancy on GDM development.

Materials and methods. A prospective cohort study was conducted from February 2021 to December 2021. Two anonymous, self-filled questionnaires were carried out. First - Pregnancy Physical Activity Questionnaire (validated for use in pregnancy (Chasan-Taber, et al., 2004)), translated to Latvian and given to pregnant women - and second - after labor questionnaire asking regarding pregnancy outcomes. Physical activity was calculated in Metabolic Equivalent of Task (MET). One MET is equal to 1 kcal/kg/hour. Data was analyzed using Microsoft Excel 16.56 and IBM SPSS 26.

Results. A total of 100 pregnant women during the second trimester with singlet pregnancies were interviewed. Twelve patients (12%) had GDM. The mean age was 28 (SD±4.2). The mean weight gain in women with GDM was 14.5 kg (SD±5), mean BMI 26.98 (SD±2.3) and women without GDM 14.7 kg (SD±4.7), mean BMI 21.38 (SD±1.5), respectively. There is a statistically significant difference between GDM and total amount of physical activity ($p=0.004$) and sports activity ($p=0.015$). The mean amount of total physical activity in women with GDM was 213.3 MET h/week (SD±58.2), in women without GDM - 293.4 MET h/week (SD±101). The mean amount of sports activity in women with GDM was 34.7 MET h/week (SD±20.7), in women without GDM - 52.5 MET h/week (SD±31).

Conclusions. Adequate physical activity during pregnancy can decrease the incidence of GDM. But there are other risk factors that affect GDM development.

ANALYSIS OF THE PRACTICES OF OBSTETRIC VIOLENCE IN THE WOMEN MEDICALLY FOLLOWED AT UNIDADE DE SAÚDE FAMILIAR DA ESTRELA

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Keywords. Obstetric violence; Labour; Pregnancy; Consent; Autonomy

Objectives. Obstetric violence is defined as dehumanized treatment, abuse of medication and the pathologization of labour. It encompasses procedures in which women are deprived of autonomy regarding their bodies and others performed without consent. The objectives are to evaluate labour and assess the prevalence of obstetric violence practices in women who are medically followed at Unidade de Saúde Familiar da Estrela, as well as discuss the most frequent procedures and their post-labour consequences for women.

Materials and methods. We conducted an observational, cross-sectional and descriptive study, with clearly defined inclusion and exclusion criteria, conditioning women who are medically followed in Unidade de Saúde Familiar da Estrela that have given birth between January 2015 and December 2019. A questionnaire was delivered to collect the data. The population is 275 women and our sample consists of 23 subjects.

Results. There are 8.7% of women that consider having suffered some form of violence or mistreatment during labour and 13% are not sure. Some procedures were performed without consent in between 4.3% and 15% of our sample (vaginal touches and amniotomy). The Kristeller's Manoeuvre was performed in 17.4% of women, 39.1% of labours were induced and the caesarean delivery was performed in 47.8%. Disrespect, humiliation, movement and position restriction are statistically related to having suffered some form of violence or mistreatment during labour.

Conclusions. Obstetric Violence in these women is directly related with 4 different types of practices, namely, disrespect and humiliation from health care professionals as well as position and movement restriction during labour. Besides that, there are other procedures that should be analysed due to their prevalence, such as caesarean deliveries, the induction of labour and the Kristeller's Manoeuvre. Measures should be put in place to mitigate these practices.

MATERNAL VEGETABLE AND FRUIT CONSUMPTION DURING PREGNANCY IN LATVIA

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Keywords. Maternal health; Pregnancy; Vegetables; Fruits

Objectives. The World Health Organization (WHO) recommends consuming at least 400 g of fruit and vegetables daily. However, the Ministry of Health of the Republic of Latvia recommends raising it to 500 g daily for pregnant women, with at least 300 g of vegetables. As a result, determining whether pregnant women in Latvia consume an adequate amount of fruits and vegetables is critical for both maternal and fetal health.

Materials and methods. The study was carried out as part of the Latvian Council of Sciences project Nr.lzp-2019/1-0335. This cross-sectional study included 291 women until the 7th day post-partum in 8 Latvian healthcare institutions who consented to a face-to-face interview using a food frequency questionnaire from July 2020 to December 2021. IBM SPSS 27.0 was used to analyze the data.

Results. 50.9% (n=148) of women reported daily fruit-eating of less than 200 g, and 56.7% (n=165) reported insufficient vegetable consumption (less than 200 g), with the lowest rates reporting daily consumption of less than 10 g. Between-meal snacks were chosen in 85.0% of cases (n=243), however, in only 37.1% of the cases (n=106), vegetables were chosen, while sweets were chosen in an alarmingly high number – in 54.5% cases (n=156). Only 25.1% (n=73) of pregnant women attempted to eat healthier; in 18.3% cases (n=53), they increased their fruit consumption, while in 24.4% cases (n=71), they increased their vegetable intake. Despite prior findings, there is no statistically significant correlation ($p > 0.05$) between the amount of fruits or vegetables consumed and the rate of pregnancy complications or the infant's weight after delivery.

Conclusions. Consumption of fruits and vegetables was insufficient and fell short of the recommendations by WHO and the Ministry of Health of the Republic of Latvia. Future research would be needed to conduct a more comprehensive analysis of nutritional intake during pregnancy.

OBSTETRIC COMPLICATIONS IN OBESE PATIENTS WITH GESTATIONAL DIABETES MELLITUS

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Keywords. Obesity; Gestational diabetes mellitus; Complication

Objectives. Obesity is associated with an increased risk of developing GDM during pregnancy. The number of obese women is rapidly growing worldwide. Obese women are more likely to experience obstetric complications.

Materials and methods. A retrospective case-control study was performed using the data from the Department of Obstetrics and Gynecology of the Lithuanian University of Health Sciences (LUHS) Birth Registry in 2020 to compare two groups of women with GDM: normal weight (group I) and obese (group II). Data analyzed using IBM Statistics SPSS for frequencies, T and χ^2 tests. Results with values of $p < 0.05$ considered statistically significant.

Results. A higher weight gain mean was found in group I ($p = 0.001$) – 11–16 kg ($p = 0.011$) and >16 kg ($p = 0.005$), in group II – <11 kg ($p = 0.003$). GDM diagnosed using fasting glucose test more often in group II ($p = 0.037$), OGTT – in group I ($p = 0.022$). Treatment with lifestyle changes more often used in group I, insulin therapy – group II ($p = 0.001$). Hypertensive disorders in pregnancy ($p = 0.001$) – gestational hypertension and preeclampsia ($p = 0.003$, $p = 0.022$), polyhydramnios ($p = 0.034$) were more diagnosed in group II. There were more vaginal births in group I ($p = 0.033$), caesarean section – in group II ($p = 0.035$). Large for gestational age and macrosomic newborns were more found in group II ($p = 0.022$, $p = 0.047$). Induction of labor more used in group II ($p = 0.001$), amniotomy and induction with prostaglandins ($p = 0.032$, $p = 0.035$). Caesarean section after induction of labor more often performed in group II ($p = 0.037$).

Conclusions. GDM for obese women is more frequently diagnosed using the fasting glucose test and required insulin therapy. There were more obstetric complications in obese women group.

LEVEL OF PHYSICAL ACTIVITY DURING PREGNANCY AND GESTATIONAL WEIGHT

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Keywords. Physical activity; Obesity; Maternal weight gain

Objectives. The Ministry of Health of the Republic of Latvia recommends 150 minutes of moderate exercise per week in the absence of medical or obstetric complications. However, research regarding the usefulness of exercise in managing weight gain during pregnancy is limited and contradictory. Therefore, the purpose of the study was to assess the association between exercise during pregnancy and meeting the recommended gestational weight gain.

Materials and methods. The study was conducted as part of the Latvian Council of Sciences project Nr.lzp-2019/1-0335. This cross-sectional study included 353 women until the 7th day post-partum in 8 Latvian healthcare institutions who consented to a face-to-face interview using a physical activity frequency questionnaire from July 2020 to December 2021. The data was analyzed using SPSS 27.0.

Results. From 352 women, 18 (5.1%) women - underweight, 212 (60.1%) women - normal weight, 81 (22.9%) women - overweight and 41 (11.6%) women - obese before the pregnancy. The median weight gain among respondents was 13.0 (IQR 10.1 to 16.5). Over 137 (39.5%) women exceeded the recommended weight gain during pregnancy. Only one third (29.3%, 102) of women reported exercising ≥ 3 times a week at any time during pregnancy. 154 (44.5%) women reported walking/biking more than 60 minutes per day. Only 64 (18.3%) of all women and 31 (25.4%) of overweight/obese women reported receiving recommendations from healthcare providers (50 (78.1%) - obstetrician/gynaecologist, 14 (21.9%) other healthcare providers) to enhance physical activity during pregnancy. Statistically significant, negative, weak correlations were found between walking/biking more than 60 minutes per day and lower weight gain during pregnancy ($r = -0.235$, $p < 0.001$).

Conclusions. There is a negative correlation between walking/biking more than 60 minutes per day and lower weight gain during pregnancy. This study demonstrated that only 18.3% of women received advice to increase physical activity during pregnancy.

PELVIC FLOOR DYSFUNCTION IN POSTPARTUM PERIOD

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Keywords. Incontinence; Pelvic floor dysfunction; Postpartum

Objectives. During post partum period almost one third of women are affected by pelvic base dysfunction, what leads to urinal and fecal incontinence. The research aim was to find out the prevalence of postpartum incontinence in Latvia.

Materials and methods. A total of 149 patients 6-10 weeks postpartum were enrolled in this retrospective study. Postpartum women were asked to fill questionnaire from International Consultation on Incontinence Questionnaire Female Lower Urinary Tract Symptoms Modules. Survey was translated in Latvian and Russian. Questionnaires were sent to patients by e-mails addresses or spread within doctors office. This research was approved by the Ethics Committee of RSU.

Results. Average patient age was 31 year. 75 (50,3%) of respondents were multiparous women, 74 (49,7%) were primiparous women. From all respondents 26 (%) women had UI already before pregnancy and majority of them had it during pregnancy and after it as well. Of multiparous women UI occurred in 44% (n=33) of cases but in group of primiparous women 23% (n=17) of them developed UI. In group of women who developed UI during pregnancy for the first time only third of them had it after pregnancy. Perineal rupture was associated with UI in 23% of primiparous women and in 53% of multiparous women. From all respondents flatulence after delivery occurred in 46% of respondents.

Conclusions. Our study results show that incontinence is a common problem. More than half of women who had experienced UI before pregnancy experienced it during pregnancy and after it. In group of multiparous women who have had perineal rupture later on more than half of them developed UI after the labour but primiparous women developed UI in 23% of cases. For half of respondents a problem that occurred after delivery was also flatulence.

INTERNAL MEDICINE

PCSK9 INHIBITORS IN PATIENTS WITH VERY HIGH CARDIOVASCULAR RISK

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Keywords. PCSK9 inhibitors; Low-density lipoproteins cholesterol (LDLC); Coronary artery disease

Objectives. Many studies showed an important role of the PCSK9 molecule in LDL-receptor metabolism. Attaching and degrading LDL receptors on hepatocytes, these molecules elevate the circulating levels of LDLC. Monoclonal antibodies that can inhibit PCSK9 production are European Society of Cardiology (ESC) defined next step in treatment very-high risk patients, if the LDLC goal is not achieved on a maximum tolerated dose of a statin and ezetimibe.

Materials and methods. Twenty patients with a very high cardiovascular risk and LDLC levels above 3.0 mmol/L on a maximum tolerated dose of a statin and ezetimibe were assigned PCSK9 inhibitors. Follow-up (FU) visits were done at 1 and 3 months after the first injection of PCSK9 inhibitor.

Results. In our study participated 13 males and 7 females; mean patient age was 58 years. At the beginning of our study average LDLC level was 4.53 mmol/L; 15 patients received statine/ezetimibe combination and 5 received ezetimibe monotherapy due to statine side effects. After the first FU mean LDLC decreased by 44% and was 2.54 mmol/L; 5 patients had LDLC levels above 3.0 mmol/L and 4 patients reached ESC target <1.4 mmol/L and 5 patients had LDLC between 1.8 and 1.4 mmol/L. After the second FU mean LDLC was 2.8 mmol/L, 3 patients it was above 3.0; 6 patients had lower LDLC than 1.4, and 7 patients had LDLH between 1.8 and 1.4 mmol/L. None of the patients reported any side effects.

Conclusions. PCSK9 inhibitor in combination with a statin and ezetimibe on a maximum tolerated dose reduced LDLC levels by 44% that match the results obtained in previous studies. Moreover, 6 patients reached ESC defined target of LDLH <1.4 mmol/L.

PAPILLARY FIBROELASTOMA: CLINICAL CHARACTERISTICS AND SURGICAL OUTCOMES

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Keywords. Primary cardiac tumour; Papillary fibroelastoma

Objectives. Papillary fibroelastoma (PFE) is rare benign cardiac tumour. However, due its nature of systemic embolization, it may result in stroke, myocardial infarction, or sudden death. The aim was to review clinical, surgical data, postoperative complications and long-term survival rate after PFE resection.

Materials and methods. A retrospective study of patients who underwent PFE resection surgery in our institution between 2011 and 2021. 9 patients were suspected to have PFE, however one patient refused surgical treatment and was ruled out. All tumours were histologically confirmed. The study was approved by Bioethics Center of LUHS (no.BEC-MF-183).

Results. 8 patients were identified with PFE, 5 (62.5%) were male and mean age was 58.3 ± 15.3 years (range 37–77). The valvular surface was the most common location of the tumour (62.5%): the aortic valve (n=3) and the mitral valve (n=2). Nonvalvular PFEs were found in left atrium (n= 2) and in right atrium (n=1). The size of the tumour varied from 6 to 20 mm (mean 13.4 ± 5.5). Most common clinical presentation was chest pain (n=3, 37.5%), dyspnoea (n=2, 25%), syncope (n=2, 25%), myocardial infarction (n=2, 25%) or thromboembolic (n=2, 25%) events. For one patient PFE was found incidentally (12.5%). Most prevalent comorbidities were arterial hypertension (n=7, 87.5%), dyslipidemia (n=4, 50%) and coronary artery disease (n=4, 50%). All patients underwent surgical treatment. 2 patients (25%) had simple tumour extirpation, in other cases complex surgery with CABG (n=2, 25%) or valvular repair (n=4, 50%) was required. 3 (37.5%) patients had postoperative complications: pneumonia (n=2), atrial fibrillation (n=2) and excessive bleeding (n=1). The mean postoperative follow-up was 4.5 years (range 2 month to 8 years). No mortality was observed. There were no signs of tumor recurrence.

Conclusions. Although PFE is benign tumour, the complications may be life-threatening. Surgery is the first-line treatment and has a good long-term prognosis.

FAMILIAL HYPERCHOLESTROLEMIA IN A SINGLE-CENTRE ENDOCRINOLOGIST'S CLINICAL PRACTISE – 3 YEARS DATA

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Keywords. Familial Hypercholesterolemia (FH); Low-density lipoprotein cholesterol (LDL-C); ApolipoproteinA (ApoA); ApolipoproteinB (ApoB); Lipoprotein(a) (Lp(a)); Dutch Clinic Network Criteria (DLCN)

Objectives. Heterozygous FH (HeFH) prevalence is 1:300. However, diagnosis and treatment are still very delayed. Undiagnosed and untreated HeFH patients –50% men, 15% women– die from premature CVD before 60 years, while well diagnosed and treated achieve survival as other population. We aimed to determine the HeFH's incidence in a single-center endocrinologist's clinical practice.

Materials and methods. We collected 3 years (2019–2021) data from medical records at one endocrinologist's clinical practice in RECUH Outpatient Clinic and analyzed it. The patients were divided into groups: definite FH (DFH) and possible (PFH) based on LDLC, ApoB, Lp(a), apolipoprotein index (Apoindex), DLCN score points. Wilcoxon test was used to determine statistically significant differences.

Results. Within 3 years, there were altogether 3720 patients in the endocrinologist's practice. From which we analyzed 129 (3.47%) HeFH patients. The mean age was 49.8 ± 12.27 SD years; 90 (69.8%) were women; 18 (14%) were using lipid-lowering therapy initially. 58 (45.0%) were divided in DFH and 71 (55.0%) in PFH. The treatment during the study showed reduction of LDL-C from 4.5 ± 1.3 SD to 2.8 ± 1.0 SD (mmol/L) in DFH ($p < 0.001$) and 4.1 ± 0.9 SD – 2.4 ± 0.9 SD (mmol/L) in PFH ($p < 0.001$). ApoB was changed in DFH from 117.5 ± 25.1 SD to 82.8 ± 21.4 SD (mg/dl) ($p < 0.001$) and in PFH 98.2 ± 16.5 SD to 71.7 ± 18.3 SD (mg/dl) ($p < 0.001$). Reduction of Apoindex in DFH was from 0.8 ± 0.2 SD to 0.6 ± 0.2 SD ($p < 0.001$) and 0.6 ± 0.1 SD to 0.5 ± 0.1 SD in PFH, respectively ($p < 0.001$). Also, Lp(a) reduced from 82.8 ± 62.1 SD to 78.7 ± 48.9 SD (mg/dl) in DFH ($p = 0.272$) and elevated 17.5 ± 23.9 SD to 20.5 ± 20.6 SD (mg/dl) in PFH ($p = 0.499$). Apart from that, DLCN in DFH were 2.1 ± 1.8 SD points, whereas 1.3 ± 1.4 SD in PFH.

Conclusions. Study data imply that HeFH is more common than generally recognized. The lipid-lowering therapy reduced LDL-C, ApoB, Apoindex levels. HeFH diagnosis and treatment need to be improved in practices of different specialties.

ATRIAL FIBRILLATION IN KIDNEY TRANSPLANT RECIPIENTS

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Keywords. Atrial fibrillation (AF); Kidney transplant

Objectives. The AF in kidney transplant recipients has not been well studied. Therefore, we aimed to determine AF incidence, predictors, and use of anticoagulants among kidney transplant recipients.

Materials and methods. This was a retrospective cohort study of 184 patients who underwent kidney transplantation from 2015 to 2019 at Pauls Stradins Clinical University Hospital. We compared patients without AF (group 1) and with paroxysmal or persistent AF (group 2). Data were analyzed using IBM SPSS version 26.0.

Results. Group 1 consists of 167 patients (54,5% male, mean age $48,5 \pm 12,9$ years), group 2 consists of 17 patients (29,4% male, mean age $62,9 \pm 6,6$ years). The AF incidence in this population was 9,2% (17/184). In 13 patients, AF occurred de novo, and in the remaining four patients, it was a relapse.

Risk factors for AF identified in the univariate analysis included age >60 years ($P < 0,001$), history of coronary heart disease ($P < 0,001$), heart failure ($P < 0,001$), myocardial infarction ($P = 0,002$), and previous AF ($P < 0,001$). Type of dialysis and dialytic vintage, diabetes, BMI was not associated with the development of atrial fibrillation. Two years after transplantation, the kidney graft function was evaluated by GFR (calculated from serum creatinine by CKD-EPI formula) and it was not significantly different between the groups.

Eight patients from group 2 received new oral anticoagulants (NOAC). Seven patients received rivaroxaban, one received edoxaban. 50% of patients received a lower dose of NOAC than required according to kidney graft function.

Conclusions. In this study AF incidence in kidney transplant recipients was 9,2%. Only 47% of patients received treatment with NOAC, and only 50% of them received doses appropriate to GFR according to EHRA 2021 guidelines. Age >60 years, previous AF, coronary heart disease, heart failure, myocardial infarction are statistically significant risk factors for developing AF in kidney transplant patients.

COMPLIANCE OF RECOMMENDED DOSES OF DIRECT ORAL ANTICOAGULANTS USED IN THE TREATMENT OF ATRIAL FIBRILLATION

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Keywords. Atrial fibrillation (AF); Direct oral anticoagulants (DOAC); Dose reduction

Objectives. Anticoagulants are used for stroke prevention in atrial fibrillation patients. As stated by European Society of Cardiology inappropriate dose reduction increase the risk of stroke without decreasing bleeding risk. Aim was to find out whether the appropriate doses of DOAC are being prescribed in Paula Stradins Clinical University hospital (PSKUS). Inclusion criteria was patients with atrial fibrillation.

Materials and methods. The study included patients from the beginning of 2021 in PSKUS cardiology, neurology and internal diseases departments. Dose adequacy and criteria for dose adjustment have been reviewed, such as glomerular filtration rate (GFR), weight, age, serum creatinine. Data processing, analysis were performed with SPSS statistical software.

Results. Were selected 194 patients. 50% (N=97) were male. Study included patients from cardiology 47%, 43% neurology, 10% internal diseases department. Mean age 71 ± 12 (28-95) years. Patients were predominantly treated with Rivaroxaban 71.6% of cases (N=141), Edoxaban 13.7% (N=27), Dabigatran 9.6% (N=19), Apixaban in 3.7% (N=7). Rivaroxaban was administered in reduced dose in 18.4% patients (N=26), in 5 patients (3.5%) inadequately. Edoxaban was used in reduced dose in 6 patients (22.2%), a corresponding reduction in 1 (3.7%). Dabigatran was reduced in 1 patient (5.3%) - inadequately. Apixaban was used in inappropriate dose in 3 patients (42.9%). Overall an reduced dose of DOAC was administered in 18.2% (N=36). Only 6% the dose was reasonably reduced. Cardiology sections prescribe medication according to guidelines in 95.6% of cases (N=87), neurology department prescribed in 88.1% (N=74), internal diseases department 68.4% (N=13) ($p < 0,001$).

Conclusions. In selected departments of the PSKUS, 15.5% of patients (N=30) have been prescribed the inadequate dose of DOAC according to the guidelines and the drug description, due to possible fear from potential bleeding, but without complete protection against the risk of an acute cerebrovascular event.

CONTRAST INDUCED ACUTE KIDNEY INJURY – THE MODERN FEAR OR A LIE?

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Keywords. Acute kidney injury; Contrast media; CI-AKI

Objectives. Iodinated contrast agents used in computer tomography (CT) can cause contrast-induced - acute kidney injury (CI-AKI). In literature, CI-AKI rates vary from 6 - 35%. We aimed to assess the rate of CI-AKI in the inpatients and its correlation with previous kidney function.

Materials and methods. The retrospective study included patients hospitalized in Pauls Stradins Clinical University Hospital Nephrology department in 2019 and who had undergone computer tomography with intravenous low or iso-osmolar contrast agent (100ml). Kidney dysfunction was diagnosed by measuring serum creatinine (Scr) and calculating glomerular filtration rate (GFR) by CKD-EPI formula. CI-AKI was diagnosed if Scr increased 44mkmol/l after 24-48 hours of investigation according to KDIGO guidelines. Analysis of data was performed using IBM SPSS statistics 26, MS Excel.

Results. From 1340 hospitalized patients the CT with contrast was done to 79(21,3% males, the mean age 59.59 years (95% CI 55.31-63.88)) patients. 11(13,9%) of them had the base GFR <30 mL/min/1.73m² and received intravenous 0,9% NaCl 500ml before CT. Surprisingly after contrast CT mean Sc level decreased by 25,9 (95% CI -78,5-26,7) mkmol/l for patients with GFR less than 30 mL/min/1.73m² and by 1,1(95% CI - 9,3-7,02) mkmol/l with GFR more than 30mL/min/1.73m². The incidence of suspected CI-AKI was 4,4%(N=3, concomitant sepsis, bleeding, acute coronary syndrome) with GFR>30 mL/min/1.73m² and 9,1% (N=1, concomitant bleeding) with GFR<30 mL/min/1.73m². Relationships between base levels of Sc and GFR and AKI incidence were p=0.526 and p=0.751 for GFR<30 mL/min/1.73m² and p=0.066 and 0.078 in GFR>30 mL/min/1.73m².

Conclusions. The total incidence of suspected CI-AKI was 5,1%. There were no statistically proven correlations with patients' age, gender, or base GFR levels. We can't exclude other factors such as bleeding, sepsis, or hypotension as the cause of AKI, and therefore propose that contrast-induced AKI does not really exist nowadays.

PECULIARITIES IN ELECTROCARDIOGRAPHIC FINDINGS IN BASKETBALL, FOOTBALL AND ICE HOCKEY JUNIOR ATHLETES

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Keywords. Electrocardiography; Athletes

Objectives. Every year two out of all children up to age eighteen in Latvia dies from heart problems that can be noticed by regular electrocardiography (ECG). Some of these children had been diagnosed with serious heart conditions but continued to exercise with inappropriate workload.

To determine the findings that can be seen in electrocardiography in different age groups and different sports disciplines.

Materials and methods. A total of 900 junior athletes ECG's before and after exercise were analysed. 100 of each study group – football, basketball and ice-hockey in age groups: U-12, U-14, U-16. Physical activity such as veloergometry or running for two minutes was offered to athletes individually.

Results. Mean heart rate at rest is the highest at U-12 age group but after exercise the highest heart rate is in U-16 group. In all study groups ECG findings that were found: Wandering atrial pacemaker in 3.66% (N=33) cases. Early atrial repolarization was found in 2.55% (N=23) cases. Juvenile T waves were found in 4.88% (N=44) cases. Incomplete right bundle branch block was found in 18.8% (N=170) cases. Prolonged QT interval was found in 0.2% (N=2) cases. 1st degree AV block was found in 0.7% (N=7) cases. WPW syndrome was found in 0.4% (N=4) cases. 2nd degree AV block (Mobitz type 1) was found in 0.2% (N=2) cases. Sinus arrhythmia was found in 32.6% (N=294) cases.

Conclusions. From 900 junior athletes six abnormal ECG findings were found – two ECG's with prolonged QT interval and four ECG's with WPW syndrome. These athletes require more specific cardiac evaluation and it is necessary to determine adequate workload for them. Other findings classifies as normal for athletes, and doesn't need further evaluation but it acquires only for asymptomatic athletes with no family history of inherited cardiac disease or sudden cardiac death. ECG is good diagnostic tool to rule out serious cardiac conditions and it can help to prevent sudden cardiac death among athletes.

PERIPARTUM CARDIOMYOPATHY AS AN IMPACT ON ARRHYTHMIA DEVELOPMENT

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Keywords. Cardiomyopathy; Pregnancy; Arrhythmia; COVID-19

Objectives. Peripartum cardiomyopathy is a life-threatening condition in pregnancy, that occurs in 3rd trimester of pregnancy or 5 months after delivery, presenting with a heart LV pathologies, acute HF, ventricular arrhythmias and/or cardiac arrest. Predisposition is caused by environmental and/or genetic factors. COVID-19 infection related as a new risk factor predisposing or developing illness condition. The aim is to identify PPCM with/without arrhythmia incidence and an increase in a number of cases in Latvia comparing pre-COVID and post-COVID data. Qualify the average quantum of risks factors for a high-risk group of PPCM development. Create a statistical report of PPCM patients in Latvia. Investigate COVID-19 infection impact on PPCM development and increment of PPCM incidence in Latvia.

Materials and methods. Secondary quantitative research using Paul Stradins university hospital medical data archive. Literature research on PPCM using abstracts, reports, journals, PubMed databases. Data analysis via Microsoft® Excel® for Microsoft 365 MSO (version 2201 16.0.14827.20198) 64-bit

Results. From 800 total cases 22 were selected for a study. Mean age was 33 years; 9 patients had an ECHO cardiography (40,9% of cases). Mean LVEF was 44,7% for women with PPCM, mean overall LVEF was 55%. 1 case had average 5-month mortality of 100% with sudden death. Arrhythmia occurred in 9% of cases. Thromboembolic events occurred in 4%. Recovery occurred in 25% of all approved PPCM cases. No significant data of PPCM increasing rates were stated from 17.11.2019; None of analyzed patients had a registered COVID-19 infection. The average quantum of risks factors is 3+ for inclusion in a high-risk group of PPCM development.

Conclusions. From 800 total cases 22 were selected for a study. Mean age was 33 years; 9 patients had an ECHO cardiography (40,9% of cases). Mean LVEF was 44,7% for women with PPCM, mean overall LVEF was 55%. 1 case had average 5-month mortality of 100% with sudden death. Arrhythmia occurred in 9% of cases. Thromboembolic events occurred in 4%. Recovery occurred in 25% of all approved PPCM cases. No significant data of PPCM increasing rates were stated from 17.11.2019; None of analyzed patients had a registered COVID-19 infection. The average quantum of risks factors is 3+ for inclusion in a high-risk group of PPCM development.

POSTOPERATIVE VENOUS THROMBOEMBOLISM – DATA FROM SINGLE UNIVERSITY HOSPITAL

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Keywords. Venous thromboembolism; Deep vein thrombosis; Pulmonary embolism; Surgery; Thromboprophylaxis

Objectives. The incidence of venous thromboembolism (VTE) in Europe ranges from 104 to 183 per 100 000 (Heit JA et al., 2015) which makes it one of the top cardiovascular diseases in the terms of morbidity. Recent surgical intervention is one of the major risk factors for venous thromboembolism. The aim of this study is to investigate clinical presentation and outcomes in postoperative patients with VTE.

Materials and methods. A prospective cohort study enlisting patients with symptomatic VTE from 2014 till 2021 in a single university hospital. This study is focusing on patients with developed VTE in 8 weeks after surgical intervention. The surgeries were categorized as orthopedic, oncologic, abdominal, and other. The thromboembolic event was defined as pulmonary embolism (PE), deep vein thrombosis (DVT), or pulmonary embolism with deep vein thrombosis (PE/DVT).

Results. Of 565 patients enrolled in the study, 65 (11,5%) had recent surgery. The mean time to develop VTE from surgery was 24 days (IQR, 18,5). During the first week, 16,9% of the patients developed VTE, while 75,6% – during the first month postoperatively. Only 29,2% had received thromboprophylaxis after surgery. Mainly thromboprophylaxis was prescribed after orthopedic surgeries, however all in all it was used in only 50% of the patients. Finally, 23,1% of the patients died within 90 days, although 60% of them were with diagnosed cancer.

Conclusions. The highest risk to develop VTE is during the first month postoperatively. Only 29% had received thromboprophylaxis after surgery. At the time of the follow-up, 23,1% (vs 22,2% for unprovoked) of the postoperative patients were dead. It is necessary to reevaluate the importance of thromboprophylaxis after surgeries.

HSP70 SINGLE NUCLEOTIDE POLYMORPHISM AS AN INDICATOR FOR DISEASE SEVERITY

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Keywords. Heat shock proteins; Single nucleotide polymorphism; Acute pancreatitis

Objectives. Acute pancreatitis (AP) is a painful and potentially life-threatening disorder, with no effective therapy and early diagnostic methods available to date. To present Heat Shock Protein 70 (HSP70) single nucleotide polymorphism (SNPs) as a possible method in early detection of acute pancreatitis severity. Introduce the current literature, which indicates SNPs association with the clinical severity of other diseases.

Materials and methods. Literature search was performed using Pubmed, Web of science and Scopus data bases. Inclusion criteria: English language, published in 2016–2021, discussing impact of SNPs and disease severity. 57 patients were diagnosed with AP and 52 were healthy. Peripheral blood samples from pancreatitis patients were collected upon admission. The severity of AP was determined according to the revised Atlanta classification. Genomic DNA was extracted from the blood samples. Two SNPs of the HSP70-gene family were selected. The polymorphism frequencies were determined by performing quantitative polymerase chain reaction (qPCR) and using TaqMan allelic discrimination assays. Additionally, RNA was extracted parallel to genomic DNA from AP patients (N=57) and healthy controls (N=52).

Results. Multiple diseases and their clinical severity will be outlined with association to single nucleotide polymorphism. Major allele frequency for HSPA1A frequency was 0.672 (A>C) for patients and 0.7 (A>C) for controls, while for HSPA1L, the major allele frequencies were 0.638 (A>G) and 0.672 (G>C) for patients and 0.85 (A>G) and 0.65 (G>C) for controls, respectively. Furthermore, after gene expression of HSPA1L and SNP relationship analysis we identified that AP patients with heterozygous genotype had higher expression levels as compared to non-AP patients ($p=0.014$).

Conclusions. SNP's play a role in clinical severity in several diseases. Furthermore, the HSP70 promoter region may also be a risk factor for developing severe acute pancreatitis.

CHARACTERISTIC OF ELECTROCARDIOGRAPHIC STUDIES IN CHILDREN IN THE BACKGROUND OF SMALL ANOMALIES HEART DEVELOPMENT

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Keywords. Electrocardiographic; Small anomalies heart development

Objectives. In the structure of cardiovascular pathology of great importance have functional disorders and conditions associated with minor anomalies development of the heart, which determine not only the external phenotype of patients, but also a predisposition to the occurrence of cardiovascular pathology. Most a frequent pathological phenomenon is arrhythmic syndrome. The development of arrhythmias is based on both structure and function abnormalities. Conduction system of the heart (dysfunction of the sinus node and sinoatrial zone, additional pathways and interfascicular connections), and hemodynamic disturbances that occur during blood regurgitation due to valve prolapse.

The aim is to study the features of the characteristics of an ECG study in children with small anomalies in the development of the heart.

Materials and methods. A study was carried out in 55 children. Of these, 35 children with cardiovascular pathology and 20 without cardiovascular pathology of preschool and school age.

Results. Most often rhythm and conduction disturbances occurred in children aged 8-12 and 12-16 years. Arrhythmias are more common in boys than in girls. When conducting an ECG in children, changes were noted in 71.5% and only 23.2% were registered ECG without pathology. The most common ECG change was impulse formation, which is represented by sinus tachycardia: in patients with small anomalies development of the heart and cardiovascular pathology - 50.9% and in children with minor anomalies heart development without cardiovascular pathology - 27.5%, sinus bradycardia - 18.2% and 7.5% respectively.

Conclusions. Thus, small anomalies of the heart can appear structurally - functional risk factors for the development of cardiac arrhythmias in children.

COVID-19 PANDEMIC INFLUENCE OF HIGH-RISK ATRIAL FIBRILLATION PATIENTS IN LATVIA

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Keywords. COVID-19; Vaccination; Atrial fibrillation

Objectives. Coronavirus disease is an infectious disease caused by the SARS-CoV-2 virus. Vaccination against COVID-19 infection is important in all age groups, especially patients with serious chronic diseases.

Materials and methods. A cross-sectional study was made from May till December 2021 including patients from Pauls Stradiņš Clinical University Hospital, Latvian Centre of Cardiology. Patients with high-risk atrial fibrillation were offered to participate in this research and interview about COVID-19, vaccination status, and habits during the COVID-19 pandemic. Data were analyzed with SPSS statistics.

Results. 54 patients were included, where 55.6% (30)- male, mean age – 67.7 years, CHA₂D₂-VASc score – 3.9. Recovered from COVID-19 infection were 3 patients, who were unvaccinated. Altogether 57.4% have received vaccination in 2021: 14.8% – Pfizer-BioNTech, 16.7% – Moderna, 22.2% – Oxford-Astra Zeneca and 3.7% – Johnson & Johnson's Janssen, 42.6 % – unvaccinated for various reasons (47.3 % – wanted to wait some time, 10.5% – claims to had allergic reactions, 42.1% – other reasons (e.g. do not believe in COVID-19)). Side effects after vaccination: 57.6% of patients – none, 24.2% – pain at the injection site, 18.2 % – had fatigue and fever. 33.3% of all patients agreed that their habits during the COVID-19 pandemic had changed. 48% of patients agree with the statement, that they have missed a doctor appointment due to the pandemic, 28% – agree that during the COVID-19 pandemic, their health and quality of life have worse than before the pandemic.

Conclusions. Vaccination status among high-risk atrial fibrillation patients was 57.4% where the main part of patients experienced non or mild side effects after vaccination. COVID-19 pandemic has negatively affected health and access to healthcare for high-risk atrial fibrillation patients.

ACUTE PULMONARY THROMBOEMBOLISM IN YOUNG ADULTS

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Keywords. Pulmonary embolism; Young adults; Outcomes; Risk factors

Objectives. Sakuma et al. found that pulmonary embolism (PE) accounted for 2.3% of deaths in young adults, but only 20% of PEs had been diagnosed during life. This study aimed to review risk factors, clinical characteristics, laboratory results and outcomes in younger patients with PE.

Materials and methods. A prospective cohort study enrolling consecutive patients aged 18–50 years with PE was conducted in a single clinical university hospital. Unprovoked PE was considered in the absence of surgery, active cancer, hormonal therapy, immobility, pregnancy, prolonged travel.

Results. Of 639 patients, 92 (14.4%) were aged 18–50 years. Of these, 52 (57.0%) were men. Common risk factors were arterial hypertension (30.0 % in women vs 30.8% in men) and smoking (25% vs 37.5%). In men frequent risk factors were chronic heart failure and history of thrombosis (19.2 %) meanwhile in women- hormonal therapy (38.5 %) and immobility >4 days (22.5 %). Most men had unprovoked PE 75.5%, for women it was 24.4% ($p < 0.001$).

Dyspnea (95.0% vs 74.5%; $p = 0.009$) and neurological manifestations (25.0% vs 7.8%; $p = 0.024$) were statistically higher in women. Women had higher platelet count ($289.30 \times 10^9/L \pm 93.17$ vs $225.90 \times 10^9/L \pm 82.59$, $p < 0.001$), lower creatinine levels ($76.73 \text{ mmol/L} \pm 33.20$ vs 120.67 ± 123.40 , $p = 0.028$), higher total cholesterol levels ($4.75 \text{ mmol/L} \pm 1.25$ vs $4.01 \text{ mmol/L} \pm 1.10$, $p = 0.028$), lower high density lipoprotein cholesterol levels ($0.97 \text{ mmol/L} \pm 0.33$ vs $1.18 \text{ mmol/L} \pm 0.39$, $p = 0.044$), but no difference in D-dimer levels ($p = 0.26$).

During anticoagulation, 3 patients had thromboembolic recurrences, 6 patients had bleeding, 1 patient died of PE, but no statistical difference was found.

Conclusions. Men were more likely to have unprovoked PE. Noticeable differences exist between genders, however, possible impact from other laboratory tests might explain the etiological factor. Further studies are needed to assess links between younger patients and PE.

COMPLEX ASSESSMENT OF PATIENTS WITH CHRONIC HEART FAILURE: CORRELATION BETWEEN IMPEDANCE CARDIOGRAPHY, N-TERMINAL PRO-BRAIN NATRIURETIC PEPTIDE, AND 6 MIN WALK DISTANCE

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Keywords. Heart failure; Impedance cardiography; Natriuretic peptide; 6 minute walk distance

Objectives. Echocardiography, N-terminal pro-brain natriuretic peptide (NT-pro-BNP) and 6 min walk distance (6MWD) are among the most important diagnostic studies of chronic heart failure (HF). The first one is inexpensive, but a qualified specialist is required to perform it. The use of NT-pro-BNP is limited by its availability and price. Impedance cardiography (ICG) is a non-invasive, low-preparation needed method.

The aim of this study is to compare and determine the relation of impedance cardiography with NT-pro-BNP, left ventricular ejection fraction (LVEF), and 6MWD in chronic HF patients.

Materials and methods. The retrospective study enrolled 60 patients which were treated at the Department of Cardiology due to chronic HF in 2021. We analysed the following information: 6MWD, NT-pro-BNP, LVEF and ICG derived parameters – thoracic fluid content (TFC), cardiac index (CI), cardiac output (CO), stroke volume (SV), left cardiac work (LCW), systolic time ratio (STR) and systemic vascular resistance (SVR). MS Excel 2013 and IBM SPSS Statistics version 25.0 were used for data analysis. A Spearman's correlation was run to determine the relationship between these parameters. A $p < 0,05$ was considered statistically significant.

Results. The analysis demonstrated a moderately strong correlation between NT-pro-BNP and TFC ($r=0,625$, $p=0,01$), NT-pro-BNP and LCW ($r=-0,432$, $p=0,02$). Other ICG parameters did not significantly correlate with NT-pro-BNP ($p>0,05$). Although the correlation between LVEF and STR was strong ($r=-0,72$, $p=0,0031$), other ICG data revealed no statistically significant correlations ($p>0,05$). Also, significant moderate-strong correlation was found between 6MWD and CO ($r=0,660$, $p=0,001$), 6MWD and SV ($r=0,599$, $p=0,001$), 6MWD and LCW ($r=0,620$, $p=0,02$), other parameters did not significantly correlate ($p>0,05$).

Conclusions. There is a moderately strong correlation between NT-pro-BNP and TFC, NT-pro-BNP and LCW, LVEF and STR, 6MWD and CO, 6MWD and SV, 6MWD and LCW. Other parameters did not significantly correlate with each other.

ANALYSIS OF THE RELATIONSHIP BETWEEN ATRIAL FIBRILLATION, DYSLIPIDEMIA AND STATIN THERAPY

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Keywords. Atrial fibrillation (AF); Dyslipidemia; Statins

Objectives. AF is associated with an increased mortality risk. Dyslipidemia is a major risk factor for adverse cardiovascular events.

The aim was to compare lipid levels – triglycerides (TG), total cholesterol (TC), high-density lipoprotein (HDL), low-density lipoprotein (LDL) – in AF patients with/without dyslipidemia depending on statin therapy.

Materials and methods. This study involved AF patients, where inclusion criteria was existence one of I48.0, I48.1, I48.2 or I48.9 ICD-10 diagnostic codes. The participants were divided into 3 groups according to the persistence of dyslipidemia and statins (Rosuvastatin 20 mg): dyslipidemia with statin therapy (DS), dyslipidemia with no statin therapy (DNS), no dyslipidemia and no statin therapy (NDNS). Kruskal-Wallis test was used to find statistically significant differences.

Results. We analyzed 500 patients. The mean age was 69.2 ± 10.9 SD years, 55.0% (N=275) were men, 74.0% (N=370) had dyslipidemia. 43.1% (N=215) patients were divided in DS with mean age 69.5 ± 9.7 SD, 58.6% (N=126) were men; 30.9% (N=154) in DNS – mean age 67.7 ± 12.4 SD years, 52.6% (N=81) men; and 26.1% (N=130) in NDNS – mean age 70.4 ± 10.8 SD years, 51.5% (N=67) men. TG levels were elevated in only DNS, respectively, 1.5 ± 0.8 SD mmol/L in DS, 1.9 ± 1.3 SD mmol/L in DNS and 1.2 ± 0.3 SD mmol/L in NDNS ($p < 0.001$).

Normal TC levels were observed in all groups, where 3.7 ± 1.0 SD mmol/L was in DS, 4.5 ± 1.1 SD mmol/L in DNS and 4.1 ± 0.9 SD mmol/L in NDNS ($p < 0.001$). In all groups HDL levels were normal: 1.1 ± 0.3 SD mmol/L in DS, 1.0 ± 0.3 SD mmol/L in DNS and 1.3 ± 0.3 SD mmol/L in NDNS ($p < 0.001$). Elevated LDL levels were only in DNS, respectively, 2.2 ± 0.9 SD mmol/L in DS, 3.1 ± 1.2 SD mmol/L in DNS and 2.4 ± 0.8 SD mmol/L in NDNS ($p < 0.001$).

Conclusions. Study data imply that, although elevated TG and LDL levels were in DNS group, the majority of patients with AF diagnosis were from DS group, where TG, TC, HDL and LDL levels were normal.

NEUROLOGY, PSYCHIATRY, PSYCHOTHERAPY, PSYCHOSOMATICS

SELF-REFERRED PATIENTS IN OUTPATIENT PSYCHIATRIC CARE: WHO BENEFITS FROM IT?

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Keywords. Psychiatric outpatient care; Self-referred patients; Adherence

Objectives. In 2019 the Latvian Cabinet of Ministers' "Plan for Improving Access to Mental Health Care for 2019-2020" envisaged support for the development and expansion of psychiatric outpatient services, reducing the inpatient service role in mental health care. Psychiatric consultation nowadays is available for any person in society without special referral. However, there is an overwhelming workload for the outpatient psychiatrists while the adherence of the self-referred patients is low as reported. We aimed to compare the prevalence and the adherence to psychiatrist recommendations between diverse self-referred patients in outpatient care.

Materials and methods. The medical documentation of all consecutive first-time outpatient center "Pardaugava" psychiatrist patients over the period of 01.01.2020. to 30.04.2020. with one year follow-up period was analyzed in this retrospective study. Analyzed data included sociodemographic data, referring institution, diagnosis, treatment and adherence to recommendations.

Results. 236 patients were included in the study, 31.2% of them were men. The median age was 46 (Q1; Q3 29 to 69). Self-referred patients were younger compared to the ones referred by general practitioners (37 vs 77 years, $p=0.027$). Patients with Affective (F3X) and Neurotic (F4X) disorders were self-referred more often compared to Organic mental (FoX) disorder and other spectrum patients (83.3% and 77.5% vs 33.3% and 56.0%, $p<0.001$). Median appointment count was 4 (Q1; Q3 1 to 6), higher in F3X (6) and lower in F4X patients (2). F4X stopped seeing psychiatrist or ignored recommendations more often compared to F3X patients (61.6% vs 43.5%, $p<0.001$) and were adherent with the recommendations less frequently (13.7% vs 48.4%, $p<0.001$). Other spectrum patients followed recommendations in 32.0% of cases and ignored - in 56.6%.

Conclusions. Younger patients were self-referring themselves to psychiatrist more actively. Highest adherence to psychiatrist recommendations was found in patients with affective disorders compared to other spectrum patients, particularly neurotic disorders.

ASSOCIATION BETWEEN DIABETES MELLITUS AND ALZHEIMER'S DISEASE: A CASE-CONTROL STUDY

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Keywords. Alzheimer; Diabetes; Case-control study

Objectives. Alzheimer's disease and type 2 diabetes mellitus are associated with high comorbidity levels, having a prevalence of 1.88% and 9.9%, respectively, among the Portuguese population. Recent studies indicate a relationship between both pathologies. However, this remains an area of controversy. This study aims to analyze the relationship between Alzheimer's disease and Diabetes Mellitus in a Case-Control Study.

Materials and methods. This work is a retrospective case-control study using medical records from the Cova da Beira University Hospital Center from 2018 to 2021. The case group was composed of 173 patients with the diagnosis of Alzheimer's disease following National Institute on Aging-Alzheimer's Association recommendations. The control group (n=173) was matched for age and sex, using patients from the Dermatology Department, without evidence of neurological disorders. The data were analyzed with IBM SPSS Statistics 28.

Results. The mean age of the whole sample was 84.2 ± 6.4 years and 69.9% were female. Diabetics accounted for 35.8% of cases, compared to 21.4% in the control group. Alzheimer's disease was used as the dependent variable in logistic regression. Using the forward conditional method, atrial fibrillation, ischemic cardiomyopathy, stroke, eGFR, and cardiovascular risk factors such as hypertension and low HDL were used as covariates. Diabetes, low HDL and eGFR were included in the final model. The Adjusted Odds-ratio for diabetes was 2.90 (95% confidence interval: 1.55-5.43; $p < .001$), 3.01 for low HDL (95% confidence interval: 1.56-5.81; $p = .001$) and 0.98 for eGFR (95% confidence interval: 0.97-0.99; $p < .001$).

Conclusions. There is an apparent association between Diabetes and the risk of Alzheimer's Disease in the total study population, even after adjusting for potential confounders. Indicating that the odds of having Alzheimer's were 2.90 times greater among diabetics than among non-diabetics.

INTRAVENOUS ANALGESIA FOR HEADACHES IN THE EMERGENCY DEPARTMENT AT THE CHILDREN'S CLINICAL UNIVERSITY HOSPITAL

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Keywords. Intravenous analgesia; Headaches; Vomiting; Nausea

Objectives. Investigate the frequency of prescribing intravenous analgesics for headache treatment at the Children's Clinical University Hospital. Intravenous analgesia is increasingly used around the world for pain control for a variety of indications, one of them is for the treatment of headaches. Headaches are often accompanied by vomiting and nausea, which makes it difficult to take oral medications, but in most cases the patient is able to take oral medications. Intravenous medication has more significant complications than oral medication, such as catheter dislocation, local inflammation, hematoma and extravascular administration.

Materials and methods. The study was conducted during the period from July to December 2021 in the Emergency Department (ED) at the Children's Clinical University Hospital. The study selected 514 ED patients, who had been counseled by a neurologist between 2018 and 2020. Data included in the study - type of headache, pain scale, presence of vomiting, nausea.

Results. In the study 232 were boys and 282 were girls. Minimum age of patients - 2 years, maximum - 17 years, average - 13 years. 7.2%(n=37) of patients have not received medication in the emergency department, 92.8%(n=477) have received it. Of the patients who received medication, 62.9%(n=300) received medication intravenously and 37.1%(n=177) received oral medication. In patients without vomiting or nausea, intravenous medication was administered in 53%(n=187) of cases. In the case of vomiting and nausea, intravenous medication was administered in 71.5%(n=113) of cases. Intravenous analgesia for primary headache was prescribe 57% (n = 156) of patients and oral 33% (n = 89).

Conclusions. Most of the patients with headache received analgesia and intravenous administration route was chosen more often than oral. Significant part of patients without complains about nausea/vomiting did receive intravenous analgesics.

ASSOCIATION BETWEEN ANXIETY AND A YOUNG PERSON'S SENSE OF THE QUALITY OF LIFE AND THEIR ATTITUDE TOWARD THEIR AGING

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Keywords. Anxiety; Quality of life; Aging; Attitude toward aging

Objectives. The prevalence and level of anxiety among young people are increasing, with the COVID-19 pandemic contributing. Young people attach too much value to future events, which creates fear of the future, and it could impact the quality of life. The aim of the study was to determine the association between the level of anxiety and young people's attitudes toward their aging and quality of life.

Materials and methods. A quantitative cross-sectional study in the population of young people (age 18-30) in Latvia was conducted in December 2021 - January 2022. In the study participated 125 participants. Anxiety levels were 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. Data was analyzed using SPSS- Pearson Correlation.

Results. Age was obtained from 125 participants with mean age 23 (± 3), 81,6% (N=102) of the participants were female. There was statistically significant strong negative correlation between state anxiety and both - attitude toward own aging ($r = -0.614$, $p < 0.001$) and negative perception of quality of life ($r = -0.611$, $p < 0.001$). There was statistically significant strong negative correlation between trait anxiety and both - attitude toward own aging ($r = -0.634$, $p < 0.001$) and negative perception of quality of life ($r = -0.646$, $p < 0.001$).

Conclusions. There is a statistically significant correlation between anxiety among young people age 18-30 and their attitude toward own aging and quality of life - participants with higher state and trait anxiety had more negative attitude toward own aging and quality of life.

METHODS EMPLOYED IN THE TREATMENT OF PATIENTS WITH OBSESSIVE-COMPULSIVE DISORDER BY PSYCHOTHERAPISTS AND RESIDENTS IN PSYCHOTHERAPY IN LATVIA

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Keywords. Psychotherapy; Obsessive-compulsive disorder

Objectives. Obsessive-compulsive disorder (F42, ICD-10) is psychiatric disorder that requires both pharmacological and psychological methods of treatment. The National Institute for Health and Care Excellence (NICE) and American Psychiatric Association (APA) guidelines state that the most efficient method of psychotherapy is cognitive behavioral therapy, namely exposure-response prevention technique alongside with psychopharmacologic treatment. The aim of this study was to assess the most commonly applied types of psychotherapy for patients with obsessive-compulsive disorder in Latvia.

Materials and methods. A descriptive cross-sectional study, which consisted of electronical self-report questionnaire, was conducted in October 2021. Study population included psychotherapists and residents in psychotherapy currently practicing in Latvia. 26 respondents voluntarily participated in the study. The survey included questions about the used type and methods of psychotherapy, experience with patients diagnosed with obsessive-compulsive disorder, knowledge of exposure-response prevention technique, patient evaluation scales and prescription of medications. Statistical analysis was performed using IBM SPSS 26.0.

Results. Median age of respondents was 38 (IQR 29-53). 20 (76.9%) of them were females. The median workload was 20 appointments per week (IQR 15-25). 17 (65.4%) respondents had worked with a patient diagnosed with obsessive-compulsive disorder. Of these 15 (88.2%) applied psychodynamic psychotherapy, 10 (58.8%) cognitive-behavioral psychotherapy and 7 (41.2%) supportive psychotherapy. Less than half of all respondents (n=12; 46.2%) knew about exposure-response prevention technique and two psychotherapists had used it in practice. 5 psychotherapists prescribed medications to their patients. 15 (57.7%) respondents, particularly those with less work experience, considered using patient evaluation scales to objectify symptom severity.

Conclusions. The study shows that psychodynamic psychotherapy is the method of choice among specialists in Latvia working with patients with obsessive-compulsive disorder. Cognitive-behavioral therapy is rarely used with exposure-response prevention being an unpopular technique. Medication prescription is used in individual cases. Therefore, the tactics used by psychotherapists in Latvia differ from international guideline recommendations.

PSYCHIATRIC CONDITIONS AFTER SUBARACHNOID HEMMORRHAGE

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Keywords. Depression; Fatigue; PTSD; subarachnoid hemorrhage

Objectives. Posttraumatic stress disorder (PTSD), fatigue and depression have been recently recognized as possible outcomes of subarachnoid hemorrhage (SAH). However, patients who achieve full functional independence are usually seen as fully recovered despite reduced quality of life. We evaluated whether psychiatric conditions are common in SAH patients with good clinical outcome (GOS=5) and whether a more severe clinical course is to be blamed.

Materials and methods. The sample of 23 SAH patients (61% woman; mean age 49 ± 13 years) with good clinical outcome (GOS=5) were prospectively studied approximately 39 (Q1=28; Q3=44) months after SAH. Evaluations included assessments of depression (by Zung self-rating depression scale, ZDS), PTSD (by The Impact of Event Scale – Revised, IES-R) and fatigue (by Multidimensional fatigue inventory, MFI-20). The data on the severity of SAH was obtained from medical files and was defined as World Federation of Neurosurgical Societies (WFNS), Hunt and Hess scale (HHS) and modified Fisher scale (FS) grades at admission.

Results. Depression (ZDS score ≥ 40) and PTSD (IES-R score ≥ 24) symptoms were present in 8 (39%) and 12 (52%) patients respectively. The mean value of the total score on the MFI-20 scale was 64%. Fatigue scores were higher in women than in men (34 vs 18, $p = 0.02$), when mean scores on other scales did not significantly differ between sexes. Mean MFI-20 scores were higher in people with HHS >2 (59 vs 79, $p = 0.03$) but not WFNS and FS >1 . ZDS and IES-R scores were higher in people with HHS >2 but the difference was not statistically relevant. Age had no significant effect on patients' psychological status based on the results of the scales.

Conclusions. PTSD symptoms, depression and fatigue is common after SAH. More severe course of SAH is related to more severe fatigue symptoms later.

PUBLIC KNOWLEDGE AND ATTITUDE TOWARDS EPILEPSY IN GENERAL POPULATION OF LATVIA

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Keywords. Epilepsy, stigma.

Objectives. The burden of epilepsy is often associated with stigmatization and negative attitude. This varies between populations. The aim of this study was to investigate the knowledge of and attitudes towards epilepsy in general population of Latvia.

Materials and methods. In a cross-sectional study participants completed an online questionnaire. Statistical analysis: SPSS 28.0 (Chi-square, Fisher's Exact, Mann Whitney-U test).

Results. Final sample consisted of 560 respondents (mean age 32.6 ± 9.9 , 92.1% female); 65.9% of respondents had higher education level, 51.4% were from Riga; 59.8% knew someone with epilepsy, 55.5% had seen a seizure. The overall knowledge of epilepsy was average, several misconceptions still existed: epilepsy was considered a psychiatric disorder by 22.7%, substantial part of respondents considered unproved factors as cause of epilepsy (physical activity – 41.6%, medications – 29.5%). Only 52.5% thought epilepsy was a treatable disease. Non-pharmaceutical treatment options were less commonly known (keto-diet 21.6%, surgery 25.9%, vagal-nerve stimulation 17.0%). Only 41.6% thought they would know what to do in case of seizure. However, many chose inappropriate actions (26.3% – placing spoon in a person's mouth). Although attitude was good, several negative tendencies were present – 38.9% thought that people with epilepsy shouldn't drive cars, even if they are allowed to, 19.8% would feel nervous around people with epilepsy, 6.6% would avoid them, 15.7% didn't think they were just as capable as others. Older age was statistically significantly associated with negative attitude, higher education level – with better knowledge on the subject, and previous relation with the disease – with both.

Conclusions. The knowledge about epilepsy was average, the attitude was good. However, several myths and misinformation are still present. Education of the general population should be one of high priorities.

NEUROLOGICAL AND FUNCTIONAL IMPROVEMENT AFTER INTRAVENOUS TROMBOLYSIS WITH TENECTEPLASE OR ALTEPLASE FOR ACUTE CEREBRAL INFARCTION

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Keywords. Stroke; Tenecteplase; Alteplase; Thrombolysis

Objectives. Intravenous thrombolysis (IVT) is a systemic reperfusion treatment that improves functional outcome in patients with acute ischemic stroke. Two thrombolytic agents are approved by guidelines: alteplase and tenecteplase. According to the recent evidence, tenecteplase is at least as effective as alteplase. The aim of the study was to investigate the differences in clinical outcome in stroke patients treated with tenecteplase and alteplase.

Materials and methods. The retrospective observational study enrolled all 208 patients hospitalized at Pauls Stradiņš Clinical University Hospital from January 2021 to December 2021, who received IVT without endovascular thrombectomy. For the data analysis patients were divided into tenecteplase group (TT) and alteplase group (AT). Patients were evaluated using NIHSS and mRS scores on admission and discharge. Group comparisons were performed using Mann-Whitney U, Chi-square and Fisher's exact test in IBM SPSS Statistics 23.

Results. 190 patients received alteplase and 18 patients – tenecteplase. Patients in TT group had significantly severe neurological deficit on admission than in AT group (median NIHSS – 15 points (IQR 7.0-19.3) and 7 points (IQR 6.0-14.0) accordingly, $p=0.004$). MRS median on admission was similar between groups. The improvement of NIHSS score on discharge was more extensive in TT group (alteplase 4.0 (IQR 2.0-6.0) vs tenecteplase 6.0 (IQR 4.0-11.0), $p=0.004$). Favorable neurological outcome on discharge (NIHSS of 0 or reduction more than 4 scores) was more common in the tenecteplase group (alteplase $n=91$ (59.1%) vs tenecteplase, $n=13$ (86.7%), $p=0.036$). The proportion of patients with excellent functional outcome on discharge (mRS of 0-1) was higher in TT group (33.3%, $n=6$) than in AT group (22.5%, $n=42$), although without statistical significance, $p=0.38$.

Conclusions. Patients treated with tenecteplase showed more markable neurological improvement by NIHSS on discharge than the alteplase group. However, there was not enough evidence that patients treated with tenecteplase had better excellent functional outcome.

PREVALENCE OF LARGE AND SMALL FIBER NEUROPATHIES AMONG SYSTEMIC SCLEROSIS PATIENTS, AND THEIR IMPACT ON PATIENTS' DISABILITY AND FUNCTIONAL STATUS

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Keywords. Systemic sclerosis; Large/small fiber neuropathy; Disability/functional status.

Objectives. Systemic sclerosis (SSc) affects multiple organ systems, including peripheral nervous system (PNS). However, prevalence of PNS involvement in SSc and the impact of PNS involvement on disability/functional status among SSc patients is not known. The aim of the study was to determine the prevalence of PNS involvement: both large and small fiber neuropathies (LNP and SNP, respectively) among SSc patients, and their impact on patients' disability/functional status.

Materials and methods. The study enrolled 67 patients (81% females, $n=54/67$) with diagnosed SSc, with mean age 61.8 ± 12.5 years and mean disease duration 15.5 ± 10.2 years. Severity of neuropathic symptoms was evaluated by shortened and revised total neuropathy scoring criteria. Nerve conduction studies were used for LNP evaluation and quantitative sensory testing for SNP evaluation. Neuropathic pain was evaluated by DN4 Questionnaire. Health Assessment Questionnaire-Disability Index was used for accessing disability/functional status. Statistical analysis was performed using SPSS software.

Results. In the study group, LNP was diagnosed in 47.8% ($n=32/67$) of subjects, and SNP in 40.3% ($n=27/67$) of subjects, while only 11.9% did not have LNP/SNP ($n=8/67$). There were 24/67 subjects with risk factors for neuropathy (e.g., diabetes, treatment with cyclophosphamide) of whom 21 had LNP or SNP and 3 did not, but there was no significant difference between the groups ($p=0.37$). Further, neuropathies presence was not associated with sex ($p=0.32$), age ($p=0.63$) and disease duration ($p=0.64$). While LNP/SNP presence did not directly significantly affect patients' disability/functional status ($p=0.68$), severity of neuropathy symptoms, and severity of neuropathic pain both significantly correlated with disability/functional status ($r=0.39, p=0.0012$ and $r=0.51, p<0.001$, respectively).

Conclusions. This study uncovered unexpectedly high prevalence of LNP and SNP among SSc patients. Moreover, severity of neuropathic symptoms and neuropathic pain are associated with higher disability and lower functional status. Importantly, common risk factors for neuropathy are not the main LNP/SNP etiological factor among SSc patients.

RELATIONSHIP BETWEEN QUANTITATIVE SENSORY TESTING THERMAL SENSORY THRESHOLDS AND SEMIOLOGICAL CHARACTERISTICS OF SMALL FIBER SENSORY NEUROPATHY

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Keywords. Small fiber sensory neuropathy; QST; Pain DETECT

Objectives. Small fiber sensory neuropathy (SFSN) is defined as a structural abnormality of small fibers characterized pathologically by degeneration of the distal terminations of small fiber nerve endings. There are many potential causes of SFSN, the commonest being diabetes mellitus. The combination of clinical signs and abnormal quantitative sensory testing (QST) and/or intraepidermal nerve fiber density (IENFD) findings can lead to diagnosis of small fiber neuropathy. The clinical presentation is dominated by pain, but may vary from person to person. Research objective is to find out the relationship between QST thermal sensory thresholds and semiological characteristics of SFSN.

Materials and methods. Thirty-five (n=35) participants diagnosed with SFSN participated in quantitative correlation research which took place at Neuroimmunology and immunodeficiency center in Riga, Latvia. Participants were tested using thermal QST (using Medoc Q-Sense device) and self-report nine-item painDETECT questionnaire were used to assess SFSN semiology. Pearson correlation were used to clarify the relationship between QST thermal thresholds and painDETECT questionnaire items. Data were analyzed using IBM SPSS Statistics software.

Results. Median SFSN symptom duration was around 74 (IQR =42) months and mean participants age – around 62 (SD ±16) years. The mean painDETECT total score was around 15,66 (SD± 6,68) points. Only left arm cold detection threshold had positive, weak, but statistically reliable correlation with burning pain ($r = 0,353$, $p = 0,038$).

Conclusions. Quantitative sensory testing alone cannot be the only objectivization method of semiological characteristics of SFSN as the correlation was found only between one QST sensory threshold of one arm and one painDETECT item.

EDUCATIONAL INSTITUTION EMPLOYEE ATTITUDE AND KNOWLEDGE TOWARDS EPILEPSY IN LATVIA

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Keywords. Epilepsy; Education; Myths

Objectives. Epilepsy is one of the most frequent chronic neurological disorders of childhood. Awareness of epilepsy among employees of educational institutions (its aetiology, treatment, response to seizures) is essential to prevent stigma. Identifying the current situation is the aim of this study.

Materials and methods. In this cross-sectional study, a digital self-administered questionnaire was sent to publicly available email addresses of all accredited preschools, basic, secondary, and informal educational institutions in Latvia. Statistical analysis: IBM SPSS 27.0.

Results. Final sample consisted of 684 respondents (94% female) with a mean age of 46.9 ± 11.5 years and good geographical coverage (38% Vidzeme, 20% Riga, 16.5% Kurzeme, 12.6% Zemgale, 12.9% Latgale); 35.6% worked in preschools, 20% middle schools, 16% high schools. 43.6% have had work related contact with epilepsy, out of these 35.2% were present during an epileptic seizure. Overall knowledge about epilepsy was good: most can recognise seizure symptoms – 80.4% unresponsiveness, 76% jerking extremities, 64.9% face twitching, 64% sudden stiffness. However, misconceptions existed: 18.9% thought epilepsy is a psychiatric disorder, 12.7% thought a seizure can be caused by moon phases, 6.3% by vaccines, 6.1% by weather conditions. Most (57%) respondents claimed to know the correct response to a seizure – 84.1% would keep calm, 70% would protect a person's head, 67.4% would clear the area. Some incorrect actions were also popular: 44.9% would put a spoon in the persons' mouth, 15.9% would hold the person down. The upside is that many are willing to learn more (75.7%) and would feel safer (81.9%) if they had additional knowledge on emergency medical situations.

Conclusions. Although overall educators have been informed about epilepsy and some of the respondents know how to act during a seizure, there are several misconceptions that still impact their knowledge. This study confirms the necessity of educational staff training.

DYNAMIC OF INTENTIONAL SELF-HARM CASES IN THE CHILD PSYCHIATRY CLINIC OF CHILDREN'S CLINICAL UNIVERSITY HOSPITAL DURING THE COVID-19 PANDEMIC

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Keywords. Intentional self-harm; Paediatric psychiatry; COVID-19 pandemic

Objectives. Children and youth were severely impacted by the restrictions and negative emotional impact of the COVID-19 pandemic. To understand its impact on mental health of Latvian youth we compared data of admissions into the Child Psychiatry Clinic before and during the COVID-19 pandemic. This abstract explores the dynamic of intentional self-harm (ISH) cases.

Materials and methods. A retrospective cross-section study of 213 patients of the Child Psychiatry Clinic with an ICD-10 ISH diagnosis admitted from 20.07.18 till 01.11.21 was conducted. To understand the impact of the pandemic the data was divided into the pre-pandemic group (n=85) and the pandemic group (n=128), each representing a 300-day period. Statistical analysis was done with SPSS 23.

Results. The absolute number and the relative proportion of patients hospitalized with ISH significantly increased in the pandemic period from 11.5% to 21.4% ($p=0.000$). In both ISH groups of patients there were more females – 85.9% (n=73) in the pre-pandemic group and 87.5% (n=112) in the pandemic group ($p=0.73$). In the pre-pandemic period, the mean age of the patients was 14.58 (SD=1.606) years which insignificantly decreased in the pandemic to 14.27 (SD=2.484) years ($p=0.321$). The rate of emergency hospitalizations decreased from 90.6% (n=77) to 77.3% (n=99) during the pandemic ($p=0.012$). A decrease in the length of hospitalization was observed from 18.94 (SD=15.707) to 16.04 (SD=11.896) days ($p=0.019$). The most common diagnosis was X78, observed in 62.4% (n=53) of cases in the pre-pandemic group and in 64.8% (n=83) of cases in the pandemic group ($p=0.711$).

Conclusions. The number of patients hospitalized with ISH diagnosis has increased during the pandemic with the most common form of self-harm being ISH with a sharp object. The rate of emergency hospitalizations decreased during the pandemic. The demographic data shows a prevalence of females aged around 14 years in both time periods.

HEADACHE ASSOCIATED WITH HEAD AND FACE PROTECTIVE PERSONAL EQUIPMENT AMONG HEALTHCARE WORKERS IN LATVIA

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Keywords. Personal protection equipment (PPE); Headache; Coronavirus.

Objectives. This study analyses PPE induced headache (PPEIH) characteristics, the differences in de novo and predisposed headaches as well the contributing factors for developing PPEIH in Latvian healthcare workers during Coronavirus pandemic.

Materials and methods. This is a cross sectional study based on anonymous self-filled online questionnaire among healthcare workers in Latvian healthcare centres. The acquired data were analysed IBM SPSS Statistics 23.

Results. A total of 489 healthcare workers took part in this study. 55.6% (N=272) of participants reported about previous headaches. 43.4% (N=212) of participants experienced headaches or facial pain while using PPE and 83% (N=176) of participants admitted that PPE induced headache impacts their working efficiency. 60.4% (N=128) participants had previously reported headaches, 39.6% (N=84) developed de novo headaches. Most commonly PPEIH started in 2-3 hours (36.3%, N=77), lasted 1 hour after taking PPE off (39.2%, N=83), occurred 2-3 times per week (32.1%, N=68), localised in temporal (57.1%, N=121) region with the severity of 5 points according to numeric pain rating scale. 45.8% (N=97) of participants used acute headache medication for PPEIH, 88.7% (N=86) reported them as effective. The most commonly used medication group was non-steroidal anti-inflammatory drugs in 35.8% (N=76) cases. There were significant odds of developing PPEIH while using PPE for more than 10 hours daily over the last 30 days (OR = 3.23, 95%, CI [2.04-5.13] p<0,001), while using PPE for more than 10 hours without taking it off (OR = 4.41, 95%, CI [1.61-12.32] p=0,004) and for participants who admitted local discomfort and pressure while using PPE (OR = 21.25, 95%, CI [10.79-41.83] p<0,001).

Conclusions. There was no statistically significant difference between the de novo and predisposed headache characteristics in our study. The time of PPE usage as well as local discomfort and pressure was associated with the development of PPEIH.

MOTHER WEIGHT TALK AND TEASING: HOW MUCH DO THEY MATTER FOR BODY DISSATISFACTION AND UNHEALTHY WEIGHT CONTROL BEHAVIORS IN DAUGHTER?

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Keywords. Mother-daughter interaction; Dieting; Weight-teasing; Weight loss

Objectives. Weight is a sensitive issue, especially for women, mothers find it difficult to discuss weight related topics with their daughters. However, little is known about mother attitude as a factor that increased daughter risk for body dissatisfaction and unhealthy weight control behaviours. The aim of the study is to assess mothers attitudes towards their and their daughter body correlation with daughters body dissatisfaction and unhealthy weight control behaviour.

Materials and methods. A quantitative cross-sectional study in the population of adolescent girls from Latvia high schools was made in September – November 2021. The study population included 676 adolescent girls in 10th–12th grade. Mothers attitudes towards their and their daughter body were assessed: “My mother talks negative about her weight”. Mother weight-teasing: “Have you been teased/made fun by mother because of your weight?”. Daughters body dissatisfaction and unhealthy weight control behaviors: “How dissatisfied have you been with your weight/shape?”, “Have you been deliberately trying to limit the amount of food you eat to influence your weight/shape?”. Data was analyzed using SPSS.

Results. In the study participated 676 adolescent girls, mean age of 17.2(SD+/-1.4) years. 533(78.9%) girls reported negative mothers talk about their weight. 444(65.7%) girls reported that their mother diets to lose weight. 175(25.9%) girls reported weight-teasing by mother. Statistically significant, positive, weak correlations were found between negative mother talks about her own weight and weight-teasing by mother ($r=0.208, p<0.001$). Statistically significant, positive, weak correlations were found between negative mother talks about her own weight and daughters body dissatisfaction ($r=0.176, p<0.001$), unhealthy weight control behaviors ($r=0.148, p<0.001$). Statistically significant, positive, weak correlations were found between weight-teasing by mother and daughters body dissatisfaction ($r=0.329, p<0.001$), unhealthy weight control behaviors ($r=0.203, p<0.001$).

Conclusions. Mothers whoes talk negative about her weight more often weight-teases their daughters and these mothers daughters more often have body dissatisfaction and unhealthy weight control behaviours.

CORRELATION BETWEEN PHYSICAL AND EMOTIONAL SYMPTOMS OF STRESS IN ADULT POPULATION

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Keywords. Stress; Psychosomatics

Objectives. Persons' reaction to stress is a subjective entity that is determined by individual perception of the given situation. Stress affects physiological reactions of the body as well as cognitive function, emotions, and behavior. The aim of this study was to examine the correlation between physical and emotional symptoms of stress in adult population in Latvia. The hypothesis stated that higher physical stress symptom score would correlate with lower emotional stress symptom score.

Materials and methods. This quantitative, cross-sectional study included 272 respondents, aged 19 to 68, who voluntarily filled in anonymous electronical self-report questionnaire. The questionnaire was distributed via internet portal visidati.lv. It consisted of 65 questions of Stress symptom scale and Perceived Stress Scale-4 as well as two questions about experienced stress frequency and intensity. The level of experienced stress symptoms was measured using 5-point Likert scale (1 = "never", 2 = "rarely", 3 = "sometimes", 4 = "frequently", 5 = "very often"). The questionnaire was available in Latvian and in Russian. The data was collected in January 2021. Statistical analysis (Spearman's correlation) was performed using IBM SPSS 26.0.

Results. Median age of respondents was 37 (IQR 29-46). 236 (87%) of them were females. Statistically significant positive correlation was found between physical and emotional symptoms of stress ($R_s=0.75$; $p<0.001$). Analyzing relationship between perceived frequency of stress with the Stress symptom scale results there was a strong statistically significant correlation ($R_s=0.69$; $p<0.001$). Similar correlation was found between perceived intensity of stress and Stress symptom scale results ($R_s=0.63$; $p<0.001$).

Conclusions. Respondents with more pronounced physical stress symptoms also had higher emotional stress symptom scores; therefore, the hypothesis was rejected. The study showed that increased awareness of frequency and intensity of perceived stress resulted in higher reported physical and emotional symptoms of stress

REPERFUSION THERAPY OF VERTEBROBASILAR STROKE: IN FAVOR OF OR AGAINST?

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Keywords. Stroke; Vertebrobasilar; Reperfusion; Therapy; Contraindication

Objectives. To analyze contraindications for reperfusion therapy of subjects hospitalized to the Vilnius University Hospital Santaros Klinikos (VUHKS) 2018-2020 with vertebrobasilar stroke, to determine the percentage of subjects who did not receive reperfusion therapy (RT) due to relative contraindications (RC) according to the hospital protocol.

Materials and methods. The data were analyzed using R Commander and MS Excel programs after receiving approval from the Institutional Review Board.

Results. Data of 500 subjects were analyzed. Median age - 69 ± 18 , National Institutes of Health Stroke Scale (NIHSS) - 4 ± 4 . RT was done to 120 (24%) subjects: thrombolysis - 72 (14,4%), thrombectomy - 37 (7,4%), combined therapy - 11 (2,2%). Median door-to-needle time (DNT) 60 ± 30 min, median door-to-puncture time - 87 ± 86 min. Median onset-to-door time - $12 \pm 24,5$ hours. Of 343 (68,6%) subjects who had absolute contraindications (AC), 288 (68,6%) arrived too late. Paresis, disturbance of speech and face asymmetry increased the chance of timely arrival, odds ratio - 0,43; 95% CI[0,29-0,62]; 0,57; 95% CI[0,39-0,83]; 0,65; 95% CI[0,43-0,99] respectively. 105 (21%) subjects were considered not suitable for RT due to relative contraindications: 62 (59%) had NIHSS <5 , 36 (34%) - age >80 . RT group was characterized by longer hospital stay (8 versus 7 days), higher baseline NIHSS (7 versus 3) compared to AC and RC groups. RG, AC, RC groups differed significantly in terms of these outcomes - delirium (most common in AC group - 5%), intracranial hemorrhage (most common in RG group - 2,6%), infection (most common in RG group - 39,5%), and stroke (most common in RG group - 4,3%) during hospitalization.

Conclusions. The most common AC - late arrival, RC-NIHSS <5 . RT group had the longest hospital stay and highest NIHSS (thrombectomy subgroup).

AMNESTIC MILD COGNITIVE IMPAIRMENT WITHOUT DEMENTIA AFTER COVID-19 INFECTION – CASE REPORT

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Keywords. Mild cognitive impairment; COVID-19 infection

Introduction. Mild cognitive impairment (MCI) is a deterioration of cognitive processes which can involve a decline in one or several cognitive functions. MCI can be caused by many factors, such as an infection of the central nervous system.

Case description. A 49-year-old patient was admitted to the Neurology Department with vertigo and disturbances in allopsychic orientation which occurred directly after a SARS-CoV-2 infection. A neurological and neuropsychological examination revealed fatigue, difficulty in maintaining attention, decreased orientation in time, a decrease of information processing and decrease verbal fluency without dysphasia. The patient also showed signs of memory perseveration and confabulation. An ability to learn new content was impaired without disturbances of autobiographical and semantic memory. The patient scored 24/30 points in the Mini-Mental State Examination (MMSE), 4/5 points in the Clock Drawing Test and 8 points in Verbal Fluency Test. Magnetic resonance imaging (MRI) showed ischemic foci located in left parietal and occipital cortex as well as sparse chronic angiogenic ischemic foci located subcortically. The treatment included haloperidol, quetiapine and cerebrolysin. The patient was hospitalized for 10 days. During this time his cognitive abilities and mental performance were subsequently improving. On the last day of hospitalization, his MMSE score equaled 28 points. The patient was discharged home in good general condition, without traits of focal damage in the central nervous system. The patient was prescribed piracetam, acetylsalicylic acid, quetiapine and ginkgo biloba and recommended to maintain physical and mental activity along.

Summary. This case report demonstrates and confirms that mild cognitive impairment without dementia can be a consequence of the COVID-19 infection.

Conclusions. It is important to report cases of neurological complications after COVID-19 infection in order to expand knowledge about this virus and create proper guidelines for treatment of specific conditions.

COVID-19 LOCKDOWN AS AN ASSOCIATED FACTOR TO SYMPTOMS OF ANXIETY IN RĪGA STRADIŅŠ UNIVERSITY STUDENTS

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Keywords. Anxiety; Covid-19

Objectives. Increase in anxiety during Covid-19 lockdown is related to decreased psychological well-being, productivity and higher risk of mental health disorders including post-traumatic stress disorder, anxiety disorders, depression, and somatization. The aim of this study was to determine anxiety symptom prevalence and severity in Rīga Stradiņš University students and its associated factors.

Materials and methods. A quantitative, cross-sectional study was conducted in December 2021. Study population consisted of Rīga Stradiņš university students. Self-report questionnaire was distributed via social media. It included demographic data and questions about changes in sleep patterns, physical exercises, financial situation and daily routine during lockdown (21.10.2021.–15.11.2021.). The second part of the questionnaire consisted of General Anxiety Disorder-7 Scale and seven questions from anxiety section of Depression Anxiety and Stress Scale-21. Cut-off score for clinical significance in both scales was set at 10 points. Statistical analysis (Kruskal-Wallis, Mann-Whitney U) was performed using IBM SPSS 26.0.

Results. 205 respondents participated in the study, the median age was 21 (IQR 20-23). 178 (86.8%) of them were females. 84 (41%) reported decreased quality of sleep and increase in unhealthy food choices. 129 (62.9%) reported decreased physical activities. 153 (74.6%) respondents experienced changes in daily routine. Communication with friends decreased for 125 (61%) respondents. According to GAD-7 64.4% of respondents had result that suggests moderate to severe symptoms of anxiety, 36.6% had corresponding results on DASS-21. Higher levels of anxiety were associated with decreased quality of sleep ($p<0.001$), unhealthy food consumption ($p<0.001$) and change in daily routine ($p=0.009$). Respondents who maintained communication with friends had less anxiety symptoms ($p=0.001$).

Conclusions. The study shows that 36.6% (DASS-21) to 64.4% (GAD-7) of students presented with clinically significant symptoms of anxiety during Covid-19 lockdown. The most relevant associated factors were sleep quality, dietary changes, decreased communication with friends and change in daily routine.

THE PREVALENCE AND TRIGGERS OF MIGRAINE ATTACKS AMONG LITHUANIAN MEDICAL STUDENTS

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Keywords. Migraine attacks; Migraine prevalence; Headache; Migraine triggers

Objectives. Migraine is a chronic neurological disease characterized by a severe episodic headache accompanied by nausea or vomiting as well as sensitivity to noise and light, with a prevalence of more than 10% of the world's population. The aim of this study was to ascertain the prevalence of migraine and the main triggers leading to its attacks among medical students at Lithuanian University of Health Sciences.

Materials and methods. A survey-based cross-sectional study was performed during the period from October to December of 2020. The study population consisted of the students from the last eight semesters who were studying at the Lithuanian University of Health Sciences. An original self-administered anonymous, previously validated, a questionnaire was used for the survey purposes.

Results. The final sample consisted of 326 students, with a 23.0% response rate. Distribution by gender: 79.4% (n=259) were women and 19.9% (n=65) were men. The majority of respondents - 52.5% (n=171) were students from the 5th-6th semesters. Migraine was experienced by 33.7% (n=110) subjects, but only one-tenth (n=11) had a confirmed diagnosis. A statistically significant relationship was observed between subjects and their family history ($\chi^2=11.071$, $df=1$, $p<0.05$). The most common occurrence of migraine attacks 32.7% (n=36) was from 1 to 2 times in 3 months, with an average attack duration of 4 to 12 hours 60.9% (n=67). Stress, fatigue and tension (33.3%, 32.3% and 31.3% respectively) were most commonly selected as migraine triggers.

Conclusions. We found a significant prevalence of migraine among Lithuanian medical students, however, only a few respondents were clinically diagnosed with this condition. Based on this study, physicians face challenges in diagnosing migraine.

SEASONALITY AND IMPACT OF THE COVID-19 PANDEMIC ON PREVALENCE OF PEDIATRIC HEADACHE IN EMERGENCY DEPARTMENT

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Keywords. Primary and secondary headaches; Covid-19 pandemic; Seasonality

Objectives. Headaches are common reason children may seek help at general practitioner, neurologist or even in Emergency Department (ED). Seasonal differences in the prevalence of headaches in different age groups are also observed. The Covid-19 pandemic has affected the prevalence of headaches as well as patient seeing health care professionals. Study aim was to analyse seasonality and impact of the Covid-19 pandemic on prevalence of pediatric headache.

Materials and methods. Retrospective medical history data analyses using the information system program of the Children's Clinical University Hospital (CCUH) "Andromeda" – neurologist consultations applied for at the ED to patients with headache (01.01.2018–31.12.2020).

Results. A total of 514 patients were included in the research, 54.9% (n=282) were girls and 45.1% (n=232) boys 2–17 years old. The highest number of children who turned to the ED with headaches was in 2019– 48.6% (n=250), 2018– 33.5% (n=172), but significantly fewer patients in 2020, when the Covid-19 pandemic started in Latvia–17.9% (n=92) (p<0.001). In 2020 more frequently were primary headaches– 73.9% (n=68), but in 2019 secondary headaches– 54.4% (n=136). In 2018 almost the same– secondary headaches–49.4% (n=85), primary– 50.6% (n=87). Secondary headaches were most common in summer 32.2% (n=79) and autumn– 29% (n=71), but less common in winter–19.2% (n=47) and spring–19.6% (n=48). Primary headaches were frequently observed in winter–29.2% (n=77) and autumn–27.7% (n=73), but in spring–22.7% (n=70) and summer–20.5% (n=54) fewer. Assessed in the age groups: 0–5 years old children–the most common headaches were secondary 68.6% (n=24), which was most pronounced 54.2% (n=13) in summer, but in the age group 11–18 years, primary headaches were more common– 55.1% (n=205), which was most common in winter–30.9% (n=25) and spring–33.7% (n=27), but least in the summer– 12.3% (n=10).

Conclusions. In 2020, the number of children in the CCUH who had a neurologist consultation was lower than in 2018 and 2019. Secondary headaches were most common in summer and autumn, but primary headaches in winter and autumn.

DEPRESSION, ANXIETY AND STRESS AMONG NURSES AND CARING PERSONNEL DURING THE MEDICAL EMERGENCY SITUATION IN LATVIA

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Keywords. Depression; Anxiety; Stress; Health care personnel

Objectives. With the rise of admitted patients with Covid-19 in hospitals, health care workers (HCW) are exposed to a heavier workload which can result in mental health problems. Aim of the study is to compare the frequency of depression, anxiety and stress of nurses and caring personnel in COVID-19 and other hospital wards during the medical emergency situation in Latvia.

Materials and methods. A quantitative cross-sectional study in the population of nurses and caring personnel working in COVID-19 and other hospital wards in Latvia was conducted in December 2020 - January 2021. Symptoms of depression, anxiety and stress were assessed using Depression, Anxiety and Stress Scale (DASS21). Statistical analysis (Chi-square test, Fisher's exact test) was performed using SPSS.

Results. The data analysis included 88 participants, 14 participants were excluded due to clinically diagnosed depression and/or anxiety over the past 3 years. From 88 HCW 75 (85,3%) were women. 71 (80,7%) respondents were 25 years old or younger. Depression symptoms were observed in 21 (37%), anxiety - 35 (61%) and stress - 28 (49%) HCW who worked in Covid-19 ward. Depression symptoms were observed in 16 (52%), anxiety - 15 (48%), stress - 12 (39%) HCW who worked in other hospital wards. There were no statistically significant associations found between HCW of Covid-19 wards or other wards and symptoms of depression ($p=0.18$), anxiety ($p=0.35$) and stress ($p=0.27$).

Conclusions. Frequency of depression, anxiety, and stress among HCW working in Covid-19 and other wards is not statistically significant. To assess related factors a continued study with a greater number of participants is needed.

CORRELATION BETWEEN MOTHERS WEIGHT – TEASING AND DAUGHTERS BINGE EATING AND BMI

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Keywords. Weight-teasing; Obesity; Mother-daughter interaction; Binge eating

Objectives. There is debate in studies that comments directed to a child, such as weight-teasing by mothers or mothers encouragement to diet, may be more harmful than indirect factors, such as observing a mother dieting. The aim of the study is to assess associations between weight - teasing from mother and daughters weight status and binge eating.

Materials and methods. A quantitative cross-sectional study in the population of adolescent girls from Latvia high schools was made in September – November 2021. The study population included 676 adolescent girls in 10th–12th grade. Mother weight-teasing was assessed: “Have you been teased/made fun by mother because of your weight?”. Daughters binge eating was assessed: Have you had a sense of having lost control over your eating? Daughters weight rating was assessed by body mass index (BMI) - was calculated based on participants self-reported height and weight scores. Data was analyzed using SPSS: Pearsons correlation.

Results. In the study participated 676 adolescent girls, mean age of 17.2(SD+/-1.4) years. The objective measurements of body weight showed that mean BMI was 21.9 (SD = +/- 3.4). 175(25.9%) daughters reported weight-teasing by mother. 480(71%) daughters reported that they having lost control over eating.

Statistically significant, positive, weak correlations were found between daughters who reported being teased by mother because of their weight and higher BMI values ($r=0.230$, $p<0.001$, $n=676$).

Statistically significant, positive, weak correlations were found between daughters who reported being teased by mother because of their weight and that they having lost control over eating ($r=0.165$, $p<0.001$, $n=676$). Statistically significant, positive, weak correlations were found between daughters having lost control over eating and higher BMI values ($r=0.143$, $p<0.001$, $n=676$).

Conclusions. Mothers weight-teasing may contribute binge eating in daughters and higher BMI.

ONCOLOGY, HEMATOLOGY

THE ASSOCIATION OF PRIMARY TUMOR SITE LATERALITY AND RACE ON BREAST CANCER PATIENTS' SURVIVAL IN THE UNITED STATES DURING 1998-2016

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Keywords. Laterality; Race; Ethnicity; Breast cancer survival; Breast cancer mortality

Objectives. The objective of the study was to assess the effect of laterality of primary tumor site on breast cancer patient survival and determine whether any association between race and survival is modified by laterality.

In 2020, breast cancer was the second leading cause of cancer death in women in the US. Despite detection and treatment advancements, a racial disparity exists. Laterality has been implicated to affect breast cancer prognosis.

Materials and methods. This was a retrospective cohort study using secondary data analysis from the SEER Program. Participants were included based on breast cancer diagnosis, age, laterality confirmation and race identification. Exclusion criteria was lack of race classification and bilateral involvement of the breast. The independent variable was race/ethnicity. The dependent variable was five-year cause-specific mortality. Covariates included year; age, grade, and stage at diagnosis; surgical treatment; tumor size; breast subtype; and marital status. Kaplan-Meier curves and log-rank tests were used to compare the patients' cause-specific survival curves across race/ethnicity. Cox regression was used to calculate the unadjusted and adjusted hazard ratios and 95% confidence interval.

Results. The adjusted Cox regression model revealed no association between laterality and 5-year mortality (1.0 HR 95% CI 0.98-1.02). An important finding was the association between race/ethnicity and 5 and 10-year cause-specific mortality. After adjusting for covariates, the 5-year HR among Blacks was 51% higher compared with Whites (95% CI 1.48-1.55), while Asian Pacific Islanders had a 17% lower HR (95% CI 0.80-0.86).

Conclusions. The results of our study concluded that laterality does not modify the association between race and mortality in our study population. An important finding revealed that Black women had the lowest rate of survival while Asian women had the highest. The results are useful for clinicians counseling patients on the statistics involved in their breast cancer diagnosis.

LANDSCAPE OF THYROID CARCINOMA: THE DIAGNOSTIC VALUE AND MANAGEMENT. RETROSPECTIVE STUDY ONE SINGLE- CENTRE 2019–2021 (PART I)

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Keywords. Thyroid cancer; Fine-needle aspiration (FNA)

Objectives. Ultrasound imaging and fine-needle aspiration (FNA) is the mainstay in evaluating thyroid nodules. There is a substantial lack of recent data on thyroid carcinoma. This study aimed to determine the effectiveness of Green Corridor and collect the data on the prevalence of thyroid carcinoma by FNA and after surgical intervention, and compare both data since the malignant result in the FNA is an indication for surgery.

Materials and methods. We provided the single-centre real-world retrospective observational study (2019–2021). We analysed patients sent to physicians along the Green Corridor (code Z03.173) RECUH. After surgical interventions, we collected FNA data, treatment types, thyroid cancer types. The data provided an indication of the number of malignancies cytologically – starting from Bethesda III (atypia of undetermined significance or follicular lesion of uncertain significance) – and histologically, comparison of their efficiencies and an analysis of the efficiency of the green corridor. The statistical analysis was conducted using SPSS.

Results. We manually analysed medical records of 563 patients for 3 years, and thyroid cancer was confirmed in 153 patients (27.2%); women were 123 patients (80.4%). The average age was 53.5 ± 14.3 SD years. 147 patients had surgical intervention (total thyroidectomy or hemithyroidectomy) and confirmed thyroid cancer histologically. Four patients (2.6%) had radiation therapy, two patients (1.3%) had palliative care due to an inoperable condition. FNA results of malignancy coincided with the histological analysis in 114 patients (77%). In 84 (73.7%) patients, FNA results of malignancy types coincided with the histological analysis.

Conclusions. According to the Green Corridor, the distribution of patients has proven its effectiveness, taking into account its percentage as far as the disease is histologically confirmed. The FNA is the gold standard for malignancy diagnosis in thyroid cancer and has proven its high diagnostic value in combination with cost-effectiveness and minimal invasiveness.

MORPHOLOGICAL SPECTRUM OF CENTRAL NERVOUS SYSTEM TUMOURS AMONG PAEDIATRIC PATIENTS IN LATVIA (2016-2020)

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Keywords. CNS; Paediatric brain tumours

Objectives. Brain tumours stand out as the most common paediatric solid tumours and remain a significant contributor to death (Fahmideh,2021). The study is aimed to summarise and compare morphological spectrum of CNS tumours in the Children's Clinical University Hospital, Latvia (2016-2020) with literature data.

Materials and methods. Histological reports were accessed through the laboratory system "Dialab". Additional information - through the clinical system "Andromeda". Only newly diagnosed abnormalities were enlisted, excluding repeated surgical interventions. Data was analysed using descriptive statistics.

Results. In total 109 histological reports were collected, of which 73 CNS tumours were identified with brain tumour predominance (93.58%; n=67). Infratentorial localisation comprised (49.25%; n=33), supratentorial (37.31%; n=25) and parasellar region tumours (13.43%; n=9). Spinal cord tumours comprised (6.42%; n=6). Ventricular system was affected in 32 cases (47.76%). Additional molecular diagnostic was performed in 20 cases (27.40%).

The most common histological group, according to The 2016 WHO Classification, was other astrocytic tumours (35.62%; n=26), of which pilocytic astrocytoma predominated (31.51%; n=23), followed by pleomorphic xanthoastrocytoma (4.11%; n=3). The second group was embryonal tumours (19.18%; n=14) – classic medulloblastoma (15.07%; n=11), of which with leptomeningeal dissemination (45.45%; n=5), CNS embryonal tumour NOS (2.74%; n=2), medulloblastoma with extensive nodularity (1.37%;n=1). Diffuse astrocytic and oligodendroglial tumours (13.70%; n=10) – glioblastoma (6.85%; n=5), diffuse astrocytoma (4.11%; n=3), diffuse midline glioma (2.74%;n=2). Neuronal and mixed neuronal-glial tumours (10.96%; n=8) – ganglioglioma (6.85%; n=5), DNET (2.74%; n=2), central atypical neurocytoma (1.37%; n=1).

Less frequent tumours – schwannoma (4.11%; n=3), adamantinomatous craniopharyngioma (4.11%; n=3), ependymoma (2.74%; n=2), myxopapillary ependymoma, pineoblastoma, choroid plexus carcinoma, atypical choroid plexus papilloma, fibrous meningioma, atypical meningioma (all 1.37%; n=1).

In terms of malignancy WHO Grade I tumours represented (52.05%; n=38), II – (16.44%; n=12), III – (1.37%; n=1), IV – (30.14%; n=22).

Conclusions. The results are compatible with the latest literature data – the most common CNS tumours were glial tumours, followed by embryonal tumours. Infratentorial localisation comprised most of the brain tumour cases.

DYSREGULATION OF EXTRACELLULAR MATRIX GENES EXPRESSION AS PROGNOSTIC MARKER OF PROSTATE CANCER COURSE

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Keywords. Epigenetic regulation; MicroRNA; Cancer course

Objectives. To identify the features of mRNA of SPP1, SPARC and miR-181a, -29b expression in patients with PCa and estimate their potential as prognostic markers cancer course.

Prostate cancer (PCa) is one of the most common hormone-dependent malignancies. High rates of morbidity and mortality of patients with this disease is an important modern problem of oncology. The identification of reliable markers of cancer course is needed. One of the promising among these markers are the components of the extracellular matrix. Extracellular matrix is one of the main components of the tumor microenvironment and is one of the main functional components of tumor tissue. Despite active studies of extracellular matrix proteins in the most common hormone-dependent malignancies, information on the epigenetic mechanisms of regulation of relevant genes is poor and fragmented. One of the most candidate molecules are mRNA of SPP1, SPARC and microRNAs, involved in their regulation.

Materials and methods. The levels of microRNAs and mRNAs in tissue samples from PCa patients were estimated by RT-PCR in real time. The study was conducted on 50 tumor samples from PCa patients.

Results. We found correlation between SPP1 mRNA expression with cancer stage (0.59, $p < 0.05$), mRNA SPP1, SPARC and miR-181a with regional lymph node metastases (0.52, 0.59, 0.59, $p < 0.05$), mRNA SPP1, SPARC with the degree of Gleason differentiation (-0.51, -0.55, $p < 0.05$). Also, mRNA SPP1, SPARC and miR-181a, miR-29b expression in tumor tissue correlated with the level of PSA in the serum of patients (0.53, -0.49, -0.62, -0.56, respectively). These data show the utility of studied molecules as biomarkers of PCa course.

Conclusions. The dependence between the expression of mRNAs and clinical-pathological parameters PCa, as well as miRNAs, involved in their regulation makes them promising prognostic factors and requires additional large-scale study.

PATHOLOGICAL SIGNIFICANCE AND PROGNOSTIC ROLES OF DENSITIES AND DISTRIBUTION OF MAST CELLS IN PROSTATE CANCER

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Keywords. Prostate cancer; Mast cells; Prognostic markers

Objectives. Interaction between tumor cells and tumor microenvironment plays a major role in the growth and progression of solid tumors like prostate cancer (PCa). Some reports suggest that mast cells (MCs) play a promoting role in the occurrence and development of malignant tumors. The aim was to study how MCs density and distribution relate to PCa progression.

Materials and methods. We studied 75 patients with PCa, who were treated in the National Cancer Institute (Kyiv, Ukraine) in 2015-2017. Hematoxylin and eosin staining was used for the morphological studies. Toluidine blue staining was used for the identification and quantification of MCs. Analysis of the distribution of MCs in the tumor and peritumoral areas was made by counting the number of MCs from intratumoral and peritumoral stroma on 1 mm² PCa tissue. Statistical analysis of the results was carried out using the methods of variation statistics using the program GraphPad Prism 8.

Results. The mean mast cell numbers of the intratumoral region were significantly different from those of the peritumoral region ($p < 0.05$). In the general group, the intratumoral mean MCs number was 3.24 ± 0.31 within the tumor and 2.54 ± 0.31 in the peritumoral stroma. We found that PCa patients with a high risk of progression of this disease are characterized by a higher mean intratumoral MCs number compared with similar patients with low-risk progression ($p < 0.05$).

Conclusions. Our results suggest that intratumoral MCs could potentially serve as a prognostic biomarker of PCa.

MONITORING HAEMOPHILIA PATIENTS IN THE ERA OF TELEMEDICINE

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Keywords. Haemophilia; Applications; Adherence

Objectives. Haemophilia is an inherited X-linked disease, which includes 3 forms, that cause modification in blood coagulation. The treatment of this condition takes two approaches: On-demand and prophylactic. Preventing joint bleeding is essential as it leads to abnormal normal musculoskeletal function.

When we talk about telemedicine(=TM) in the monitorization of haemophilic patients videoconferences, e-mails, websites, and mobile applications should be considered.

We proposed to look into the adherence, compliance, and demographical factors of internet-based follow-up.

Materials and methods. We searched PubMed and Google Scholar. The keywords were, „Haemophilia” and „Telemedicine” „Apps” „Applications” „Websites” .We found 40 studies in total, which have been published between 2011 and 2021, from which 35 were eliminated due to the lack of a full text being available, literature reviews, case reports or they were not corresponding with our objectives.

Results. From 5 selected papers the major representing group was of severe haemophilia A and between 62% and 82% of the haemophilia A group received prophylactic treatment. All papers reported over 78% compliance to the use of the app. The adherence to the treatment was over 80%, except for 1 paper which reported 55%. Another important found aspect was the earlier and higher reporting of joint bleeding. Especially in the use of applications patients report the infusion earlier in around 40 to 50 %, than using websites (20%).

Conclusions. Telemedicine shows promising results, it has a high compliance rate for all age groups, after importing online tools even elder patients reported satisfying outcomes. Infusion rates and bleeding are communicated faster giving higher accuracy of patients' wellbeing and treatment adherence. Internet-based tools create an easier background for patients to have an overlook of their disease and the development of new features and easier software apps should be considered, as they offer patients flexibility and autonomy.

BREAST CANCER RATE IN DIFFERENT AGE GROUPS: A SINGLE TERTIARY CENTRE PERSPECTIVE, IN 2020

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Keywords. Breast cancer; Radiology

Objectives. Breast cancer affects a large proportion of women worldwide, and while the incidence of breast cancer grows with age, cancer can affect younger women (pre-screening age group women) as well.

The aim of the study was to assess how many women in different age groups had a breast cancer diagnosis in 2020.

Materials and methods. This is a retrospective study, based on data collected from medical databases at the Oncology Centre of Latvia. Altogether study included 954 women, who had a 'core' biopsy done of suspicion for breast cancer in 2020. Women in the study were divided into 3 different groups: pre-screening (below 50 years of age); screening (50-69 years of age) and post-screening (more than 69 years of age).

Results. 1. The average age of women in the study was 61.

2. In total 954 women had 'core' biopsy done, from these women 700 were diagnosed with breast cancer.

3. Out of 223 women in the pre-screening age group, 54.26% of women were diagnosed with breast cancer.

4. Out of 446 women in the screening age group, 72.2% of women were diagnosed with breast cancer.

5. Out of 285 women in the post-screening age group, 90.18% of women were diagnosed with breast cancer.

Conclusions. Although the risk of having cancer by the age of 50 is relatively low, there is still a significant number of women having breast cancer diagnosis in pre-screening age group. That is why at least physical examining of breasts is important for women in pre-screening age group. For better and earlier detection of breast cancer, it is useful to combine physical examining with a further evaluation with sonography or mammography if necessary.

BARCELONA CLINIC LIVER CANCER STAGING SYSTEM VARIETY FOR PATIENTS RECEIVING TRANSARTERIAL CHEMOEMBOLIZATION AS PRIMARY TREATMENT FOR HEPATOCELLULAR CARCINOMA

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Keywords. BCLC-B; Hepatocellular carcinoma; Transarterial Chemoembolization; Cancer treatment

Objectives. In 1999 the BCLC (Barcelona Clinic Liver Cancer) group first proposed a staging system with a treatment algorithm for hepatocellular carcinoma (HCC) patients that consists of five stages – 0, A, B, C and D. According to BCLC classification, TACE was acknowledged as the recommended treatment option for stage B (BCLC-B). The aim of this study was to determine whether TACE treatment is only used for BCLC-B patients and what is the percentage distribution between the other BCLC stages.

Materials and methods. This retrospective study included 77 patients with HCC that had been treated with TACE in Riga East University Hospital from January 2014 to December 2020. 67 out of the 77 patients that underwent TACE treatment were selected for further analysis on receiving TACE as a primary treatment method. Data analysis was performed using MS Office Excel.

Results. Results showed that TACE was performed not only for BCLC-B patients but also for other stages. TACE mainly for BCLC-A was performed in 2014 (n=8; 72.72%), 2016 (n=8; 44.44%), 2017 (n=4; 44.44%), 2019 (n=3; 60%) and 2020 (n=4; 80%). Only in 2015 TACE was performed mainly for BCLC-B patients – 42.86% (n=6), however, BCLC-A formed 35.71% (n=5), BCLC-C 21.43% (n=3). In 2018 BCLC-B patients formed 40% (n=2), same as BCLC-C. BCLC-D patients received TACE as primary treatment in 2017 (n=1) and 2018 (n=1), due to failing liver function (Child-Pugh C).

Conclusions. The results of our study are consistent with literature data and support the real world findings, where TACE is applied not only for BCLC-B, but also is frequently implied into treatment strategy of patients with other HCC BCLC stages. This can be explained by variable and center-dependent availability of other treatment modalities.

UNCOVERING THE INVISIBLE- AN ANALYSIS OF THE INTERPLAY BETWEEN PARP3 GENE EXPRESSION AND CLINICAL FEATURES OF BREAST CANCER

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Keywords. PARP3; Breast cancer; Gene expression

Objectives. Poly-ADP-ribose polymerase (PARP) 3 is DNA damage sensor that has significant role in DNA repair. BRCA1/2 associated cancers depend on PARP-mediated base excision repair for the further expansion. The aim of this study was to evaluate PARP3 gene expression in peripheral blood lymphocytes from 18 patients diagnosed with breast cancer and finding correlations of PARP3 gene expression with clinical features of the tumor. The following parameters were evaluated: BIRADS scale, Bloom, T-scales M N, G, number of births, breastfeeding, date of first and last menstruation, Ki67.

Materials and methods. The study was performed according to protocol and with the approval of the Local Bioethics Committee. PARP 3 gene expression was tested at the mRNA level by qPCR. Initially, RNA was isolated from peripheral blood lymphocytes from 18 female patients with breast cancer and from 18 healthy patients (control group) using a modified Chomczynski's method, followed by reverse transcription reaction, then real-time PCR reactions using a TaqMan-type probe for the gene under study.

Results. As a result of the conducted studies, it was observed that PARP3 gene expression is significantly different in the study group compared to the control group; the mean relative peripheral lymphocyte expression in the treatment arm (RQ+/- SEM) was 6.18 +/- 3.35; (RQ+/- SEM) and in control group: 1.14 +/- 0.42. There is statistically significant difference (p=0.006) (Mann-Whitney U-test). PARP3 expression results also correlated with tumor grade and other characteristics. The study group showed significant correlations of PARP3 gene expression in peripheral blood lymphocytes: with Ki67 expression in tumor cells (r=0.817 p<0.05), with tumor (r=0.51 p<0.05) and nodes (r=0.492 p<0.05).

Conclusions. We conclude that PARP3 can be a promising biomarker for the diagnosis and treatment of breast cancers.

THE EVALUATION OF SERUM FREE LIGHT CHAIN RATIO: ONE OF THE STRATEGIES TO EVALUATE PROGNOSIS IN MULTIPLE MYELOMA PATIENTS

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Keywords. Serum free-light chains; Multiple myeloma; Prognosis

Objectives. Multiple myeloma (MM) is a monoclonal gammopathy and is characterized by presence of monoclonal serum free light chains (sFLC). As an indicator of monoclonality, sFLC ratio can have an important role in the prognosis of the disease.

The aim of the study is to determine the prognostic value of the reference sFLC ratio in the newly diagnosed multiple myeloma patients.

Materials and methods. Retrospectively acquired patient data from 2010–2015, including sFLC assay;

Data analysis was performed by using IBM SPSS 26.0.

Results. Data from 65 patients were analysed for κ and λ FLC levels to assess the possibility of FLC utility in the prognosis prediction.

The median age at diagnosis was 68.6 years (range, 41–88 years). The median duration of follow-up to is 6.2 years.

In patients with an FLC ratio of <0.05 or >36 ($n=23$ patients) the survival was significantly lower (median = 28 months) compared to patients with FLC ratio within reference range interval (median = 43 months).

When analysing survival of the patients, the similar pattern was observed when analysing both 1-year and 5-year survival of patients based on the κ/λ ratio - survival is markedly reduced in patients with κ/λ ratio <0.05 or >36 (1-year survival 69.4%, 5-year survival 23.2%).

Better survival rates are observed in patients with sFLC ratio 0.05–36 (1 year survival 82.1%, 5-year survival 30.1%). κ/λ ratio 0.26–1.65 has the finest survival rates of 89.7% and 47.3%, respectively.

Conclusions. κ/λ ratio correlates with survival of the patients – it was significantly inferior in patients with sFLC ratio <0.05 and >36 , better survival is observed in patient group with κ/λ ratio 0.05–36 and improved survival in patients with κ/λ ratio within the reference range.

FLC ratio of <0.05 or >36 is concluded to be an adverse prognostic factor for multiple myeloma patients.

THE IMPACT OF COVID-19 PANDEMIC ON THE DIAGNOSTIC PROCEDURE RATE OF BREAST CANCER: A SINGLE TERTIARY CENTER PERSPECTIVE

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Keywords. Covid-19; Radiology; Breast cancer

Objectives. Covid-19 pandemic has disrupted breast cancer diagnosis control through screening program and follow-up diagnostic procedures around the world. Nationwide data shows that the response rate to screening invitation was 42.1% in 2018 and 39.1 in 2019, and the saw a sharp drop to 29.9% in 2020.

The aim of the study was to assess the impact of Covid-19 pandemic and state of emergency in healthcare on breast cancer diagnoses throughout 2020, at a single tertiary healthcare center.

Materials and methods. Data of 954 women who had undergone core biopsy for suspicion of breast cancer between January 2020 and December 2020 were collected. Parameters including core biopsy procedure rate and positive results for breast cancer were compared in the period of the first and second lockdown, to the period before lockdown, and in between lockdowns.

Results. The results showed a decline in breast cancer diagnostic rate during lockdown periods compared to the period before lockdown and in between first and second lockdown. After the first lockdown, there was a 22% drop in diagnostic procedure rate, also at this time, the breast cancer screening program was stopped. After the second lockdown breast cancer screening program was running, but still, there was a 17% decline. Of all 954 women, there were 700 breast cancer diagnoses. In the period before Covid19-pandemic and between first and second lockdown there were 62,5 (SD 10,55) breast cancer cases per month on average, compared to lockdown periods, where on average there were 52 (SD 4.17) cases per month.

Conclusions. Although the Covid-19 pandemic in 2020 did not affect Latvia as much, there was still a decline in breast cancer diagnostic procedure rate. As the Covid-19 pandemic will be a challenge for some time, new strategies in patient care are needed to optimise breast cancer diagnostic procedures during the pandemic.

PUBLIC HEALTH, OCCUPATIONAL MEDICINE, NUTRITIONAL SCIENCE, REHABILITOLOGY

PALLIATIVE CARE IN LATVIA: BASIC KNOWLEDGE AND SKILLS OF PRIMARY CARE SPECIALISTS

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Keywords. Knowledge of palliative care; Primary care; General practitioner (GP)

Objectives. Palliative care is a holistic approach that improves the quality of life of patients and their families who are facing problems (whether physical, psychosocial, or spiritual) associated with life-threatening illness. Ensuring a good quality of life for palliative patients often depends on the GP's knowledge of palliative care and its system, because they have continuous relationships with patients and their families over time. Therefore, the aim was to determine general knowledge of Latvian GPs about palliative care and its system and to what extent this knowledge is applied in practice.

Materials and methods. GPs practicing in Latvia (N=159) at the time of writing (September 1, 2021 to November 30, 2021) in different regions of the country voluntarily completed an online survey of 20 questions. Data were analyzed using MS Excel.

Results. 96,2% of GPs have at least one palliative patient per year and the majority (69,8%) have 4 or more. When asked to rate their own skills and knowledge in palliative care, 47,1% rated them either as good or very good and 40,9% as average. Regarding knowledge, 35,2% of participants could correctly identify the definition and aim of palliative care and 23,9% could correctly name the count of steps in WHO pain ladder. More than 89% of GPs could name state-funded palliative care services on an outpatient basis. Regarding skills, GPs were offered to choose from 13 different activities, and each activity was done on average by 70% of all participants.

Conclusions. GPs are actively involved in care and management of their palliative patients by doing a large variety of activities and have good knowledge of the palliative care system. Even though their theoretical knowledge is lacking in some of the aspects, they are quite confident of their knowledge and skills.

INCREASED SEDENTARY BEHAVIOUR AS A RISK FACTOR FOR IMPAIRED SLEEP QUALITY AND AGGRAVATION OF PHYSICAL SYMPTOMS DURING COVID-19 LOCKDOWN

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Keywords. COVID-19; Sedentary behaviour; Sleep quality; Students

Objectives. Due to COVID-19 restrictions all classes were transitioned online, resulting in more than a 1,5 year-long home confinement. Such changes could disturb both mental and physical health. The aim of this study was to assess the association between sedentary behaviour, sleep quality and exacerbation of physical symptoms among Latvian healthcare students both before and during lockdown.

Materials and methods. A retrospective pre-post study among the population of healthcare students from Riga Stradiņš University and University of Latvia was conducted using online questionnaire in March- April 2021. Data was analysed using SPSS- Spearman's rank correlation test; Kruskal Wallis test, Mann Whitney U test.

Results. 208 healthcare students completed the survey. Mean age of respondents was 22.6 years (SD=2.8) and most of them were females 65.4% (n=136). Our results show increase in daily sitting time: students spent 8.2 hours sitting (SD=3.4) during lockdown, instead of 5.6 hours (SD= 0.6) before pandemic. There is also an increase in sleep latency to 24.5 minutes (SD= 29.7) when compared to pre-pandemic 13.5 minutes (SD=12.9). A positive correlation was found between increased sitting time and difficulties falling asleep in 30 minutes time (Spearman's test, $r_s = 0.29$, $p < .001$), sleep disturbances (Spearman's test, $r_s = 0.18$, $p = 0.01$), as well as nightmares and excessive phone use (Spearman's test, $r_s = 0.19$, $p = 0.006$). Increased sitting time also contributed to the aggravation of physical symptoms. We found a statistically significant difference between exacerbation of back pain (Mann-Whitney test, $U = 4078.0$, $p = .011$); headaches (Mann-Whitney test, $U = 3711.0$, $p < .001$); depression symptoms (Mann-Whitney test, $U = 3796.5$, $p = .009$); stomach-aches (Mann-Whitney test, $U = 2821.0$, $p = .025$); insomnia (Mann-Whitney test, $U = 3741.5$, $p = 0.018$) and increased daily sitting time.

Conclusions. Results of our study imply that increased sitting time during lockdown has negative effects on students' sleep quality, including sleep latency, insomnias and nightmares, as well as on physical wellbeing.

WEIGHT GAIN IN MEDICAL STUDENTS DURING COVID-19 LOCKDOWN

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Keywords. COVID-19; Lockdown; Weight change; Medical students

Objectives. Coronavirus disease 2019 (COVID-19) was declared a pandemic by the WHO on 11.03.2020. COVID-19 related preventive measures restrict the opportunities to be physically active, therefore many people gain weight. Our aim was to study self-reported weight change in Latvian medical students during lockdown and its association with sex, age, initial BMI, affiliation, alcohol and nicotine use.

Materials and methods. A retrospective pre-post survey on medicine students from Riga Stradiņš University and University of Latvia with two cut-off points– 01-15.01.2020 and 26.03-30.04.2021– was conducted with online questionnaire.

Results. Altogether 208 of invited medical students completed the survey. Participants' mean age was 22.6 years (SD=2.6), 63.3% (n= 107) were females. We found that in general weight increased by 1.6 kg (SD=3.8) during lockdown (Wilcoxon test, $p<0.001$). Interestingly, weight increase was more prominent in males 2.7 kg (SD=3.1), compared to females 1.0 kg (SD=3.9), (Mann-Whitney test, $U=4184.500$, $z=2.917$, $p=0.004$). Also, due to lockdown restrictions, weight gain was less prominent in RSU students 0.9 kg (SD=3.7), compared to LU students 2.6 kg (SD=3.7), (Mann-Whitney test, $U=4484.500$, $z=3.355$, $p<0.001$). Apart from that, we asked participants about alcohol and nicotine use in rating scale, where minimum – 0 was no alcohol consumption and maximum – 10 was a lot of alcohol and nicotine use. We found out that weight gain correlated with alcohol consumption (Spearman's test, $r_s=0.157$, $p=0.041$). However, we found no correlation between weight change, nicotine use and age. According to the initial BMI, normal weight participants gained more weight than underweight and overweight respondents (Kruskal-Wallis test, $\chi^2=8.395$, $p=0.015$).

Conclusions. The majority of Latvian medical students gained weight, whereas in males and LU students weight change was the biggest. In addition, LU students' weight gain was not gender or age associated. Moreover, those students, who drank alcohol, gained more weight.

FACTORS INFLUENCING THE DECISION TO VACCINATE A CHILD

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Keywords. COVID-19 vaccination; Vaccination hesitancy; Parents' attitudes; Perceptions

Objectives. Vaccinating children against COVID-19 is an effective way to mitigate disease burden, to reduce the speed of new viral strain development, and to allow children school and other activities attendance. The aim was to assess Estonian parents' attitudes towards COVID immunization and to determine factors associated with parents' intentions to vaccinate their child.

Materials and methods. Web-based electronic questionnaire was fulfilled online by parents whose child was younger than 18y in autumn 2021. Descriptive statistics, t-, and χ^2 -tests were used. $P < 0.05$ was considered statistically significant. In order to measure parents' attitudes Likert-scale (5 degrees), and to identify risk factors associated with decision to vaccinate the child, univariate logistic regression analyses were used.

Results. Altogether 207 parents ($\varphi = 95.2\%$; $36.37 \pm 7.3y$) were enrolled. Among them were pro-vaccinators (52%), uncertain (8%), and anti-vaxxers (40%). The parents' own vaccination status influenced the willingness to vaccinate the child: pro-vaccinators, uncertain, and anti-vaxxers OR=204.4; 95%CI 27.4-1526.7; OR=4.2; 95%CI 1.4-12.4; OR=88.2; 95%CI 20.6-377.3, respectively. Older parents and previous healthcare education had a bigger chance to belong to pro-vaccine group (OR=1.1/2.2; 95%CI 1.05-1.15/1.1-4.4) and lower chance in anti-vaccine group (OR=0.91/0.3; 95%CI 0.87-0.95/0.2-0.7). Parents having higher vs secondary education and who have more children were more likely pro-vaccine (OR=2.1/1.5; 95%CI 1.1-4.5/1.1-2.1). Parents on the basis of the Likert scale, who agree or rather agree: mostly worry about potential risk of side effects in the future (63.8%); vaccines have been little studied (58.7%); believe that vaccination is not necessary due to low presence in children (57.3%). 14.2% do not believe in COVID and 21.6% vaccinate children to set an example.

Conclusions. The study showed a strong association between parents' intention to vaccinate themselves and willingness to vaccinate their child. It highlights the need to promote vaccine uptake among parents, given that they are responsible for making decisions for their children.

PROPORTION OF SEDENTARY BEHAVIOUR AND PHYSICAL ACTIVITY AMONG OFFICE EMPLOYEES DURING THE COVID-19 PANDEMIC: THE IMPACT OF REMOTE WORK

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Keywords. Sedentary behavior, physical activity, employees, Covid-19

Objectives. The aim of this study was to investigate the effect of remote work during the pandemic on proportion of sedentary behaviour and physical activity among office employees.

Materials and methods. The study was based on an anonymous cross-sectional online survey included 20 questions. 119 office workers 38.7% (n=46) men and 61.3% (n=73) women) voluntarily recalled their health and physical activity related information before and during Covid-19 pandemic. The data acquired were analysed by Microsoft Excel and SPSS programs.

Results. Sedentary job in office was for 37.8% of respondents (n=45), 49.6% (n=59) worked remotely, but 12.6% (n=15) split workplace. 73.9% (n=88) of respondents were physically active before the Covid-19 pandemic, but 49.6% of respondents (n=59) remained physically active during the pandemic. 62.2% of respondents (n=74) have changed their behaviour during pandemic and started to move less, 27.7% (n=33) have not changed, but 10.1% (n=12) were moving more than previously. Analysing physical activity level by a scale from 1 to 10, where 1 indicates complete inactivity, the level of physical activity before the pandemic was much higher (mainly 6 to 8 points): 6 points for 17.6% of respondents (n=21), 7 – 25.2% (n=30), and 8 – 22.7% (n=27). During the pandemic, most of respondents indicated physical activity level only between 3 and 5 points: 3 – 16.8% (n=20), 4 – 20.2% (n=24), 5 – 14.3% (n=17). 38.7% of respondents (n=46) developed health problems, 61.3% (n=73) noted weight gain during the pandemic. Respondents, who had a sedentary job in the office, walked on average 6311 steps per day during the pandemic, but those, who worked remotely, walked 4959 steps per day (p=0.019).

Conclusions. The study has shown that Covid-19 pandemic had significant detrimental impact on self-reported physical activity level, increase of sedentary behaviour, and health changes in office employees. There were found statistically significant differences between behaviour among office employees working on site and those who worked remotely.

PREVALENCE AND PREDICTORS OF DEPRESSION AMONG PREGNANT WOMEN AND WOMEN IN THE POSTNATAL PERIOD DURING COVID-19 PANDEMIC

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Keywords. Pregnancy; Depression

Objectives. Research shows that in highly developed countries depression affects as much as 7% of pregnant women, whereas postpartum depression affects between 5.2% and 74.0% of women after birth. The aim of the study was to investigate the prevalence of depression among pregnant women and women in the postpartum period during COVID-19 pandemic and to determine its predictors.

Materials and methods. 500 respondents took part in the study: 250 pregnant women (between 12th and 42th week of pregnancy) and 250 women in the postpartum period (up to 6 weeks after birth). The research tool was a questionnaire which contained Edinburgh Postnatal Depression Scale, Courtauld Emotional Control Scale, Satisfaction With Life Scale, Revised Life Orientation Test, Mini-COPE and author's questions which concerned sociodemographic characteristics of an investigated group.

Results. The highest percentage (72%) of the investigated pregnant women had a low risk of depression. 14% were classified as having medium risk of depression and 14% were assessed as having a high risk of this disease. 5.2% of patients from this group admitted having thoughts of self-harm. Among women after birth 58% of participants were classified as having a low risk of postpartum depression. 15.2% of women from this group had a medium risk of depression, whereas high risk of this disease was detected among 26.8% of them. 6.8% of postpartum women experienced thoughts of self-harm. A statistically significant relationship was found between high risk of both depression during pregnancy and postpartum depression and: low subjectively-rated ability to control anger, anxiety and depression in difficult situations; low satisfaction from life; pessimistic attitude towards life and using coping strategies such as: denial, venting, behavioral disengagement and self-blame.

Conclusions. Depression during pregnancy and postpartum depression are common. Factors which increase the risk of its occurrence are negative emotional states (pessimism, low life satisfaction) and disadvantageous coping strategies.

ATTITUDE TOWARDS THE COVID-19 VACCINE AMONG THE POPULATION OF LATVIA

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Keywords. COVID-19; Vaccination; Latvian population

Objectives. COVID-19 is continuing to spread around the world, with more than 320 million confirmed cases across the world and 300 thousand cases in Latvia. Vaccination is the only way to end the pandemic, but not all people accept the process of vaccination. This study aimed to identify these groups of the Latvian population who are negatively opposed to COVID-19 vaccination.

Materials and methods. An anonymous questionnaire during December 2021 was used to collect data. Overall, 268 participants were interviewed. Program IBM SPSS with Chi-square and Fisher's exact test was used for statistical analysis.

Results. The median age of the participants was 29 years (IQR: 24-36), 81% (n=217) were female. 18.3% (n=49) persons of the study population weren't vaccinated and had a perception of no need for COVID-19 vaccination; 8.2% (n=22) trusted all COVID-19 vaccines and 24.3% (n=65) didn't trust any vaccine. There is no statistically significant association between the perception of no need for COVID-19 vaccination and the religious affiliation ($p>0.05$), the presence of chronic diseases ($p=0.877$), the gender (18.4% of female and 17.6% of male had a perception of no need for COVID-19 vaccination; *Chi-square* test, $\chi^2(1, N=268)=2.427$, $p=0.285$). A statistically significant association was found between the perception of no need for COVID-19 vaccination and age (28.1% aged 31 to 45 years and 11.3% aged 18 to 30 years; $p<0.001$); education ($p=0.002$); employment status (38.9% unemployed and 9.1% employed who are also studying; $p<0.001$); field of work (66.7% work in agriculture and 11.6% work in health care; $p<0.05$); place of residence (23.7% live in Latgale and 6.5% in Vidzeme; $p<0.001$); marital status (24.1% married and 9.7% unmarried; $p<0.001$).

Conclusions. Latvian citizens' attitude to the COVID-19 vaccine is associated with age, education, employment status, the field of work, place of residence, and marital status.

THE EFFECT OF ACTIVE SITTING ON THE TEMPERATURE OF THE HAND DURING PROLONGED WORK WITH A COMPUTER MOUSE

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Keywords. Ergonomics; Computer mouse; Skin temperature; Thermography; Active sitting

Objectives. The aim of this study was to determine the temperature changes of the wrist skin for volunteers who have been working on a computer while sitting on a standard chair and a gymnastic ball for prolonged time. Prolonged seated work is associated with the decline of microcirculation in extremities. Active sitting may improve static and dynamic aspects of working posture and prevent wrist hypothermia.

Materials and methods. Four volunteers participated in this study. Participants were asked to work on a computer for 3 hours. The test was repeated two times on different days changing the seat type: a standard chair or a gymnastic ball. Skin surface temperature of the right wrist was measured every 15 minutes during three hours by high resolution medical digital infrared camera (ICI ETI 7320 Pro) in controlled environmental conditions. Volunteers' movements were measured by 3-Axis Logging Accelerometer Axivity AX6. Data statistical analysis was done by IBM SPSS Statistics program.

Results. After 3 hours of the trial wrist skin temperature declined in all participants regardless of seat type. A very strong negative correlation was found sitting on the gymnastic ball ($r_s = -0.866$, $p < 0.001$). A moderate negative correlation was found sitting on the standard chair ($r_s = -0.543$, $p < 0.001$). Temperature lowered more prominently using gymnastic ball in two male participants. In two female participants, temperature was higher sitting on the gymnastic ball than on the standard chair. Surprisingly, volunteers' movements mean value was slightly higher while sitting on the standard chair ($p > 0.05$).

Conclusions. Active sitting on gymnastic ball did not improve hand microcirculation. Motion tracking has shown no significant difference in movement intensity comparing volunteers while sitting on the gymnastic ball or standard chair. Other ergonomic designs or work organisation solutions should be tested in future studies.

KNOWLEDGE OF NON-DENTAL HEALTH SPECIALISTS REGARDING TRAUMATIC DENTAL INJURY MANAGEMENT IN LATVIA

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Keywords. Tooth injuries; Emergency care; Non-dental professionals; Tooth avulsion

Objectives. Traumatic dental injuries (TDI) are frequent results of general trauma and can be present to non-dental health specialists (NDHS). Timing and adequate dental trauma management play a vital role in tooth prognosis. In this study we aimed to evaluate the comprehension among NDHS towards TDI management.

Materials and methods. A cross-sectional anonymous online questionnaire was conducted which consisted of two parts: First contained questions on personal information and occupation, second part on a scenarios of dental trauma to evaluate NDHS knowledge regarding trauma management. In total, 223 NDHS were examined. 90 of them were nurses (N), 67 doctors (D) and 66 medical assistants (MS). Exclusion criteria was set as acquired education in dentistry. Descriptive and analytical statistics were performed by SPSS statistics, level of significance was set at $p < 0.05$.

Results. 58% of all NDHS have been a witness of a TDI. 78% of all NDHS suggest that they do not feel certain about their knowledge regarding TDI management. 72% of all NDHS responded that they have not acquired knowledge of how to deal with TDI. In Second part of questionnaire, 34.5% of all NDHS answered that with the biggest possibility, the injured front tooth of an eight year old child is primary tooth. Three most common answers regarding avulsed tooth management included: putting the avulsed tooth in 0.9% NaCl solution (26.1%) which was most common answer among doctors ($p=0.014$), stopping the bleeding, without any management regarding tooth (24.3%) which was most common among nurses ($p=0.003$) and putting tooth in milk (18.8%) from all NDHS ($p=0.599$).

Conclusions. Our results demonstrate that dental injuries are common and overall NDHS lack of knowledge towards TDI management. Awareness and education of NDHS towards dental injury management should be performed.

MOTIVATIONS AND ATTITUDE OF GENERAL PRACTITIONERS IN LATVIA TOWARDS PRIMARY CARE RESEARCH

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Keywords. General Practitioners (GPs); Willingness

Objectives. The importance of evidence based general practice as foundation of primary care in pandemic circumstances is stressed worldwide. To promote this approach, GP participation in studies is vital. Therefore, it's important to identify reasons GPs choose not to take part in studies. The main focus of this study is to identify the factors influencing GPs willingness to participate in studies.

Materials and methods. An observational, cross-sectional study was done using a self-made questionnaire. Questionnaires were sent out to GPs on August 18th, 2021, and repeatedly to non-responders on September 8th, 2021, October 8th, 2021. The National Departments of Health GPs register was used to collect email addresses of Latvian GPs. All the GPs with valid email addresses were included in the study.

Results. In total 934 emails were sent out. 6% (N=56) GPs answered, 92%(N=52) of them were willing to participate in research and 7.1% (N=4) refused. The study group included 42 women, 10 men, mean age 42. Likert scale was used (1 strongly disagree, 10 strongly agree, the average answer is included). Main reasons for GPs to participate in studies - financial aid (5.8), interest in the results (8.6), to help out co-worker (7.5), to gain new knowledge (8.8). Main reasons not to take part in studies – no financial aid (5.6), lack of time (8.7), sees no point in research studies (2.7), not wanting to include their patients (2.6), participation in research can effect their work (4.0). Interesting answers to – why they would absolutely not take part in a study – patient or GP fund use, violation of ethical regulations, long, difficult paperwork.

Conclusions. The low responder count shows how low the interest in studies is among GPs in Latvia and some key factors are observed – lack of time, no financial aid.

COMPARISON BETWEEN MEDICAL STUDENT VIEWPOINT TOWARD BENZODIAZEPINES WITH GENERAL PRACTITIONERS EXPERIENCES

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Keywords. Benzodiazepine; Family medicine

Objectives. The objective of this study was to analyze student viewpoints on benzodiazepines (BDZ) and compare it with general practitioners (GP's) experience. The aim was to review the information about excessive BDZ use to reduce the risks of the addiction.

Materials and methods. An online survey was conducted. Data was collected from 51 GPs and 51 medical students and analyzed using Microsoft Excel and SPSS 26.0 program.

Results. The study included 51 GPs, most of whom have been practicing more than 20 years (64,7%) and 51 mainly 6-year medical students (68,6%). Mean age of the BDZ users in GPs practice was 60-70 years old (41,2%), meanwhile the student assumed that the mean age is 30-40 years old (39,2%), ($p < 0,001$). The students assumed that the mean duration of the BDZ therapy is >4 weeks (37,3%), but the GPs noticed that most of the patients use BZD on an "as needed" basis (68,6%). Distribution of the therapy duration in the GPs experience differs significantly from the students assumption ($p = 0,001$). First-line anxiety treatment in the GPs experience was antidepressants therapy (31,1%). However, the students were more likely to recommend psychotherapy and non-pharmacological treatment (e.g. sport, meditation, sleep hygiene) compared with the GPs ($p = 0,003$, $p = 0,035$). The GPs are more likely to agree that BDZ are excessively used ($p = 0,018$). The students are more likely to disagree with the statement that non-pharmacological treatment of anxiety, insomnia and panic disorder are more expensive and time-consuming, that is why BDZ prescription is the better option ($p = 0,002$, $p = 0,004$).

Conclusions. The students consider that BDZ users are younger and the duration of the therapy is longer compared with the real live experience of the GPs. Students prefer non-pharmacological treatment more than GPs. Students tend to disagree that the price and the duration of the therapy is a valid reason to prescribe BDZ.

IODINE INTAKE IN PREGNANT WOMEN IN LATVIA

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Keywords. Iodine; Pregnancy; Deficiency; Diet; Food supplements

Objectives. Recommended daily dose of iodine during pregnancy by WHO and Ministry of Health of Latvia is 250 mcg, but there is no sufficient data on the implementation of these recommendations. Mild iodine deficiency may impair neuropsychological and motor development in children, preventing them from reaching their full intellectual potential. Still far, there is no salt iodization programme in Latvia. The aim of the study was to assess the iodine intake among pregnant women in Latvia.

Materials and methods. The study has been implemented within the frame of the project Lzp Nr. lzp-2019/1-0335 funded by Latvian Council of Science. A cross-sectional survey of 422 women with singleton birth until 7th day post-partum. Data was obtained by face-to-face interviews including food frequency questionnaire and medical documentation from July 2020 until October 2021. Data was analysed using IBM SPSS 27.0.

Results. Additional iodine supplements were taken by 25 (5.9%) of women. Multivitamins were more popular and taken by 198 (46.9%) of women. Women who did not take daily supplements consumed 120.8 (IQR 98.4 to 161.0) mcg of iodine per day, compared with 257.7 (IQR 212.6 to 312.7) mcg in the supplements group ($p < 0.001$). Insufficient iodine intake had 285 (67.5%) of women when analysing their total daily iodine intake – by food and supplements. There were no differences between the groups of pregnant and post-partum women.

Conclusions. Our study shows that there is insufficient iodine consumption among 2/3 of pregnant women in Latvia. It is recommended to increase in diet sources of iodine, such as fish, seafood and dairy products, and dietary iodine supplements use according to national recommendations.

THE EFFECT OF SELF-REPORTED PHYSICAL ACTIVITY LEVEL IN PREGNANCY ON VITAMIN D STATUS AMONG HEALTHY PREGNANT LATVIAN WOMEN

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Keywords. Physical activity; Pregnancy; Vitamin D status

Objectives. Vitamin D insufficiency is globally widespread in pregnant women. Recent studies identify the positive effect of physical activity on vitamin D status in pregnancy. The Center for Disease Prevention and Control data indicate that the majority of adults in Latvia insufficiently engage in physical activities. This study aimed to examine the physical activity level among pregnant women in Latvia and evaluate their vitamin D status.

Materials and methods. Materials and methods. The study has been implemented within the frame of the project LZP Nr. lzp-2019/1-0335 funded by the Latvian Council of Science. It is a cross-sectional study of women until the 7th day post-partum and pregnant women. Data was collected using questionnaires to obtain information on nutrition, lifestyle, and physical activity in pregnancy during interviews in outpatient clinics and hospitals in various regions of Latvia. Blood samples for measuring serum vitamin D 25(OH) levels were taken. Data were analysed using IBM SPSS.

Results. A total of 275 women with an average age of 31.4 (SD: 5.4) years, with BMI 24.0 (SD: 6.6) kg/m², participated in the summer-autumn season of 2020-21 years. Only 9.9% of the respondents (n=27) reached the recommended level of daily physical activity during pregnancy. Almost half of the respondents (n=135) do not engage in physical activities at a moderate or greater intensity or do it only a few times a year. The mean blood vitamin D level was 30.0 ng/mL (IQR: 22.9 to 39.5 ng/mL). The correlation between physical activity level and vitamin D status was found ($r=0.21$, $p<0.005$).

Conclusions. This ongoing study data indicate that overall physical activity among respondents is low. Analysis revealed that a higher D vitamin level is associated with elevated physical activity, which needs further examination with a higher number of participants.

THE PARENTS ROLE IN CHILDREN'S SEXUAL AND REPRODUCTIVE HEALTH EDUCATION

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Keywords. Sexual health; Reproductive health; Sexual education; Parenting

Objectives. In Latvia health education in schools is not mandatory. The purpose of this study was to evaluate the role of parents in educating children about sexual and reproductive health.

Materials and methods. Parents (N=177) whose children were aged 3-17 completed the online survey of a various questions on parent - children's relationships and views on sexual education topics, including questions for parents about their sexual and reproductive education as children. Data were analysed by Chi-Square Tests and Descriptive Statistics.

Results. Most respondents (96.7%) admitted that parents should be the one that educate children about sexual and reproductive health. There were no significant associations between parents age and education to which methods they use to educate their children about sex and reproduction. Educating methods parents most often used were - personal experience (82%), medical literature (35.4%), popular science literature (27.5%). Data show that younger parents as children gained their prime knowledge about sexual health from their parents ($p=0.021$). Although only 27% of parents as children gained their prime education about sexual and reproductive health by their parents. Most respondents' parents (66.7%) were not involved in their children education about sex and reproduction.

Conclusions. The majority of parents as children were not educated about sexual and reproduction health by their parents. Nevertheless, respondents confirmed that the main role of educating children in this field should be parents themselves.

SOCIO-ECONOMIC CONDITIONS, LIFESTYLE, OCCUPATIONAL BEHAVIOR OF THE SANITATION WORKER IN THE SELECTED AREA OF OLD DHAKA CITY, BANGLADESH

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Keywords. Sanitation workers; Socio-economic condition; Lifestyle; Common health problems; Occupational behavior

Objectives. Sanitation workers play an important role in maintaining health-hygiene in the communities. The overall picture of the Socioeconomic conditions, lifestyle, occupational Behavior of the sanitation worker is not satisfactory. The aim of this study is to find out socio-economic conditions, lifestyle, common health problems, occupational behavior of the sanitary workers.

Materials and methods. This was a cross sectional type of descriptive study .149 respondents were selected and data was collected from them by Face to face interview. The sampling technique was Convenient type of non-probability sampling. Structural questionnaire was used as research instrument. Graphical presentation (pie chart), tables were applied and analyzed by SPSS 20 programme.

Results. Among the total respondents 145 (97.3%) were sweeper and 4 were scavenges. 67 (45%) were literate. 124 lived in Semi Paccya house. 15 (10.07%) had sore throat, 21 (14.09%) had cough, 9 (6%) had breathlessness and 16 (10.74%) had chest tightness. 7 (20%) had lacrimation, 15 (42.9%) had redness of eye, 13 (37.1%) had itching problem in eye. 7 (4.10%) had abdominal pain and 2(1.03%) had diarrhea. 92 (61.74%) had musculoskeletal pain. 43 (46.7%) had leg pain, 37 (40.2%) had back pain. 31 (20.81%) had knowledge about personal protection equipment, 12 (37.50%) used mask, 8 (25%) used hand gloves. 7 (4.70%) had a regular health checkup. 51 (46.36%) had a habit of taking betel nut, 31 (28.18%) took cigarette, 27 (24.55%) took gul and 1 (0.91%) took tobacco.

Conclusions. The occupational health hazards, the knowledge and attitude about the health conditions and occupation, socio-economic condition, lifestyle of the sanitation workers are not satisfactory.

OUTCOMES OF HOME ISOLATED COVID-19 PATIENTS AND RISK FACTORS ASSOCIATED WITH THE ADVERSE OUTCOMES: LONGITUDINAL RETROSPECTIVE STUDY IN SHIMOGA, KARNATAKA

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Keywords. COVID 19; Risk factor; Home isolation; Hospitalization rate

Objectives. COVID-19 is a current global pandemic caused by the newly discovered novel SARS-COV-2. According to studies in comparison to those who have recovered, patients who have died thus far were older, more likely to be male, and to have a comorbidity such as hypertension, diabetes, cardiovascular disease, or lung disease thus necessitating the assessment of risk variables in various demographic groups or contexts. Data of confirmed COVID cases with definitive outcomes were retrieved retrospectively from MCGann hospital's triage. Aims were to estimate the proportion of different outcomes such as recovery, hospitalization, and mortality among home isolated covid-19 patients, to estimate the proportion and to determine various risk factors associated with COVID-19 adverse outcome.

Materials and methods. The study was carried out in Shimoga Institute of Medical Sciences, Shivamogga, Karnataka. Study Design: Longitudinal Retrospective study. Study Period: April 20th-June 20th, 2021. Sampling: All the patients who report in MCGann triage during April 20th-June 20th, 2021. The basic information and phone numbers of all the patients will be collected from the triage. Study Population: Home isolated COVID-19 patients. Sample Size: 168. Method: Data was collected by telephonic Interview.

Results. A total of 168 people participated in this study, with 93 men (55.3%) and 75 women (44.7%). More than 90% of patients in the Home Isolated Covid 19 patients recovered, 10.75% required hospitalisation, and 3% died. One third of the patients (37%) had one or more comorbidities.

Conclusions. Our systematic overview of the results to determine the relationship between COVID-19 infection, and outcomes such as hospitalisation, death, and recovery shows that older age, male gender and comorbidities have higher hospitalisation rates. Comorbidities and older age were associated with a higher risk of death in hospitalised patients. Even though recovery rate is very high, a significant (10.75%) home isolated patients need hospital admission in the disease course. So, the proper monitoring of home isolated patients can save the lives of many COVID-19 patients.

THE ASSOCIATION BETWEEN SOCIAL DETERMINANTS OF HEALTH AND SELF-REPORTED DIABETIC RETINOPATHY: AN EXPLORATORY ANALYSIS

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Keywords. Diabetes; Diabetic retinopathy; Social determinants of health; Built environment; Economic stability; Education; Community; Race; Ethnicity; Health care

Objectives. One-third of Americans with diabetes will develop diabetic retinopathy (DR), the leading cause of blindness in working-age Americans. Social determinants of health (SDOH) are conditions in a person's environment, not including health care, that may impact health. The objective of this study was to determine whether there is an association between various SDOH and DR in patients with type II diabetes.

Materials and methods. This cross-sectional study used data from the 2018 Behavioral Risk Factor Surveillance System (BRFSS). This study included people with self-reported diabetes in the US in 2018. Participants with missing or incomplete responses relevant to the study's variables were excluded. The exposure variables included homeownership (rent vs own), marital status, income, health care coverage, completed level of education, and urban vs rural environment. The outcome variable was self-reported DR. Unadjusted and adjusted logistic regression analysis were applied to calculate odds ratios (OR) and confidence intervals (CIs).

Results. A total of 14,810 participants with DR were included in the final analysis. Alaskan Native/Native American (OR 2.11; 95% CI: 1.14–3.90), out of work (OR 2.82; 95% CI: 1.62–4.92), unable to work (OR 2.14; 95% CI: 1.57–2.91), did not graduate high school (OR 1.91; 95% CI: 1.30–2.79), only graduated high school (OR 1.43; 95% CI 1.08–1.97), or only attended college or technical school without graduating (OR 1.42; 95% CI: 1.09–1.86) were statistically significantly associated with DR in patients with diabetes.

Conclusions. By identifying specific SDOH with each patient and incorporating this holistic approach as a standard of care, patients diagnosed with Type II Diabetes could benefit from early detection and surveillance of DR. Future studies should be conducted to obtain a better understanding of why certain SDOH are associated with DR.

ATTITUDE, AWARENESS AND PRACTICE OF BREAST SELF-EXAMINATION IN POLISH WOMEN DURING COVID-19 PANDEMIC

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Keywords. Attitude; Awareness; Breast cancer; Breast self-examination; COVID-19

Objectives. Breast cancer is one of the most common cancer in women throughout the world. The Oncology Report in the Time of COVID-19 in Poland showed high declines in preventive tests in the field of cancer in Poland, what might cause leading to delays in the detection of early neoplastic lesions. The basic and important element of breast cancer prevention is Breast Self-Awareness (BSA). Properly conducted, it detects neoplastic changes at an early stage of the disease development. Most breast cancers are detected by women when they self-examine.

The aim of this study was to present Breast Self-Awareness among Polish women during COVID-19 pandemic.

Materials and methods. The study was conducted, during the fourth wave of the pandemic, using the original questionnaire. The questions were related to women's attitudes towards self-examination breast.

Results. 289 women participated in the survey. The range of women's age was 18 to 78. This study dominated women from small towns, secondary education (24.5%), 34.2% have children and 20% have benign changes in their breasts. 33.9% of women start (BSA) at the age of 19-25, 66.8% know that BSA should be performed after menstruation, only 11.1% do it regularly, 46.3% do not know if they are doing it correctly. 3/4 of the respondents would like to learn BSA.

Conclusions. Although BSA is promoted in Poland, this study found that most women do not know how to perform it. However they have a positive attitude to BSA and willing would like to learn it.

CHANGES IN THE PREVALENCE OF COLON CANCER IN LITHUANIA

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Keywords. Colon cancer; Urban and rural population; Sex differences

Objectives. To assess changes in the prevalence of colon cancer in Lithuania during 2001-2020.

Materials and methods. Data on the prevalence of colon cancer (ICD-10 code C18) in Lithuania during 2001-2020 were obtained from the Institute of Hygiene. Information about colorectal cancer screening program were obtained from National Health Insurance Fund website. Changes in trends during 2001-2020 were assessed using Jointpoint regression program.

Results. In 2020, the prevalence of colon cancer in Lithuania was 204/100,000 population. The overall prevalence of colon cancer increased 3.85-fold over 20 years. For the whole 2001-2020 period the prevalence was similar between sexes. A significant increase in the prevalence of colon cancer was observed during 2001-2015 in both sexes ($p < 0.001$). For men, the highest increase was observed during 2011-2015 (17.1%/year, $p < 0.001$), while in women it was during 2012-2015 (18.69%/year, $p < 0.001$). Between 2015 and 2020, a stagnation of growth was observed in both sexes, with an annual increase of 0.02% in men and 0.4% in women ($p > 0.05$). In 2020, comparing the prevalence of colon cancer between urban and rural populations, the prevalence remained significantly higher in urban populations (227/100,000 and 151/100,000, respectively). However, the prevalence in the rural population has continued to increase in recent years (1.81%/year, $p = 0.041$), while in the urban population has stopped increasing. Regarding the colorectal cancer screening program, it is important to note that the highest increase in the number of participants was during 2011-2014 (from 7.65% to 26.53%), after which the growth rate decreased.

Conclusions. The prevalence of colon cancer in Lithuania has increased significantly over 20 years. However, in recent years there has been a stagnation of growth among the urban population. Colorectal cancer screening program and the prevalence of colon cancer shows similar growth and decline trends.

SHIFT WORK AS A RISK FACTOR FOR METABOLIC SYNDROME

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Keywords. Shift work; Metabolic syndrome

Objectives. Due to the high workload and shift work of medical staff, development of metabolic syndrome is more likely than in other industries. Therefore, in my work I would like to survey respondents about their lifestyle, health checks, eating habits, as well as harmful habits that go along with shift work.

Materials and methods. Collected data was analysed by using IMB SPSS statistics. In this study 220 respondents (87.7% women and 12.3% men) who work shift work participated in this questionnaire.

Results. In this study participated 46.8% of EM physicians assistants (associates), 29.1% of physicians assistants, 6.8% of resident doctors and 6.4% of certified doctors. 69.5% answered that they mostly work 24 h shifts and in one week it's more that 48 hours, 73.2% of them work directly in the Emergency medical service, 10.9% works in hospital and 8.2% works both. 85.5% of respondents answered that they don't have high blood pressure, 14.5% answered that they have high blood pressure (>130/85 mmHg); 55.0% answered that they don't have excess fat around the waist (>88cm for woman, >102 cm for men) and 45.0% that they have excess fat around waist; 77.7% answered that they have normal glucose level and 5.5% have elevated glucose level, 16.8% haven't done such blood test; 47.7% answered that they don't have elevated LDL cholesterol and 16.6% have elevated LDL cholesterol; 49.5% answered that they don't have elevated HDL cholesterol and 13.2% have elevated HDL cholesterol, and 37.3% haven't done such blood test.

Conclusions. Looking at the specialities, shift work and their blood test answers the shift work are not metabolic syndrome risk factor. Despite the fact that 12.7% of respondents answered that they have diagnosed dyslipidemia and 87.3% don't, that is no reason to say that they have metabolic syndrome.

PERIPHERAL VENOUS CATHETER INSERTION TRAINING: A RANDOMIZED CONTROLLED TRIAL COMPARING PERFORMANCE AFTER ONLINE INSTRUCTOR-LED TEACHING VERSUS FACE-TO-FACE INSTRUCTOR-LED TEACHING

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Keywords. Remote education; COVID-19; Peripheral venous catheterization

Objectives. COVID-19 pandemic has globally impacted on the education field: the process of acquiring both theoretical and practical skills has changed. Therefore, distance learning has become the most demanded mode in the education sphere, with medical studies not being an exception. The aim of the study is to compare distance practical learning via Zoom with onsite by training an intravenous catheterisation. Evaluate the results by examination for both groups using combined classification scale and a form of 10 standard questions as a valuational feedback from student side. Fulfill and optimize distance learning; promote a dual type of learning environment.

Materials and methods. Prospective randomized controlled trial; united examination via ZOOM with individual times. Unique identification number for personal data protection and objective assessment of manipulation performance. Post-exam anonymous participants survey. Research instruments: peripheral venous catheterisation kit; international combined assessment scale; post-exam survey

Results. Examination went 38 participants (19 from Zoom group, 19 from face to face). Results shows mean points summary is 9,54 out of 13. Minimal amount of points/no points participants gained at sterile gauze layout under catheter and stillte outputing (47% for both groups). Average manipulation time 5min 36s. First time successful attempt was 4min 25s for face to face group (With maximum amount of points -13); Successful attempt for the first time Zoom group was 3 min 52s (noting that none of ZOOM participants gained maximum points . The best results in ZOOM groups were 12,5).

Conclusions. Research results promote knowledge and development of distance practical skills learning at the same level as face-to-face training, ensuring high-quality training for medical students in in state of prohibited on-site training as a COVID-19 era, including attention on existing limitations and future effort of its elimination from educational platform. Depicting significant drawback of distance education. Update of dual training in medical thesals.

ANXIETY IN PRIMARY CARE PATIENTS COMPARED TO THE GENERAL POPULATION AND ITS ASSOCIATION WITH SOCIO-DEMOGRAPHIC FACTORS, HEALTH AND VACCINATION STATUS

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Keywords. Anxiety; Primary care; Covid; Vaccination

Objectives. In March 2020, the World Health Organization declared a Covid-19 pandemic with lockdowns, which can cause higher anxiety levels in the population. The research found that general practitioners are the primary ones facing an increased number of patients (Lee et al., 2020). This study analyses the association between anxiety and sociodemographic factors, health, and vaccination status in primary care patients and compares it to the control group.

Materials and methods. This quantitative cross-sectional study was conducted from November 2021 to January 2022, using anonymous questionnaires, including sociodemographic questions about gender, age, education, occupation, Covid-19 vaccination status, and General Anxiety Disorder - 7 (GAD-7) scale, where 5 is cut-off score for mild and 9 for moderate anxiety. Three groups were formed – two research groups consisted of 104 patients who visited their general practitioners in Latvia and regions (52 from Gulbene (Group G), 52 from Riga (Group R)) and one control group of 106 Latvian citizens who did not see their general practitioner last month. Statistical analysis (Kruskal-Wallis Test) was done using SPSS version 27. A P-value of <0.05 was considered significant.

Results. Altogether 210 patients responded (115 females and 95 males). The data represent statistically significant results between average GAD-7 scale points comparing research groups to control group ($p < 0.01$), where the highest mean score was obtained in Group R (10.17 ± 0.51), followed by Group G (9.15 ± 0.52) and control group (5.6 ± 0.32). There were no statistically significant differences between GAD-7 scores and Covid-19 vaccination status, gender, education level and occupation ($p > 0.05$).

Conclusions. The study results show that higher GAD-7 scale points were found in patients visiting general practitioners compared to the control group. The study should be investigated further to explore other factors which cause higher anxiety points, in general practices in Gulbene and Riga.

ACCEPTANCE TO COVID-19 VACCINATION AMONG LEBANESE ADULTS

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Keywords. Covid-19; Vaccine; Acceptance; Lebanon; Pandemic

Objectives. Therefore, the aim of this study was assessing COVID-19 vaccination acceptance and its determinants among Lebanese adults.

COVID-19 was declared a public health emergency of international concern. COVID-19 was first detected in Lebanon on February 21, 2020. However, vaccination rates remain low among Lebanese adults population.

Materials and methods. Data on COVID-19 epidemiology trends of cases of infection and deaths in Lebanon were obtained on the open platform Google Public Data. A cross-sectional online study was used to explore determinants of COVID-19 vaccine acceptance by using a survey tool with closed-ended questions between December 2021- January 2022 among Lebanese adults.

Results. Lebanon ranks 18th among all Asian countries in terms of prevalence (n=808,612) and mortality (9,353). Analysis of trends in daily new cases and mortalities of COVID-19 in Lebanon revealed 5 peaks death rates: the 1st on November 2020, the 2nd on January 2021, the 3rd on March 2021, 4th on August 2021 and the 5th on January 2022.

Among the 76 participants, 15,8% were willing to receive and 67,1% have already received a COVID-19 vaccine, 5,3% refused, and the remainder were unsure of their response. In total, 59,2% of the participants agree on the need for vaccination against COVID-19. The main reasons why adults are still not vaccinated are fear for life, distrust of the vaccine's effectiveness and safety. In addition, 43,2% of responders trust the effectiveness of vaccines while 18,4% consider vaccines to be very effective and safe. 43,2% of vaccinated responders noted that they were able to choose the type of vaccine by their own but 14,5% encountered problems during vaccination.

Conclusions. Our study showed that an insufficient level of vaccination against COVID-19 is associated with high vaccine hesitancy and distrust of the efficacy and safety that remains a notable hurdle for implementing vaccination among Lebanese adults.

KNOWLEDGE, ATTITUDE AND HEALTH PROBLEMS OF DYE WORKERS IN THE SELECTED AREA OF OLD DHAKA CITY, BANGLADESH

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Keywords. Attitude; Fye worker; Occupational health; Personal protective equipment; Health education

Objectives. Knowledge, attitude and health problem among the dye workers in Bangladesh is an unrecognized problem under occupational health.

The main objectives were to determine the common health problems, their socio-economic condition, knowledge and use of personal protective equipment.

Materials and methods. A cross sectional type of descriptive study was conducted among 40 respondents of the male dye workers. A Convenient type of non-probability sampling was done. Structural questionnaire was used as research instrument. Graphical presentation (pie chart), tables were applied and analyzed by SPSS 20 programme.

Results. Among the 40 male respondents, 16(40%) earn (9000-11000) taka monthly. 22(55%) had primary education. 37(92.5%) had the idea about harmful effect of dye. 26(72.2%) had itching, rash & redness in the skin. 4 (11.1%) had skin pigmentation, 4(11.1%) had thickening of skin of the palm and 2 (5.6%) had skin desquamation. 20(52.63%) had the problem of cough & breathlessness, 7(18.4%) had cough with sneezing & 11(28.9%) had bronchial asthma. 10(40%) had hair fall problem. 15(50%) had itching & redness in eye, 2(6.7%) had vision problem. 5(16.7%) had swelling of eyelid, 8(26.7%) had itching & redness with lacrimation. 40(100%) had the idea about using personal protective equipment. 9(22.5%) had used personal protective equipment.

Conclusions. Reluctance about health awareness, low income and lack of health education are the main causes of different health problems among the dye workers.

ORTHODONTIC PATIENTS TREATED WITH BRACES AND ALIGNERS: COMPARISON OF CHANGES IN THEIR DIETARY, ORAL HIGIENE AND SPORTS HABITS

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Keywords. Orthodontics; Braces; Aligners; Habits

Objectives. Patients' choice before treatment – braces or aligners – and anxiety during treatment depend on how it will be/is affecting their normal life habits. The advice from doctor will be practical if it is based on real patient experiences. The aim of this work was to compare changes in diet, oral hygiene and sports habits of orthodontic patients treated either with braces or aligners and identify the specific factors that are mostly related with those changes.

Materials and methods. 2 electronic questionnaires of multiple choice and Likert scale questions were posted on Lithuanian online forums for orthodontic patients. Questions about changes in quality of life, (non)refusal of specific foods, pain, physical discomfort, psychological experiences, influence of social media and doctors, fear of detachment of parts of braces/aligners system were included. Statistical analysis was performed using SPSS v28 package. Pearson Chi-Square tests and T-tests were used. Results with $p < 0.05$ were considered statistically reliable.

Results. 80 responses from each group were collected. 67.5% and 75% women, 32.5% and 25.0% men answered in brackets and aligners groups respectively. Mean age of respondents was 26.61 and 31.96 years in each group respectively. 56.4% of bracket group patients reported negative changes in their nutrition, 78.2% of aligner group patients reported oppositely. 100% of bracket and 98.8% of aligner group patients reported positive oral hygiene changes. 61.3% of braces group patients reported a deterioration of quality of life during treatment, while 72.5% of patients treated with aligners reported the opposite. 97.5% of bracket and 95% of aligner group patients reported there were any changes in their sports habits.

Conclusions. Braces, compared to aligners, adversely affect patients' nutrition and quality of life. Patients improve their oral hygiene habits after starting treatment with braces or aligners. Sports habits are not affected by any of the treatment method.

OPHTHALMOLOGY

AGE – RELATED MACULAR DEGENERATION ASSOCIATION WITH SIRT1 RS3740051 GENE POLYMORPHISM

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Keywords. Macular degeneration; SIRT1 rs3740051 gene; Age- related; Gene; Genotype

Objectives. The aim of this work was to determine the relation between age-related macular degeneration and SIRT1 rs3740051 gene polymorphism.

Materials and methods. The study enrolled 283 patients with early AMD, 215 patients with exudative AMD and n=826 controls. Samples of DNA from peripheral blood leukocytes were purified by salting-out and commercial kit. The genotyping test was carried out using the method of RT-PCR. The results were assessed using the statistical analysis method of “IBM SPSS Statistics 17.0”.

Results. Binomial logistic regression analysis revealed that the A/G genotype (G/G not found) under the codominant model was associated with 3.5-fold increased risk of exudative AMD (<65 years group), respectively (OR=3.455, 95proc. CI=1.019-11.711; p=0.047). Genotype A/G under the overdominant model was associated with 3.5-fold increased risk of exudative AMD in the same group (OR=3.500, 95proc. CI=1.032-11.865, p=0.044). Analysis in the woman group (<65 years) revealed that the A/G genotype (G/G not found) under the codominant model was associated with 6.8-fold increased risk of exudative AMD (OR=6.818, 95proc. CI=1.765-26.337, p=0.005), genotypes A/G and G/G under the dominant model were associated with 6.3-fold increased risk (OR=6.250, 95 CI=1.622-24.077, p=0.008), genotype A/G was associated with 6.9-fold increased risk (OR=6.891, 95 CI=1.784-26.617, p=0.005) and each copy of rs3740051 allele G was associated with a 3.8-fold increased risk of exudative AMD (p=0.017).

Conclusions. The SIRT rs3740051 polymorphism may be associated with exudative AMD.

RADIOLOGICAL ASPECTS OF PROPTOSIS IN THE EMERGENCY DEPARTMENT

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Keywords. Ophthalmology; Proptosis; Eye trauma; CT

Objectives. Proptosis refers to forward displacement of the globe. The most common cause of proptosis is traumatic conditions. Orbital trauma is one of the pathologies that require urgent radiological studies and computer tomography (CT) is the first choice in evaluating orbital trauma. Depending on the imaging findings, patient may require surgical treatment. If treatment isn't optimal, it can drastically alter life quality.

To illustrate the variety of traumatic oculo-orbital injuries. Analyze most commonly diagnosed pathologies for ophthalmology patients with investigation of non-contrast head CT.

Materials and methods. Retrospectively medical records and head CT of patients admitted in the eye emergency department of University Hospital with acute eye condition in a one year period were reviewed. Clinical parameters were accessed in relation to imaging data. Data were analyzed using SPSS 23.0.

Results. The retrospective study included 118 patients with the mean age of 54.6 (SD ± 23.6) years, of which 62.7% (n = 73) were men and 37.3% (n = 44) were women. Radiologically observable pathologies were found in 42.3% (n = 50) of CT scans. The most common radiological finding were associated with trauma, which were eyelid edema 15.3% (n=18); intraorbital soft tissue trauma (emphysema, hematoma, edema) 14.4% (n=17); proptosis 12.7% (n=15) and orbital fractures 8.5% (n=10). CT examinations also revealed tumors 6.8% (n=8); degenerative changes in the eye 5.9% (n=7); dacryoadenitis 5.1 % (n=6); orbital foreign body 2.5% (n=3); cerebral ischemia 1.7% (n=2); myositis 1.7% (n=2); Graves disease 1.7% (n=2) and postoperative changes 1.7% (n=2) of the cases.

Conclusions. Proptosis can be a marker of underlying serious diseases as example previously undiagnosed tumors. Recognition of proptosis clinically and with the aid of CT imaging can potentially lead to timely diagnosis and optimal treatment, to avoid permanent visual loss.

THE EFFICACY OF INTRAVITREAL ANTI-VEGF INJECTIONS IN AGE-RELATED MACULAR DEGENERATION DEPENDS ON THE TIME OF INITIATION OF THERAPY

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Keywords. Age-related macular degeneration; Anti-VEGF; Initiation of therapy

Objectives. In Western communities age-related macular degeneration (AMD) is on the first place of causing severe irreversible vision loss in people over 50 years-old. Anti-VEGF intravitreal injections is the main therapy of AMD, which provide vascular normalization. The aim of the study was to identify differences in the efficacy of intravitreal injections with anti-VEGF in AMD depending on the time of initiation of therapy.

Materials and methods. A retrospective study was performed in 20 AMD patients with the first injection of anti-VEGF (Bevacizumab 0.05ml) between November 2021 and December 2021. Patients were divided into two groups according to the duration of symptoms- more or less than 3 months, and depending on the OCT examination- presence or absence of cystic changes in the central retina. These groups were named: Early and Late treatment groups, 10 patients in each. Changes in visual acuity and changes in central retinal thickness after the first anti-VEGF injection were analyzed. Data were analyzed by IBM SPSS 27.

Results. Using the Chi-square test, it was found that after the first anti-VEGF injection in the Early treatment group, visual acuity increased in 70% of cases, remained unchanged in 30% ($p=0.074$), and central retinal thickness decreased in 100% of cases ($p=0.136$). After the first anti-VEGF injection in the Late treatment group visual acuity increased in 30%, remained unchanged in 70% of cases ($p=0.074$), and central retinal thickness decreased in 80% and increased(worsened) in 20% of cases ($p=0.136$). Mean visual acuity increase in Early treatment group was 0.096, but in Late treatment group- 0.025. The Mann-Whitney U test showed no statistically significant difference between the values in the groups.

Conclusions. The study showed a tendency for visual acuity and retinal central thickness to improve better in the Early treatment group. That leads us to know that better therapy results is when treatment started early.

DEVELOPMENT OF DRY EYE SYNDROME IN PATIENTS AFTER CATARACT SURGERY

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Keywords. Dry eye syndrome (DES); Cataract surgery; Tear osmolarity

Objectives. Nowadays dry eye syndrome (DES) and cataract are very common eye diseases. DES can cause different discomfort in the eyes. If not effectively treated, it can affect the outcome of cataract surgery. The study aimed was to study the effect of cataract surgery on the development of DES.

Materials and methods. This is a prospective study conducted through observation and measurement of tear osmolarity of 20 patients, who had cataract surgery, to determine the development of DES at the Pauls Stradiņš Clinical University Hospital. 20 patients were divided into 2 groups. In the first group, patient's tear osmolarity was in the normal range before cataract surgery. In the second group, patient's tear osmolarity was higher than 300 mOsm/L before cataract surgery. In both groups, patients didn't have any symptoms before and after cataract surgery. The parameters that were considered as risk factors for development of DES include patient's age, gender and medical diagnosis. Patient's tear osmolarity was measured by TearlabTM Osmolarity System. Data analysis was done with Microsoft Excel.

Results. Both groups had elevated tear osmolarity 1 week after cataract surgery. The average elevation of the first group patient's tear osmolarity was 9.33 ± 2.21 mOsm/L, for the second group was 10.00 ± 4.00 mOsm/L. The average age of the first group was 65.44 ± 11.50 years, the second group – 73.73 ± 9.38 years. In the first group, the average increase in tear osmolarity was 1.07 mOsm/L more in women than in men. In the second group, the difference was 5.96 mOsm/L. In the first group, 44.44% patients had ocular hypertension, in the second group – 72.73%.

Conclusions. Cataract surgery can promote the development of DES. Increase of patient's age, female and ocular hypertension are the potential risk factors of the development of DES. More research is needed to validate these potential risk factors.

CATARACT SURGERY PATIENT PROFILE IN PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL DURING TWO MONTH PERIOD IN 2021

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Keywords. Cataract surgery; Cataract; Phacoemulsification; Best corrected visual acuity; Patient profile

Objectives. Cataract clouds over the lens is a very common eye disease in the elderly and one of the leading causes of visual impairment and blindness worldwide. There is no effective pharmacological treatment for cataract up to date, thus phacoemulsification surgery when patient's lens is replaced by an artificial lens is the main treatment option. Many people undergo this surgery every day, thus the aim of this study was to find out the main characteristics of these patients.

Materials and methods. The retrospective study was conducted by reviewing medical records of 1393 patients with cataract who had undergone cataract surgery from October to November 2021 in Pauls Stradiņš Clinical University hospital day care unit. Information about their characteristics were analysed and compared using Microsoft Excel and IMB SPSS 25.0.

Results. Out of all the patients 68% (n=948) of them were women, 32% (n=445) - men. In total patients came from 107 municipalities and cities of Latvia. 49% (n=685) had operation in the right eye and 51% (n=707) in the left eye. 49% (n=676) of patients had arterphakia and 49% (n=687) patients had detected cataract in the other eye. 9% (n=128) of the patients had diabetes mellitus. The mean age was 73 (SD 8,8) years. Majority of patients resided in Riga (n=397). Out of all the patients with arterphakia in the other eye, the median vision was 0,7 (0-1) both in right and left eye.

Conclusions. The median age of the patients is 73 years. Women decide to have cataract surgery more often than men. Right eye is operated almost as often as left eye.

INFLUENCE OF CENTRAL RETINAL THICKNESS ON THE OUTCOMES OF INTRAVITREAL ANTI-VEGF INJECTION TREATMENT IN PATIENTS WITH DIABETIC MACULAR EDEMA

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Keywords. Central retinal thickness; Anti-VEGF; Diabetic macular edema

Objectives. Diabetic macular edema (DME) can cause vision changes leading to difficulties in everyday life. DME has been associated with greater retinal thickness. The aim of the study was to evaluate the influence of central retinal thickness (CRT) on the outcomes of intravitreal anti-VEGF injection treatment in patients with DME.

Materials and methods. Medical records of 9 patients between 28-78 years of age were analysed. Optical coherence tomography (OCT) and visual acuity tests (VA), made using an optometric table, were performed before, and 1 week after an intravitreal anti-VEGF injection (Bevacizumab 0.05ml). Patients were divided into two groups, depending on CRT before the anti-VEGF injection. Group 1 included 3 patients, with the average CRT<400µm; Group 2 consisted of 6 patients, with the average CRT>400µm. Data was analysed using IBM SPSS v27.0. For statistical analysis, non-parametric Mann-Whitney U-test and related-samples Wilcoxon signed rank test were used.

Results. The median age of participants was 63 years old. CRT and VA median measurements before the treatment for Group 1 were 367.0µm and 0.2 respectively; for Group 2, the measurements were 513.5µm and 0.25 respectively. A week after intravitreal anti-VEGF injection, OCT and VA median measurements for Group 1 were 321.0µm and 0.4; for Group 2, 354.0µm and 0.45 respectively.

Statistically significant results were determined, with $p < 0.05$. Mann-Whitney U-test did not reveal statistically significant results in CRT ($p = 0.167$, $N = 9$) and VA ($p > 0.99$, $N = 9$) between Group 1 and Group 2. Related-samples Wilcoxon signed rank test showed statistically significant results for Group 2 in CRT ($z = 0$; $p = 0.028$; $N = 6$) before/after the injection and VA before/after the injection ($z = 21.0$; $p = 0.027$; $N = 6$). Meanwhile, the test did not reveal statistically significant differences for Group 1.

Conclusions. CRT before intravitreal anti-VEGF injection treatment may influence the outcome of DME. However, for the approval of this statement, further studies with more patients are needed.

EFFECTIVENESS OF INTRAVITREAL ANTI-VEGF THERAPY DEPENDING ON THE TIME OF INITIATION OF INJECTIONS IN CENTRAL RETINAL VEIN THROMBOSIS

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Keywords. Central retinal vein thrombosis; Intravitreal injections; Optical coherence tomography

Objectives. Retinal vein occlusion (RVO) is the common cause of visual loss throughout the world. This condition is characterized by macular edema and requires urgent medical intervention with anti-VEGF injections. The aim of this study was to compare the effectiveness of treatment depending on the start of therapeutic intervention since the appearance of the first symptoms.

Materials and methods. A retrospective study is based on analysis of medical records and optical coherence tomography (OCT) data of patients with central retinal vein thrombosis (CRVT), who started anti-VEGF therapy. The participants were divided into 2 groups according to the duration of the symptoms: ≤ 3 months and > 3 months. Data about macular thickness and visual acuity (measured with ETDRS chart) before and 1 week after the first intravitreal injection were analysed using Microsoft Excel and IBM SPSS Statistics 26.0 (Independent Samples T-test).

Results. The study included 8 patients, of which 2 patients received first anti-VEGF intravitreal injection up to 3 months and 6 patients – after 3 months since the appearance of the first symptoms. The mean patient's age was 67.63 ± 9.55 (SD) years. The mean changes in visual acuity in group ≤ 3 months were 0.14, but in group > 3 months were 0.09 without statistically significant differences between groups ($p=0.713$). In turn, statistically significant differences ($p=0.019$) were found when comparing the mean macular thickness changes in both groups, respectively -430.5 ± 30.4 (SD) μm in group ≤ 3 months and -164.0 ± 112.2 (SD) μm in group > 3 months.

Conclusions. Macular thickness is decreasing after intravitreal anti-VEGF injection and a greater reduction in thickness has been observed in patients who started treatment earlier. It was concluded that earlier initiation of injections is not associated with better improvement in visual acuity. OCT is a useful forecasting tool for patients with CRVT.

FREQUENCY, MAGNITUDE AND RATE OF ABSORPTION OF SUBCONJUNCTIVAL HEMORRHAGE AND CHEMOSIS AFTER INTRAVITREAL INJECTIONS

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Keywords. Intravitreal injections; Subconjunctival hemorrhage; Chemosis

Objectives. The aim of intravitreal injection therapy is to improve or stabilise vision. The number of intravitreal injections and also the number of injection-related complications has increased proportionately. The aim was to identify statistically significant differences in injection-related complications such as subconjunctival hemorrhage (accumulation of blood underneath the conjunctiva) and chemosis (conjunctival swelling) by targeting different groups of patients. Intraocular pressure, gender, age, and patient diagnosis were evaluated as potentially influencing factors.

Materials and methods. A retrospective study is based on analysis of medical records and optical coherence tomography (OCT) data of patients with central retinal vein thrombosis (CRVT), who started anti-VEGF therapy. The participants were divided into 2 groups according to the duration of the symptoms: ≤ 3 months and > 3 months. Data about macular thickness and visual acuity (measured with ETDRS chart) before and 1 week after the first intravitreal injection were analysed using Microsoft Excel and IBM SPSS Statistics 26.0 (Independent Samples T-test).

Results. The median age of the patients was 76.0 ± 14.2 (SD) years. After injection 8 patients had subconjunctival hemorrhage, but after one week only 3 patients. After intravitreal injection chemosis was observed in 18 patients, but after one week no patient had chemosis. The median of subconjunctival hemorrhage after injection was 0.0 ± 2.2 (SD) mm. The median of subconjunctival hemorrhage one week after injection was 0.0 ± 0.6 (SD) mm. The median of chemosis after injection was 4.0 ± 1.7 (SD) mm. No chemosis was observed one week after intravitreal injection. There was statistically significant difference in subconjunctival hemorrhage after injection and one week later (Wilcoxon test, $P=0.007$). Statistically significant difference was found in chemosis after injection and one week later (Wilcoxon test, $P<0.001$). There was no statistically significant difference in intraocular pressure, gender, age, patient diagnosis (Mann - Whitney U test, $p>0.05$) compared to hemorrhage and chemosis.

Conclusions. 1. Subconjunctival hemorrhage and chemosis decreased statistically significantly one week after intravitreal injection. 2. Intraocular pressure, gender, age, and patient diagnosis do not significantly affect subconjunctival hemorrhage and chemosis.

EYELASH LENGTH CHANGES IN PATIENTS WHO USE PROSTAGLANDIN ANALOGS

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Keywords. Prostaglandin analogs; Eyelashes; Glaucoma.

Objectives. Topical prostaglandin analogs (PGA) often are the first-line therapy used in management of glaucoma, but they are associated with several ocular side effects, for example, elongation of the eyelashes. The aim of this research was to measure the length of eyelashes and compare it between both eyes in glaucoma patients who apply PGA in only one of the eyes.

Materials and methods. The study included 16 patients who all were on annual visits to an ophthalmologist in the period from December 2021 to January 2022, and during the appointment, three lashes were removed from the upper eyelid of both eyes and measured with a ruler. Data was analysed using MS Excel, IMB SPSS 26.0, Wilcoxon and Mann - Whitney U test, Spearman`s correlation and descriptive statistics. The data were presented as medians with the interquartile range (IQR=25%-75%).

Results. Out of 16 patients, 9 of them used combined medication of bimatoprost (PGA) and beta adrenoblocker timolol, the other 7 used latanoprost (PGA) eye drops. The median age was 71.5 years (IQR=64.3-80.3) and the median duration of PGA use was 4.5 years (IQR=3.25-5.75). There was a statistically significant difference ($p=0.01$) between the median length of the lashes in the eye in which the PGA was applied (10.00mm, IQR=9-11) and of the other eye lashes in which the eye drops were not used (8.00mm, IQR=8-9). There was no statistically significant correlation between eyelash length and duration of PGA use ($p=0.567$). Also, no statistically significant difference was found ($p=0.142$) comparing the difference between eyelash length in both eyes and used glaucoma medication.

Conclusions. The patients who used prostaglandin analogs in one of their eyes the eyelash length was longer compared to the other eye where the drops were not used. No significant changes in eyelash length were observed in the comparison of bimatoprost/timolol and latanoprost.

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

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Keywords. Anterior segment optical coherence tomography; Pachymetry; Central corneal thickness

Objectives. The purpose of the study was to evaluate the correlation and agreement in central corneal thickness (CCT) measurements obtained by Heidelberg Anterior, Heidelberg Spectralis and Optovue AngioVue optical coherence tomography (OCT).

Materials and methods. This was a prospective, single-center study. Thirteen medical records of patients who visited ophthalmologist in Pauls Stradiņš Clinical University Hospital were analysed. Each patient underwent Heidelberg Anterior, Heidelberg Spectralis and Optovue AngioVue OCT pachymetry performed by the same examiner. Data were analysed using MS Excel and IBM SPSS 27. Intraclass correlation analysis was used to evaluate the correlation between measurements. Agreement in CCT measurements was evaluated by the Bland – Altman plot method.

Results. Twenty-six eyes of 13 subjects were enrolled. 69.2% of patients (n=9) were female. 30.8% of patients (n=4) were male. The median age was 72 years (range, 34–88 years). The median measurements of CCT by Heidelberg Anterior, Heidelberg Spectralis and Optovue AngioVue OCT were 559 μm (range, 490–621 μm), 549 μm (range, 492–597 μm), 551 μm (range, 487–612 μm), respectively. The intraclass correlation coefficient between the measurements was ranging from 0.953 to 0.986, which is highly statistically significant ($p < 0.001$). The 95% limit of agreement (LoA) in CCT between Heidelberg Anterior and Heidelberg Spectralis OCT was 31.51 to -16.97 μm . The 95% LoA in CCT between Heidelberg Anterior and Optovue AngioVue OCT was 15.62 to -2.39 μm and between Heidelberg Spectralis and Optovue AngioVue OCT 20.48 to -21.79 μm .

Conclusions. The highest agreement in measurements with narrowest 95% LoA was identified between Heidelberg Anterior and Optovue AngioVue OCT. CCT values obtained by Heidelberg Anterior OCT are comparable to those obtained by Optovue AngioVue OCT. Further research is needed to confirm whether CCT measured by these two methods have similar repeatability within and between examiners.

ORTHOPAEDICS, TRAUMATOLOGY, TRAUMA & ORTHOPEDIC SURGERY, SPORTS MEDICINE, RADIOLOGY

INTRAOPERATIVE IONIZING EXPOSURE DOSE CHANGES FOR PEDIATRIC PATIENTS IN DIFFERENT MECHANICAL VENTILATION

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Keywords. Radiology; Ionizing radiation; X-rays; Radiation safety; Orthopaedic spine surgery; Pediatrics.

Objectives. Pediatrics patients are more sensitive to radiation exposure and have a longer life ahead of them in which to manifest the effects of exposure. It is important to find ways to minimize radiation exposure during examination and treatment. The aim of the study was to compare the time of the exposure and the dose of the exposure to ionizing radiation between two mechanical ventilator regimes (turned on and paused) in spine surgery on pediatrics patients.

Materials and methods. This prospective study included pediatrics patients undergoing surgery for spinal deformity in Childrens Clinical University Hospital. Clinical data included patients age, sex, weight, height and body mass index. Intraoperatively was recorded data about each exposure voltage (kV), milliamperage (mA), ionizing radiation dose (Gy) and time (s). For mechanical ventilation mode choosing in exposition moment was used randomizer application. For intraoperative visual examination was used Philips BV Pulsera Mobile C-Arm Fluoroscopy machine. Statistical analysis was done with IBM SPSS Statistics.

Results. Study included 20 patients aged 1-17 years. In all was taken and recorded data about 433 anterior-posterior and latero-lateral projections exposition units. P-value less than 0,05 considered reliable. Ionizing radiation exposure dose is higher when mechanical ventilator was turned on, the difference was statistically significant ($p < 0,001$).

Conclusions. The dose ionizing radiation was higher in the "turned on" regime compared to "paused" option. It means that Fluoroscopy machine and ventilator synchrisation can minimizing intraoperative radiation exposure dose and time for pediatrics patients and minimize they risk to exposures long-time effects manifestation in future and which complies with the principles of ALARA "As Low As Reasonably Achievable".

THE INFLUENCE OF WARM-UP PROCEDURES ON PERFORMANCE IN VERTICAL JUMPS AND SPORT EXERCISES

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Keywords. Warm up; Jumping; Improvement; Exercise; Acceleration; Force; Sport

Objectives. The aim of this study was to investigate the influence of a warm-up or pre-activity on the ability to accelerate in a vertical jump. While most literature and research are aimed towards the effect of pre activity on professional or elite athletes, papers and scientific material concerning the effect on recreational sportsman and woman are rarely published. This paper was aimed towards that population.

Materials and methods. 30 participants, from the RSU (Rigas Stradins University, Riga, Latvia) student body and the Berlin region (Germany) agreed to be part of this investigation. Each participant agreed to give information about their body data (e.g. height, age, weight), current diseases, habits of smoking, and prior infections with SARS-CoV-2. Afterwards, every participant performed three jumps before a warmup and three jumps after a warmup. The warmup consisted of a 5-minute easy run and 7 minutes of specific exercises. For each jump, the acceleration was measured using Pocketlab Voyager. During the warm-up, the heart rate was assessed. Statistical analysis was performed using SPSS.

Results. The mean peak acceleration for three jumps was significantly ($p \leq 0,05$) higher after completion of the warmup ($1,504 \text{ g} \pm 0,479 \text{ g}$) in comparison to the initial performance ($1,289 \text{ g} \pm 0,339 \text{ g}$) with an average increase of 16 %. It can be therefore said that a warmup leads to better availability of vertical jumping force in most people. Gender, weight, and height showed a statistical influence on the outcome while smoking and prior SARS-CoV-2 infections did not influence the performance. It was also noticed that participants showed different landing styles, which lead to different landing impacts.

Conclusions. Warm up procedures have a positive influence on acceleration and force in recreational athletes and can be recommended independent of a wide variety of factors (e.g. gender, age, BMI).

TREATMENT AND MANAGEMENT OF OSTEOPOROTIC FRACTURES IN MEN: A 7 YEAR STUDY OF REAL-WORLD CLINICAL PRACTICE IN A SINGLE-CENTRE (OSTEOPROM PART II)

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Keywords. Osteoporosis; Osteoporosis in men; Male osteoporosis; Denosumab

Objectives. The insufficient knowledge of male osteoporosis (OP) accounts for the lack of well-shared protocols for clinical management. The growing data on the pathophysiology of bone and epidemiological data of fracture in men are becoming available. Pharmacologic therapy options are debatable. We studied the anti-fracture effectiveness of Dmab in the men cohorts (OsteoProM).

Materials and methods. We conducted the single-centre real-world retrospective observational study from years (yrs) 2014 to 2021. We collected RECUH Outpatient Clinic data from medical records and then manually analysed it. We analysed fracture risk factors, incidences, BMD changes, laboratory data (Ca, vitamin D, iPTH). BMD of the lumbar vertebrae L1/L4 and the total mean hip by DXA scans were performed for initial and final diagnoses of the study. Statistical analysis was performed using IBM SPSS.

Results. We analysed 40 men (914 pts with OP during 7 yrs: women – 822 pts (89.9%), men – 92 pts (10.1%)). The mean age was 62.2 ± 12.5 SD yrs. Men with idiopathic OP were 70.0%, glucocorticoid-induced OP – 17.5%, secondary OP – 12.5%. Dmab increased BMD at lumbar spine L1/L4 in 71.4%; total mean hip in 69.2% pts. Before the study started, pts with at least one fracture were 47.5%, mainly in the spine (63.2%), other fracture types – hip, forearm, ribs. After the study ended, pts with at least one fracture were 2. Men were divided into six groups according to injection (inj.) numbers from 1 to 13 inj. BMD by DXA was analysed in each inj. group.

Conclusions. Dmab is an effective anti-fracture medication, which significantly and promptly increases BMD in DXA scans at the lumbar spine and the total mean hip in men with and without fractures. Dmab is an appropriate clinical option in men with intolerance or contra-indications to bisphosphonates and is an appropriate first-line treatment.

PERIVASCULAR SPACES ON BRAIN MRI IN PATIENTS WITH NORMAL COGNITION, MILD COGNITIVE IMPAIRMENT AND DEMENTIA.

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Keywords. Perivascular spaces; Glymphatic system; Cognitive impairment; Dementia

Objectives. Perivascular spaces (PVSs) are fluid-filled circular gaps between brain parenchyma and brain perforating vessels. PVSs are part of the glymphatic system of the brain that facilitates brain metabolic product drainage. Disrupted glymphatic circulation causes deposition of waste products in PVS. The aim of this study was to evaluate the association between PVS, normal cognition, mild cognitive impairment, and dementia.

Materials and methods. Cross-sectional study included 30 patients who underwent brain MRI imaging and Montreal Cognitive Assessment (MoCA). Patients were divided into 3 groups based on MoCA results - normal cognition (NC) with MoCA scores ≥ 26 ($n=9$), mild cognitive impairment (MCI) with MoCA scores >14 and ≤ 25 ($n=12$) and dementia (D) with MoCA scores ≤ 14 ($n=9$). T₂, T₁, DWI and FLAIR MRI sequences were used to analyze PVSs. Semiquantitative PVS scoring scale was used for PVS assessment in basal ganglia (BG), centrum semiovale (CSO), and midbrain. Total PVS (tPVS) score was obtained by summing up CSO, BG and Midbrain PVS scores for each patient.

Results. The mean tPVS score for NC group was 3.611 ± 0.821 , for MCI- 4.500 ± 1.206 , for D group- 5.556 ± 0.63 . BG, CSO and Midbrain PVS scores for NC group were- 1.333 ± 0.354 , 1.611 ± 0.651 and 0.667 ± 0.500 , for MCI group- 1.667 ± 0.749 , 2.083 ± 0.900 and 0.759 ± 0.452 , for D group- 2.056 ± 0.808 , 2.389 ± 0.741 and 1.111 ± 0.333 respectively. A Kruskal-Wallis test showed statistically significant difference between groups in tPVS score ($p=0.002$). Post-hoc test revealed significant difference between D-NC groups in tPVS score ($p<0.001$). There was statistically significant correlation between tPVS and MoCA scores ($rs=-0.712$, $p<0.001$).

Conclusions. Study shows a statistically significant difference in tPVS scores between NC and D patients. PVS score could serve as an MRI biomarker for early cognitive impairment diagnostics.

THE INCIDENCE OF RADIOLOGICALLY CONFIRMED LUNG DAMAGE IN VACCINATED AND NON-VACCINATED COVID-19 PATIENTS

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Keywords. Covid-19; Acute pneumonia; Computed Tomography (CT)

Objectives. Today, computed tomography (CT) is a worldwide recognised method of choice for the detailed radiological evaluation of lung damage in Covid-19 patients. The aim of this study was to determine, using chest CT, the correlation between patient's vaccination status and presence of acute Covid-19 pneumonia radiological signs.

Materials and methods. Retrospective study included patients hospitalized at the Regional Vidzeme Hospital in the period between September 6 and November 14, 2021 with acute Covid-19 infection, confirmed by a real-time reverse transcriptase-polymerase chain reaction (RT-PCR) test and respiratory complaints. Non-contrast chest CT was done at admission. Results were characterised according to "Latvian Society of Radiology" guidelines (2020). Patient's vaccination status and comorbidities were documented. Mathematical data processing was performed using descriptive statistics.

Results. 100 patients were enrolled in the study (mean age 67.32, range 28 – 91 years); 50 of them vaccinated, 50 non-vaccinated. Among 100 patients following comorbidities have been identified: 30 - primary arterial hypertension, 16 - type II diabetes, and 17 – adiposity. Average length of hospitalization was 8.6 days. Out of 50 fully vaccinated patients, 16 (32%) had received Janssen vaccine, 23 (46%) Vaxzevria, 7 (14%) Comirnaty, and 4 (8%) Spikevax. Lung damage was seen on CT more frequently in unvaccinated patients (96%), out of which 50% had a mild, 42% medium and 4% severe lung damage. 24% of vaccinated patients had no lung damage. The connection between the severity of lung damage and a patients vaccination status appeared statistically significant ($p < 0.022$). No other correlations between variables were found.

Conclusions. From a study group of 100 patients, of which 50 were vaccinated prior to hospitalisation, there was a statistical significance in correlation to possible lung damage for unvaccinated patients, but no relevance between the severity of lung damage was determined.

EVALUTION OF RADIOLOGICAL FINDINGS OF COVID-19 LUNG LESIONS IN LATVIA IN THE VIEW OF ARTIFICIAL INTELLIGENCE AND RADIOLOGIST

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Keywords. Artificial intelligence; Covid-19; Radiology; Ground-glass opacity

Objectives. Since the start of pandemic more than 211 million people have been diagnosed with Covid-19. Artificial intelligence(AI) opens up a wide range of possibilities for diagnosing lung damage caused by Covid-19 infection, which can improve and facilitate the work of a radiologist. The main aim of this study is to compare the accuracy of AI compared to radiologist in evaluation of Covid-19-induced lung damage and to determine the limitations and benefits of interpretation in a clinical context.

Materials and methods. Clinical and imaging data of 250 patients with PCR confirmed Covid-19 infection and healthy control group of 50 Covid-19 negative patients with mean age 65years(26-99years) were retrospectively analyzed. Non-enhanced computed tomography(CT) of the thorax evaluation was performed by a cloud-based AI software which provides an objective quantification of the degree of lung involvement in the different lung regions and per lesion type and experienced radiologist. Data were analyzed using SPSS program.

Results. Most common radiological sign by AI and radiologist were ground-glass opacity(63.7% and 83%).According to AI ground-glass opacity combination with consolidation was observed in 21.2% cases,but combination with crazy-paving pattern-7.8%.Bilateral lung involvement was observed in 81% and basal predominance in 65.4% of cases. The most common lobe involvement were left lower lobe and right upper lobe(91.8% and 86.4%, $p=0.01$). Among symptomatic adult patients AI software has a sensitivity for diagnosis of Covid-19 caused lung damage in excess of 96%(95% CI 0.88-0.99) and the specificity of 80%(95% CI 0.74-0.84)(PPV 98 %,NPV 54%, $p=0.01$). Based on CT estimated lung damage AI has given statistically significant correlation ($p=0.01$) between percentage of lung damage and clinical severity of Covid-19 illness.

Conclusions. AI has proven to be an effective tool in assessing the severity of lung damage by providing useful data for selecting the most appropriate therapeutic tactics and improving the prognostic outcome of the disease.

PAEDIATRICS

THERAPEUTIC HYPOTHERMIA PROCEDURE FOR NEWBORNS WITH HIE IN RIGA MATERNITY HOSPITAL 2016-2020

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Keywords. Hypoxic ischemic encephalopathy; Neonatal asphyxia; Therapeutic hypothermia

Objectives. Neonatal asphyxia during childbirth is mainly caused by neurological complications - hypoxic ischemic encephalopathy (HIE). In order to evaluate the effectiveness of therapeutic hypothermia treatment and determine the prognosis of the child, early imaging with magnetic resonance imaging (MRI) is performed in clinical practice as a prognostic indicator for the further neurological and psychomotor development of children with asphyxia. The aim of this study was to analyse the effect of the applied therapeutic hypothermia in newborns during the period from 2016 to 2020.

Materials and methods. This retrospective study included neonates with diagnosed HIE and received subsequent treatment using therapeutic hypothermia (TH). Data was collected from the hospital's medical records between 2016 and 2020 in Riga Maternity Hospital. Statistical analysis of data was performed using IBM SPSS 26.0 (Chi-square, Fisher's exact test). Statistical significance was considered at $p \leq 0.05$.

Results. In the study, 48 patients were analysed. One neonate had mild HIE grade on the SARNAT scale, while 33 neonates (68.8 %) and 14 neonates (29.2 %) had moderate and severe HIE grade. Total mortality rate for all neonates with HIE was 6.3% (n=3). For neonates with severe HIE grade, mortality was 21.4% ($p=0.026$). 21 neonate (43.8%) had seizures before the onset of TH. Hypoxic brain damage was found in 13 neonates (27.1%), while 32 neonates (66.7%) had a normal MRI without evidence of hypoxic brain damage. For 95.2% neonates without seizures before TH treatment, hypoxic brain damage in the MRI was not found.

Conclusions. For all neonates who had indications to start TH, the treatment was started in the time window until 6h. Neonates with severe HIE grade by the SARNAT scale had higher mortality risk. There was no significant relation between seizures before treatment and hypoxic brain damage in the MRI.

A COMPARATIVE ANALYSIS OF PEDIATRIC PATIENTS PRESENTING WITH ABDOMINAL PAIN TO THE PEDIATRIC EMERGENCY DEPARTMENT

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Keywords. Adolescents; Hypertension; Microcirculation

Objectives. Acute abdominal pain is common complaint at pediatric emergency department (PED). It is highly important to distinguish cases that need surgical attention, such as appendicitis. However, diagnosis can be complicated, especially in young patients. Symptoms can mimic other possible diseases which usually differ between age and gender. In this study we analyzed differences of abdominal pain between age groups at our University Hospital PED.

Materials and methods. We performed a retrospective epidemiological study of PED patients with abdominal pain 1st–30th of September 2018. Data were collected using electronic medical record system. The analyzed month was selected randomly. We included referral time, age, symptoms, clinical examination data, final diagnosis at PED, and outcomes and compared between divided age-groups (older and younger than 10 years old). P value <0.05 was defined as significant.

Results. In total, data of 254 children were included in our analysis. Children with decreased appetite (OR 3.25;95% (1.16–4.2); p=0.015) and fever <38C (OR 2.3;95% CI (1.1–4.8); p=0.026) were more likely to be diagnosed with gastrointestinal diseases other than appendicitis. We observed that older patients noted focal pain while younger patients presented with more diffuse abdominal pain (p<0.001). Older children complained of pain migration more often compared to younger ones (16/117 vs. 4/137 respectively, p=0.002). Absence of this symptom was associated with other gastrointestinal disease (OR 2.17;95% CI (1.14–4.13); p=0.017). On abdominal examination, older children were more likely to present with abdominal irritation (OR 13;95% CI (3.6,51.6)).

Conclusions. Our data showed that older children have more localized abdominal complaints (right abdominal pain) what is expected, as some of the younger ones can hardly locate and verbalize their symptoms. Moreover, findings of abdominal examination, such as peritoneal irritation was observed more frequently in older age group.

POST-ACUTE COVID-19 SYMPTOMS IN CHILDREN

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Keywords. Long COVID; Post-acute COVID-19; Persistent symptoms

Objectives. The main focus of this study is to identify the post-acute COVID-19 symptoms extending beyond the 3 month period of acute illness, and to compare them with community-acquired infections of other etiologies.

Materials and methods. An ambidirectional cohort study conducted at Children's Clinical University in Latvia using a questionnaire was done. The study group included 30 pediatric COVID-19 patients from which 15 were hospitalized and 15 were ambulatory. A control group of 30 patients was also included. The study was performed between July 1, 2020, and September 30, 2020. Statistical analysis was performed using SPSS version 23.0.

Results. In total 60 patients were enrolled in the study. 70% (N=21) of the COVID-19 patients reported at least one persistent symptom. The most common symptoms being – mood swings (40%, N=12), irritability (36.7%, N=11), cough (33%, N=10), fatigue (30%, N=9), rhinorrhea (26.7%, N=8). While comparing the patients who were hospitalised and who remained as in patients we discovered 100% (N=15) of the hospitalised patients experienced long-COVID-19 symptoms, the most frequent being mood swings (80%, N=12), irritability (73.3%, N=11), cough (60%, N=9), rhinorrhea (46.7%, N=7), depression/anxiety (40%, N=6). The number of symptoms experienced ranged from 3 to 21 with the mean number being 8. In contrast 40% (N=6) of the ambulatory patients reported long-COVID-19 symptoms – fatigue (26.7%, N=4), fatigue in the mornings (20%, N=3). The number of symptoms experienced ranged from none to 4 with the mean number being 1. In the control group no persistent symptoms were noted.

Conclusions. A significant difference between the study and control group was discovered, where 70% of SARS-CoV-2 infected patients experienced long term symptoms and 0% of patients in the control group. Notable difference in long-COVID symptoms between hospitalised and ambulatory patients was discovered. More research is needed to distinguish how long these symptoms remain and if there are different symptoms reported with the new SARS-CoV-2 variants.

ETIOLOGY AND CLINICAL CHARACTERISTICS OF CYSTIC KIDNEY DISEASES IN PAEDIATRIC PATIENTS FROM CHILDREN'S CLINICAL UNIVERSITY HOSPITAL: 5 YEAR'S DATA ANALYSIS

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Keywords. Paediatrics; Polycystic kidney disease; Multicystic dysplastic kidney

Objectives. Cystic kidney diseases are a heterogeneous group of genetic and non-genetic disorders. Clinical presentation of cystic kidney diseases is highly varied, ranging from asymptomatic presentation to end-stage renal disease (ESRD) and need for renal replacement therapy. The aim of the study was to analyze the etiology and clinical features of cystic kidney diseases in paediatric population.

Materials and methods. A retrospective study was made including 51 patients under 18 years of age with diagnosis Q61 (cystic kidney disease by ICD-10), admitted to the Children's University Hospital from 01.2017 to 12.2021. Data was collected from Andromeda database and analyzed by IBM SPSS Statistics version 27.0 ($p < 0.05$).

Results. 51 patients with the mean age of 7.08 ± 4.49 years, 51% were females ($n=26$) and 49% were males ($n=25$). Unilateral multicystic dysplastic kidney (MCDK) was diagnosed in 72.5% ($n=37$) patients, autosomal dominant polycystic kidney disease (ADPKD) in 25.5% ($n=13$) and in 2% ($n=1$) autosomal recessive polycystic kidney disease. 26 (70.3%) of MCDK patients were diagnosed antenatally, 13 of them (48.5%) had compensatory hypertrophy of contralateral kidney. 10 (27%) of MCDK patients had other urological abnormalities (4 megaureter, 3 ureteropelvic junction obstruction, 3 vesicoureteral reflux). Documentary positive family history of ADPKD patients was presented in 77% ($n=10$) patients. The patients' mean age of the ADPKD diagnosis was 6.75 ± 4.12 years. Nephrectomy was performed in 27.4% ($n=14$) of all patients at the mean age 2.1 ± 1.6 years. Due to ESRD kidney transplant received 1 patient during observation period. Proteinuria was presented in 19.6%, hematuria in 9.8%, arterial hypertension in 9.8%, anemia in 3.9%.

Conclusions. Clinical manifestations and progression to ESRD makes cystic kidney diseases an important group of kidney diseases in paediatric practice. Periodic and further follow-up is needed to observe patients for early detection of complications and treatment.

PEDIATRIC HEMATURIA

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Keywords. Glomerular diseases; Urinary tract infections; Hematuria

Objectives. Pediatricians frequently encounter hematuria in children, it has more than 100 different causes. The aim of the study is to determine the most common causes of hematuria in ambulatory practice and the diagnostic value of glomerular diseases.

Materials and methods. A retrospective study was made including 134 patients admitted to an ambulatory nephrologist during a two year period (January 2019 - December 2020). Hematuria's etiology, presentation and laboratory findings were reviewed. Statistical analysis was made by SPSS 27.0 ($p < 0.05$). The study was approved by the Institutional Ethics Review Board.

Results. The study included 134 patients with the median age of 11 (1 ± 17) years. 56,8% ($n=75$) were boys and 43,2% ($n=57$) were girls. 43% ($n=58$) had post-infectious glomerulonephritis. 15% ($n=20$) had renal pathologies confirmed by an ultrasound, such as right kidney hypertrophy (3,6%), duplex kidney (2,3%) and right kidney agenesis (0,8%). 15% ($n=20$) of patients had urinary tract infections. 5% ($n=6$) had diabetic nephropathy due to type *diabetes mellitus*. 7% ($n=9$) patients had episodes of macrohematuria caused by postinfectious glomerulonephritis. 62,4% ($n=83$) patients had isolated microhematuria. 14% ($n=19$) of all patients had proteinuria, 53% ($n=10$) below nephrotic range, 31% ($n=6$) due to post-infectious glomerulonephritis. Mean creatinine concentration was 49,3 $\mu\text{mol/l}$ (range: 22- 115). Mean glomerular filtration level was 141.22 mL/min/1.73m^2 by *Schwartz equation* (range: 53.2 -291.5). 5% ($n=7$) of patients had renal biopsies, of which 72% ($n=5$) had confirmed chronic renal disease, II-IV stage, 14% ($n=1$) had rapidly progressive glomerulonephritis, and 14% ($n=1$) had membranoproliferative glomerulonephritis.

Conclusions. Isolated microscopic hematuria in children is rarely associated with significant glomerular disease. The most common causes discovered were post-infectious glomerulonephritis with favourable prognosis, followed by renal structural changes and urinary tract infections.

ANALYSIS OF INDICATIONS FOR GENETIC CONSULTATION IN CHILDREN 0-3 MONTHS OLD IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL DURING THE PERIOD 2019-2021

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Keywords. Genetic consultation; Genetic counseling

Objectives. Congenital anomalies are common, with 2%–3% of infants estimated to have at least one major congenital malformation and countless others with minor malformations of lesser cosmetic or medical importance. Congenital anomalies can be a result of genetic, infectious, nutritional and environmental factors, but approximately 50% of all congenital anomalies cannot be linked to a specific cause, however, it is an important indication for referral to a genetic specialist. The aim of this study is to analyze indications for genetic consultations and observed anomalies of the patients, the diagnostic tests that are used to determine and confirm diagnosis, and whether a genetic disease have been detected.

Materials and methods. In this study medical records of 295 children aged 0–3 months were studied, later the data was analyzed using Microsoft Excel.

Results. Study included 295 patients and 54 (18,3%) of them had been diagnosed with a genetic disorder, 29 (9,8%) of them had a chromosomal anomaly and 25 (8,5%) had a monogenic disorder, for 52 patients (17,6%) investigation wasn't finished at that time, and for 189 patients (64%) a genetic disorder wasn't found. The most common indications for a genetic consultation were minor congenital anomalies (32,2%), congenital heart disease (28,1%), pathologies of nervous system and its functions (24,4%), musculoskeletal system pathologies. The most often used diagnostic test for these patients were karyotype analysis, which was used for 39,3% of patients and biochemical tests (29,2%).

Conclusions. From the studied cases only 18,3 % were diagnosed with a genetic disorder at this point in their life, which differs from similar studies. This study should be continued for a longer period of time, to evaluate patients symptoms later in life and see if the patients would be diagnosed with a genetic disorder later in life.

PAEDIATRIC NEURAL TUMOURS RELATED TO THE PERIPHERAL NERVOUS SYSTEM: MORPHOLOGICAL SPECTRUM OF SURGICALLY TREATED TUMOURS AND CLINICAL PRESENTATION IN LATVIA DURING THE PERIOD FROM 2016 TO 2021

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Keywords. PNS (peripheral nervous system); Paediatrics; Tumours

Objectives. Neural tumours occur in children less frequently than they do in adults. Nevertheless, the literature suggests that they represent 14% of all pediatric soft tissue tumours. The aim of this study is to determine the spectrum of surgically treated neural tumours and the variability of their clinical symptoms in the Children's Clinical University Hospital.

Materials and methods. Neural tumor cases available from 2016 to 2021 were analyzed. Additional clinical data was obtained from the internal "Andromeda" computer system. The data obtained contains various variables including histological examinations, clinical manifestations, the gender and age of the patients. The material was analyzed using descriptive statistical methods.

Results. During the period studied 51 surgeries on neural tumours were performed. The most common age of children when formations were diagnosed were from 10 to 19 years. The most common were tumours of the peripheral nerves (68,62%, n=35). Most of these were neurofibromas (33,33%, n=17), of which 2 cases were plexiform neurofibromas; traumatic neuromas (13,73%, n=7) and schwannomas (21,65%, n=11). The second most common group comprised tumours of neural crest origin (27,45%, n=14), of which 13,73% (n=7) were ganglioneuroma; 9,8% (n=5) ganglioneuroblastoma and 3,92% (n=2) neuroblastomas. A rare group comprised primitive neuro-ectodermal tumours (PNET) (3,92%, n=2). The overall percentage of malignant tumours was 11,76%. Many of the patients (43,13%, n=22) reported complaints of a palpable mass and pain. 23,52% (n=12) were accidental findings during radiological examinations and 11,76% (n=6) of cases were associated with neuro. The most common diagnosed tumour group comprised tumours of the peripheral nerves with neurofibromas predominance. A less common group was PNET. There were 11,76% malignant neural tumours which is consistent with the current literature's findings that malignant tumours rarely occur in children. The majority of patients experienced discomfort because of tumours such as pain, decreased sensation and reduced function.

CORRELATION BETWEEN CLINICAL SYMPTOMS OF HYPERTENSION WITH DISORDERS OF MICROCIRCULATION IN CHILDREN

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Keywords. Adolescents; Hypertension; Microcirculation

Objectives. Peripheral blood pressure is directly related to the functionalities of micro-vessels and its status are reflected in system blood pressure as well as severity of clinical symptoms. The aim of the study was to explore the state of the microcirculation system in hypertension in children and to determine the impact of disorders in microcirculatory parameters on the clinical symptoms of the disease.

Materials and methods. 25 patients with primary hypertension aged from 12 to 17 years (average age was 15 years) were examined. Examination of the microcirculation system was performed by the capillaroscopy of the nail bed of the IV finger of the left hand, in the morning, before meals. The structure of capillaries was assessed using a capillaroscope M-70A with photo and video recording. The correlation was determined statistically using Pearson correlation coefficient.

Results. The study showed that the most common clinical symptoms of hypertension were: fatigue (90,91%), cephalgia (72,73%), cardialgia (54,55%). Some patients experienced dizziness (27,27%) and nosebleeds (18,18%). Correlation analysis showed that cardialgia depended on the diameter of the artery branch (0,65, $p < 0,05$), the diameter of the venous branch (0,69, $p < 0,05$), expressed artery branch crimping (0,59, $p < 0,05$), the number of functioning capillaries (0,78, $p < 0,01$). Headache depended on the diameter of the artery branch (0,63, $p < 0,05$), expressed venous capillary crimping (0,78, $p < 0,01$), aggregation of erythrocytes (0,69, $p < 0,05$). The frequency of dizziness correlated with artery branch spasm (0,79, $p < 0,01$) and its crimping (0,92, $p < 0,001$), capillary loop length (0,96, $p < 0,001$), expressed venous branch crimping (0,91, $p < 0,001$), aggregation of erythrocytes (0,90, $p < 0,001$). Nasal bleeding was associated with spasm of the artery branch (0,69, $p < 0,05$), uneven arrangement of capillaries in the line (0,71, $p < 0,05$), turbidity of the perivascular background (0,82, $p < 0,01$).

Conclusions. Thus, the study showed that a number of disorders in microcirculatory parameters affect the presence of clinical symptoms of hypertension in children, as well as the need to use studies of microcirculation in this pathology.

SURGERY

CHALLENGES IN THE TREATMENT OF COMPLICATED GALLSTONE DISEASE DURING THE COVID-19 PANDEMIC, GROUP COMPARISON RESEARCH

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Keywords. Complicated gallstone disease; Covid-19 pandemic

Objectives. The COVID-19 pandemic places a heavy burden on the entire healthcare system, including surgical field. Complicated gallstone disease is itself potentially life-threatening, but Covid-19 creates challenges in timely treatment initiation and in treatment and diagnostic methods choice. The aim is to compare length of hospital stay, diagnostic methods and treatment choice for complicated gallstone disease before and during the COVID-19 pandemic.

Materials and methods. The study involved a retrospective analysis of 92 patients with complicated gallstone disease admitted to Riga East University hospital between January 2019 to March 2019 and from January 2021 till March 2021. The data were retrieved from the medical charts. Statistical analysis was performed with the SPSS software.

Results. A statistically significant higher median length of hospital stay was observed before the Covid-19 pandemic – 14 days (IQR 17-9), compared to the pandemic period – 10 days (IQR 13-7.75), $p=0.04$. The relation between the Covid-19 pandemic and laparoscopic common bile duct exploration (21.1% (N=12) in 2019, 40.0% (N=14) in 2021) is statistically significant, $p = 0.05$. There is a statistically significant relation between open common bile duct exploration and the pandemic (24.6% (N=14) in 2019, 8.6% (N=3) in 2021), $p=0.05$. No significant difference in incidence of complications was observed. Mechanical jaundice was in 78.9% (N=45) of patients in 2019 and in 65.7% (N=23) in 2021, respectively, acute biliary pancreatitis was in 29.8% (N=17) and 25.7% (N=9) and sepsis was in 7% (N=4) and 11.4% (N=4). The relation between the pandemic and fatal outcomes is not statistically significant, (3.5% (N=2) in 2019, 2.9% (N=1) in 2021), $p = 1.00$.

Conclusions. COVID-19 pandemic has made its changes in the approach to the treatment of patients with complicated gallstone disease. Length of hospital stay during the Covid-19 pandemic was reduced as well. Treatment outcomes don't differ from the pre-pandemic period.

THE IMPACT OF PREOPERATIVE BREAST MAGNETIC RESONANCE IMAGING ON THE LIKELIHOOD OF MASTECTOMY AMONG PATIENTS WITH NEWLY DIAGNOSED BREAST CANCER

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Keywords. Preoperative breast MRI; Breast cancer; Mastectomy

Objectives. Breast MRI is more sensitive than mammography and ultrasound for the assessment of disease extension and detection of additional lesions, thus MRI results may affect surgical treatment. The aim of this study was to determine whether patients with newly diagnosed breast cancer who underwent MRI during their preoperative investigation were more likely to undergo mastectomy.

Materials and methods. This retrospective study included 382 women aged 23-87 with diagnosis of breast cancer who underwent surgery in Pauls Stradiņš Clinical University Hospital, Breast Unit in the time period from 2018 to 2020. Patients with a history of breast cancer, mutation of BRCA-1/BRCA-2 were excluded. Patients were grouped into those who underwent MRI in addition to conventional imaging (mammography and/or breast ultrasonography) or conventional imaging only. The data has been collected from medical records and analysis was done with IBM SPSS Statistics 27.0.

Results. Of 382 analysed patients, 177 (46.3%) had conventional imaging only, and 205 (53.7%) underwent MRI before surgery. There was a significant difference in mean age (55 ± 11.6 SD vs. 63 ± 12.7 SD) and tumour size (mm) (22.65 ± 14.2 SD vs. 18.92 ± 12.5 SD) between MRI and no MRI group ($p < 0.001$). The prevalence of multifocal tumours was higher in MRI group comparing to conventional imaging only (30.7%, $n=63$ vs. 14.7%, $n=26$, $p < 0.001$). The overall performed mastectomy rate was 40.3%, $n=154$. Women with MRI were more likely to have a mastectomy compared to no MRI group (46.3%, $n=95$ vs. 33.3%, $n=59$), (OR = 1.73; 95% CI 1.14–2.62, $p = 0.01$). There were higher rates of mastectomy comparing to breast conserving surgery among women with multifocal tumours in both groups, 66.7% in MRI group and 73.1% in no MRI group ($p < 0.001$).

Conclusions. Preoperative MRI is associated with increased odds of receiving mastectomy as surgical treatment in newly diagnosed breast cancer patients. Higher rates of mastectomy were observed in women with multifocal tumours.

ONE YEAR FOLLOW-UP RESULTS OF THE FUNCTIONALITY OF ARTERIOVENOUS FISTULAS CREATED FOR HAEMODIALYSIS AND THE RISK FACTORS FOR FAILURE

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Keywords. Vascular access; Chronic kidney disease; Thrombosis

Objectives. An Arteriovenous fistula (AVF) is the preferred vascular access for haemodialysis, but the long-term complications have not been extensively studied. The most common complication causing AVF failure is thrombosis. The study aimed to investigate the long-term results of AVFs created at Pauls Stradiņš Clinical University Hospital and assess possible risk factors for AVF failure.

Materials and methods. A single centre retrospective cohort study was performed of AVFs created for chronic kidney disease patients from January until December 2020. During this time a total of 82 AVFs were created, 6% of the operations were unsuccessful and 6% of patients were lost to follow-up. Follow-up was obtained from 72 patients, including 22 women and 50 men. AVF failure was defined as any event to cause permanent inability to use the AVF for haemodialysis. AVF outcomes were evaluated using Kaplan–Meier survival curves and Cox proportional hazards model.

Results. One year after the surgery the incidence of AVF failure was 17.1% (n = 14, including 11 cases of thrombosis), two patients had received a kidney transplant and 10 patients had died. 48 patients had a fully functional AVF with no complications that would require a change of vascular access for haemodialysis. The cumulative survival rate following AVF creation after one year was 79.3% (CI, 0.697 to 0.889) with statistically insignificant difference between males and females. No statistically significant hazard ratio was observed regarding patient age, AVF placement site, chronic kidney disease stage or previous history of dialysis. There was also no higher failure risk observed with higher levels of platelets, serum potassium, serum creatinine, serum urea or serum haemoglobin.

Conclusions. The study observed thrombosis to be the leading cause of AVF failure during one year follow-up. Further research should be conducted to assess the relevant risk factors for AVF failure and thrombosis.

COMPARISON OF KIDNEY TRANSPLANTS FUNCTION FROM DECEASED AND LIVING DONORS

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Keywords. Kidney transplantation; Living donors; Deceased donors

Objectives. Transplant function and survival rate after kidney transplantation varies depending on the patient's condition and the quality of the transplanted organ. In general, the quality of the transplant is better in living donors (LD), resulting in better function at an early stage and the average graft survival exceeding the graft survival of deceased donors (DD). The objective of this study is to compare kidney transplants function from deceased and living donors.

Materials and methods. A total of 162 donors were included in this retrospective cohort study: 111 deceased and 51 living donors. 241 recipients who underwent kidney transplantation were divided into two groups: those who had a kidney transplant from a deceased donor and those who had a kidney transplant from a living donor. Transplantation results were observed 1 year after kidney transplantation.

Results. LD kidney transplants provide better renal function within 1 year compared to DD transplants (12 months postoperative GFR is 78.94 ml/min/1.73m² for LD transplants and 57.38 ml/min/1.73m² for DD transplants; $p < 0.001$). From the obtained data it can be concluded that the primary function of LD kidney transplants after transplantation is better than that of DD, which is indicated by renal function parameters: creatinine level (LDcrea = 77.1 µmol/L and DDcrea = 105.4 µmol/L; $p < 0.001$) and urea levels (LDurea = 6.2 mmol/L and DDurea = 6.8 mmol/L; $p < 0.001$). Data suggest that DD kidney transplants have a higher rate of acute renal damage as indicated by NGAL (88.2 ng/mL for DD and 17.3 ng/mL for LD; $p = 0.001$).

Conclusions. The findings of this study show that kidney transplantation from LD reduces the risk of graft dysfunction and the incidence of graft delayed function. Significant improvement in GFR over 1 year was also observed in recipients who received a kidney transplant from a LD than from a DD.

THE IMPACT OF THE COMPLICATIONS OF THE COLORECTAL ANASTOMOSIS ON PATIENTS' QUALITY OF LIFE

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Keywords. Colorectal anastomosis; Complications; Quality of life; Colorectal cancer

Objectives. Colorectal anastomosis is common in abdominal surgery. There are numbers of indications to form an anastomosis. However, the high demand of forming anastomosis results high risk of complications. One of the most common complications is an anastomotic leak that causes peritonitis, abscess forming, sepsis, and increases mortality. In the diagnosis of the anastomotic leak, the clinical symptoms are often not specific and clinical symptoms appear not before the 8th-daypost-op. At that point, the patient is in critical condition. The earlier the complication is detected, the less impact it will have on patients' quality of life (QoL). The evaluation of the complications is important for choosing the plan to reduce them and allocating the proper treatment.

Materials and methods. Standard LARS and EORTC QLQ-C30 questionnaires were chosen to collect answers from 60 colorectal cancer patients. The main requirement for patient selection was colorectal anastomosis formation not later than one year before the beginning of the research. The questionnaires were mail-administered to patients individually. Filled questionnaires were systematized and evaluated.

Results. After collecting the questionnaires, 51 (85%) questionnaires were appropriate for evaluation. 46% of the patients had no LARS, 10% had minor LARS, and 44% had major LARS. 10 (16,7%) out of all patients developed anastomotic leakage, however, it had no impact on global health status, functional and symptoms scales by EORTC QLQ-C30 and LARS questionnaires.

Conclusions. Colorectal cancer resection with anastomosis formation has a major impact on deteriorating QoL by role and social function scale scores. Moreover, it is associated with a higher risk of major LARS. Anastomotic leakage has no impact on functional outcomes.

OUTCOMES OF DORSAL VENOUS COMPLEX CLIPPING IN LAPAROSCOPIC RADICAL PROSTATECTOMY: CLINICAL TRIAL

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Keywords. Laparoscopic; Radical prostatectomy; Clipping

Objectives. Prostate cancer (PCA) is one of the most common cancers in males, making up 15 % of all newly diagnosed cancers in men. In cases with localized PCA, in most cases surgical intervention such as laparoscopic radical prostatectomy is chosen as a treatment. During surgery when prostate is resected from dorsal vein complex (DVC), major blood loss can occur. Suturing and ligation of DVC is one of most time-consuming steps during surgery. Our objective is to establish DVC clipping technic and to determine if clipping of DVC shortens the operation and hospitalization time, and whether it reduces blood loss, compering to suturing and ligation of DVC.

Materials and methods. A prospective study of 102 patients where the patients had laparoscopic radical prostatectomy. Patients were divided into 2 groups: group A (54 patients) underwent DVC clipping; group B (48 patients) underwent DVC ligation. The following measurements were used to analyze the treatment: surgical time, hospitalization time, Hb levels before and after surgery. Hb balance formula was used to assess blood loss.

Results. Group A and B were comparable in terms of age, body mass index, and in cancer stage. Clipping of the DVC reduces total surgical time (99,69 min vs 115,86 min, $U = 787,5$, $z = -3,41$, $p < 0,01$), hospitalization time (5,23 days vs 7,09, $U = 971,5$, $z = -2,21$, $p < 0,05$) and mean intraoperative blood loss (988,48 ml vs 1415,62 ml, $U = 356$, $z = -2,18$, $p < 0,05$) when compared to ligation of DVC. Clip migration after surgery was observed in four patients who underwent DVC clipping.

Conclusions. DVC clipping reduces surgical and hospitalization time as well as intraoperative blood loss when compared to ligation of the DVC. To determine complications rate, like clip migration, continence rate and positive margin rate, further investigation is necessary.

ERADICATION OF CASES WITH INCORRECTLY PRESCRIBED ANTIBIOTIC PROPHYLAXIS IN SURGERY - THE ROLE OF CREATION OF A LOCAL GUIDELINES

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Keywords. Surgical antibiotic prophylaxis

Objectives. Cases, when the parameters of the antibacterial prophylaxis doesn't match with the latest scientific recommendations, should be considered as eradicable, since the only expected results are potential risks (e.g. pharmacological side effects, acceleration of antimicrobial resistance development) without a proven prophylactic benefits. The aim of the study was to evaluate an impact of the created local guidelines on a frequency of incorrectly prescribed preoperative antibiotic prophylaxis.

Materials and methods. A retrospective analysis of all surgical interventions in the Department of Vascular Surgery of P.Stradins Clinical University Hospital from January to December 2018 was made. The creation of local guidelines for correct management of preoperative antibiotic prophylaxis was followed by analogical retrospective analysis for period from January to December 2020, randomly choosing every tenth medical record. Data about incorrectly prescribed antibiotic prophylaxis were compared with the data of year 2018.

Results. In 2018, from 1233 cases in 1024 (83,0%) antibacterial prophylaxis had incorrect pattern – in 264 (21,4%) incorrect or more than one antibacterial drug was given, in 640 (51,9%) it was continued for longer than a single-dose, in 115 (9,3%) antibiotics were prescribed after the discharge. After creation of the guidelines, in 2020 from 114 cases in 18 (15,8%) antibacterial prophylaxis had incorrect pattern – in 9 (7,9%) more than one antibacterial drug was given (in all cases extra drug was prescribed spontaneously during the surgery), in 12 (10,5%) it was continued longer than single-dose. There were no cases of usage of incorrect antibacterial drug and no cases when antibiotics were prescribed after the discharge. All 18 cases refers to only 3 physicians.

Conclusions. Creation of a local guidelines as well as analysis of usage of the antibacterial drugs in perioperative period within the structural unit have a strong positive impact on reduction of the unwarranted usage of antibacterial drugs.

THE RELATIONSHIP BETWEEN SPECIFIC ECHOCARDIOGRAPHIC CHANGES IN PATIENTS WITH INFECTIVE ENDOCARDITIS CAUSED BY SPECIFIC BACTERIAL MICROORGANISMS

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Keywords. Infective endocarditis; Outcome; Echocardiography; Cardiac surgery; *Staphylococcus aureus*

Objectives. Despite many improvements in diagnosing and treating patients with infective endocarditis, it is still an infection which harbours an enormous morbidity and mortality. The diagnosis of infective endocarditis is based on the modified Duke Criteria, where a central role plays microbiological analyses and echocardiography. The purpose of this study was to investigate the short- and long-term outcomes and echocardiographic manifestations of infective endocarditis caused by various bacterial agents in cardiac surgery patients.

Materials and methods. In this retrospective study, the data of 253 patients aged 18 years or above with indications for cardiac surgery due to infective endocarditis caused by *S.aureus*, *Streptococcus* spp., *E.faecalis*, or coagulase-negative *Staphylococcus* was analysed.

Results. Among 253 cardiac surgery patients, 144 subjects were diagnosed with *S.aureus*, *Streptococcus* spp., *E.faecalis*, or coagulase-negative *Staphylococcus* caused infective endocarditis. No significant differences in intrahospital mortality due to infective endocarditis caused by various bacterial agents were found, however, the worsening of long-term prognosis of endocarditis caused by *S.aureus* when compared to *E.faecalis* was confirmed ($p=0.03$). *Streptococcus* spp. caused endocarditis was associated with significantly more severe aortic regurgitation and fistula formation between cardiac chambers. The presence of *S.aureus* was associated with significantly more often embolic complications ($p=0.003$). Coagulase-negative *Staphylococci* were associated with prosthetic valve endocarditis ($p=0.015$) and the presence of perivalvular complications ($p=0.024$).

Conclusions. The presence of *S.aureus* determines the worsening of the long-term prognosis of infective endocarditis and the highest incidence of embolic complications. Perivalvular complications and prosthetic valve endocarditis is associated with the presence of coagulase-negative *Staphylococci*.

IMPACT OF ANTIBACTERIAL TREATMENT FOR CHILDREN WITH UNCOMPLICATED ACUTE APPENDICITIS

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Keywords. Acute uncomplicated appendicitis; Antibacterial treatment; Inflammatory markers

Objectives. In recent years treatment of acute appendicitis (AA) has changed. Non – operative treatment might be a safe and effective management choice for children. To evaluate whether the antibacterial treatment for patients with uncomplicated AA has impact to serum inflammatory markers (SIM).

Materials and methods. Single center one year study included the prospective data analysis of Alvarado score, white blood count (WBC), C-reactive protein (CRP), interleukin-6 (IL-6), interleukin-8 (IL-8) and monocyte chemoattractant protein-1 (MCP-1), ultrasound findings, treatment and outcome among patients aged 7-18 years old admitted to Children's Clinical University Hospital with a diagnosis of uncomplicated AA. Patients divided into two groups by age (Group I: 7-13y, Group II: 14-18y) both received ampicillin and metronidazole. All laboratory markers were obtained before and 3rd day after treatment. Data were processed by using IBM SPSS Statistics 27 with significance defined as $p < 0.05$.

Results. A total of 22 (68%, n=15 males) with mean age $13.5(\pm 2.7SD)$ were divided in Group I (59%, n=13) and Group II (41%, n=9). In Group I the mean WBC and MCP-1 were $14.14 \times 10^9/L (\pm 1.0SD)$ and $192 \text{ pg/mL } (\pm 14.8SD)$; in Group II - WBC and MCP-1 were $14.86 \times 10^9/L (\pm 1.1SD)$ and $294 \text{ pg/mL } (\pm 83.4SD)$ before treatment. After 3rd day the mean WBC and MCP-1 in Group I were $5.73 \times 10^9/L (\pm 0.8SD)$ and $181 \text{ pg/mL } (\pm 8.4SD)$; in Group II - WBC and MCP-1 were $6.64 \times 10^9/L (\pm 0.4SD)$ and $272 \text{ pg/mL } (\pm 46.1SD)$. Clinical condition improved in 63% (n=14). 8 patients did undergo appendectomy. There is significant difference between WBC ($U=85$; $p=0.028$) and MCP-1 ($U=57$; $p=0.03$) for study Group I compared to Group II on the 3rd Day after treatment.

Conclusions. The antibacterial treatment has made greater WBC and SIM value changes for school-age children comparing to adolescents with uncomplicated AA.

LONG-TERM EFFECTIVENESS OF BARIATRIC SURGERY TREATMENT OUTCOMES: A THREE-YEAR ANALYSIS IN AIWA CLINIC HOSPITAL

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Keywords. Bariatric surgery; Obesity; Surgical procedures; Operative; Surgery

Objectives. This is a retrospective study about bariatric surgery which aims to analyze how age and operation type affected patients weight loss after surgery and decrease in BMI.

Materials and methods. The retrospective study included 80 patients who underwent bariatric surgery - RYGB or SG in AIWA Clinic between 2018-2021. The data has been collected from medical records and analysis was done with IBM SPSS Statistics 23. Outcomes included patient weight loss in kg and decrease in BMI 3, 6, 9, and 12 months after surgery.

Results. Pre-OP median weight in men was 146kg IQR(175-130), women 115kg IQR (133-101). Median weight loss in first appointment after surgery for men: 10,5% IQR(15-8), women 8,7% IQR(11-7), second: 18% IQR(20-12) and 18% IQR(22-16), third: 23% IQR(29-17) and 27% IQR(30-15), fourth: woman 32% IQR(37-14). Median weight loss in first appointment after RYGB surgery- 9,2% IQR(13-7), SG surgery- 9,5% IQR(12,9-7,5), second: 19,6% IQR(23,5-15,8) and 16,8% IQR(17,8-12,2), third: 26,5% IQR(30,4-24,2) vs 22,1% IQR(27,8-15,2), fourth: 26,6% IQR(40-32,5) vs 18,8 IQR(30,1-11,6). Median BMI value before OP: men- 45,1 IQR(48,1-41,6), women- 40,6 IQR(45,7-35,7). In first appointment after surgery: 39,0 IQR(42,6-37,8) and 36,8% IQR(42,6-32,6), second: 36,5 IQR(39,0-32,1) and 34,1 IQR(38,4-29,6), third: 32,7 IQR(41,5-29,6) and 29,7 IQR(34,8-28,3), fourth: woman 29,7 IQR(34,5-24,3)

Conclusions. There was no statistical difference between patients age ($p > 0.05$), BMI groups ($p > 0.05$) and weight loss in %. RYGB tended to have slightly bigger weight loss in % than SG. Surgery choice was statistically significant between pre-OP BMI groups ($p = 0.007$). Surgery type didn't have statistically significant difference in BMI decrease ($p > 0.05$). Men had bigger median change (45,1 → 32,7) in BMI after third appointment than women (40,6 → 29,7). In addition to achieving substantial and durable weight loss, bariatric surgery is associated with favorable metabolic effects far beyond those achieved by lifestyle modifications and pharmacologic treatments.

PSYCHOLOGY

RELATIONSHIP BETWEEN RELIGIOSITY AND ATTITUDE TOWARDS VACCINATION IN LATVIAN ADULTS

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Keywords. Religiosity, Attitude towards vaccination, Adults, COVID-19

Objectives. At the end of October 2021, Latvia had the highest mortality rate due to COVID-19 among EU and EEA countries. 87% of people who died from COVID-19 had not been vaccinated or had not completed the vaccination course, which increases the risk of death by a factor of 6.1 for COVID-19. (Center for Disease Control and Prevention [CDC], 2021) As vaccines are the most effective way to reduce mortality, it is important to investigate whether such factor as religiosity, which is quite important in Latvia, is associated with attitudes towards vaccination.

Materials and methods. Data were collected from 55 respondents aged 25-60 years ($M = 39.94$; $SD = 11.07$; 27.3% male). The indicators for religiosity were assessed with the Centrality of Religiosity Scale CRS-5 (Huber, 2012, adapted by Trups-Kalne, 2019), while modified Survey on the Attitude of Healthcare Workers to Vaccinate Against Covid-19 (Lielšvāgere-Endele et al., 2021) was used to evaluate attitude of each participant. Both surveys were disseminated using a convenience sampling.

Results. The results indicated statistically significant weak negative correlations with dimensions "religious ideology", "religious experience" and attitude towards vaccination ($r_s = -.33$, $p < .05$; $r_s = -.34$, $p < .05$ accordingly), while belief that vaccination affects personal freedom showed a weak positive relationship with religiosity ($r_s = .29$, $p < .05$), as well as with the dimensions "religious ideology" ($r_s = .28$, $p < .05$), "private practice" ($r_s = .32$, $p < .05$) and "religious experience" ($r_s = .30$, $p < .05$).

Conclusions. It can be concluded that people with higher indicators of religiosity might have a more negative attitude towards vaccination. In addition religious people are more likely to believe that vaccination is imposed and threatens an individual's personal freedom.

DEVELOPMENT AND PSYCHOMETRIC TESTING OF FIVE SCALES FOR COVID-19 RELATED MEASURES WITHIN HEALTH BELIEF MODEL

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Keywords. Conspiracy theories; COVID-19; Evaluation of government decisions; Health belief model; Perceived threat; Psychometric properties

Objectives. Due to novel coronavirus (COVID-19) pandemic, a need for various measures has arisen, that evaluate influence of COVID-19 related variables in different fields. As, to our knowledge, there were no such validated measures in Latvia so far. Within our study we have developed and tested five new scales for further research on COVID-19 related preventive health behavior within Health belief model, which has been one of the most widely used health behavior models to date.

Materials and methods. The present study was conducted shortly before the second wave of pandemic with computer assisted face-to-face interviews in two languages – Latvian and Russian. Study sample was selected using a stratified random sampling method (N = 642) from Latvian population, age 18 to 95 (M = 55,63, SD = 19,30). Most of the participants were female (66,20%), about third living in Riga (34,60%). 70% of participants answered the questionnaires in Latvian. No participants reported personal experience with COVID-19 disease at the time of study. Tested scales were developed by our university's leading scientists in field of Psychology for a broader research, then psychometrically tested within our study.

Results. Scales “Perceived fear of contracting COVID-19” (I), “Evaluation of COVID-19 related government actions” (II), “COVID-19 related preventive health behavior” (III), “Belief in COVID-19 origin related conspiracy theories” (IV) and “Perceived COVID-19 severity” (V) had moderate to good internal consistency ($0,64 < \alpha < 0,95$) for all five scales in both languages. As well as acceptable results for item properties and factor structure – as theorized scales produced single (II, IV, V) and double (I, III) factor solutions.

Conclusions. The present study found that five newly developed scales had satisfactory psychometric properties within our sample and can be used for further study on COVID-19 related constructs within Health belief model.

ANXIETY SENSITIVITY, EXERCISE SENSITIVITY AND ITS RELATION TO PHYSICAL ACTIVITY

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Keywords. Anxiety sensitivity; Exercise sensitivity; Physical activity; Sitting position; Gender

Objectives. High levels on anxiety sensitivity can contribute to avoidance behavior. A person with high anxiety sensitivity is convinced that symptoms of anxiety is dangerous, therefore it's common to avoid anything that could trigger similar bodily sensations. Related construct to anxiety sensitivity is exercise sensitivity – awareness of bodily sensations during physical activity and fear of them. The goal of this research was to examine the associations between anxiety sensitivity, exercise sensitivity and physical activities. To collect data, a primary adaption of Exercise Sensitivity Questionnaire in Latvian was needed. Permission to adapt Exercise Sensitivity Questionnaire was obtained from author of the questionnaire.

Materials and methods. The study included 475 participants, 75 % females, 25 % males, aged 18 til 64 ($M=35.71$, $SD=11.21$) from Latvia. For data collection were used Anxiety Sensitivity Index-3 (Taylor et al., 2007), Global Physical Activity Questionnaire (WHO, 2005), Exercise Sensitivity Questionnaire (Farris et al., 2020) and demographic data questionnaires.

Results. This research results showed significant positive correlation between anxiety sensitivity and exercise sensitivity ($r_s = .38$, $p < .001$), negative correlation between anxiety sensitivity and physical activity ($r_s = -.15$, $p < .01$) and positive correlation between exercise sensitivity and time spent in a sitting position ($r_s = .12$, $p < .05$). Cronbach's Alpha for Exercise Sensitivity Questionnaire adaption in Latvian language was 0.93. Higher anxiety sensitivity levels ($U = .23$, $p < .001$) were reported by females ($Mdn = 21.93$) than males ($Mdn = 17.31$). Females ($Mdn = 25.90$) also reported higher exercise sensitivity ($U = 0.22$, $p < .001$) than males ($Mdn = 20.97$).

Conclusions. Sedentary lifestyle can affect mental health. The results of the study confirm the need for individual approaches for the encouragement of physical activity as a mental health promoter. Exercise Sensitivity Questionnaire can be used for further research in Latvia.

SELF-ASSESSMENT OF ARTS THERAPISTS' SELF-CARE STRATEGIES

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Keywords. Arts therapist; Attainability; Importance; Self-care; Self-care strategy; Covid-19 pandemic

Objectives. During the times of societal changes caused by Covid-19 pandemic it is ever more important for health care professionals to practice self-care thus maintaining their mental health and well-being and reducing hazards. There is limited research on self-care of arts therapists as health care professionals. The study explored self-assessment of arts therapists' self-care strategies compared to the one of the general population.

Materials and methods. Data were collected between March and November 2021 via an online survey based on Self-Care Strategies Questionnaire (Mārtinsone, Perepjolkina un Ruža, in press). Following two instructions, respondents assessed importance and attainability of 63 self-care activities structured in 14 strategies and 2 separate activities. The study sample (N=942; 858 (91%) female and 84 (9%) male participants; age M (SD) = 43.07 (13.16)) comprised 73 (8%) arts therapists and 869 (92%) professionals in other fields.

Results. Statistically significant differences between importance and attainability were indicated in all arts therapists' self-care strategies ($T = [-7.307; -4.693]$; $p < .001$). The importance was scored higher. Seven strategies and one separate activity revealed statistically significant differences between arts therapists and the general population ($U = [15704.5; 25927.5]$; $p < .05$) and were more often assessed higher by the arts therapists.

Conclusions. In sum, arts therapists tend to pay more attention to self-care compared to the general population. However, the gap between importance and attainability indicates insufficient self-care practice among arts therapists and highlights the necessity to promote self-care engagement.

DEVELOPMENT OF LATVIAN SLEEP QUESTIONNAIRE: FIRST STAGE

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Keywords. Sleep; Sleep hygiene; Questionnaire; Psychology; Psychometrics

Objectives. Restoring sleep is associated with a broad variety of favorable cognitive, emotional, social, and behavioural benefits during the day. Poor sleep hygiene is a potentially modifiable risk factor that can be addressed via appropriate tools. Having reliable and valid self-report measures to assess sleep hygiene practices is essential to gauge individual responses to behavioural interventions and evaluate sleep hygiene recommendations. As currently there are no valid tools to evaluate sleep habits in Latvian population, the aim of this study was to develop and validate the Latvian Sleep Questionnaire (LSQ), a self-report measure designed to assess sleep hygiene habits that are significant in optimal sleep specifically for Latvian population.

Materials and methods. A total of 383 individuals from Latvia, aged 18 – 84 ($M = 33.86$, 27.41% male) have participated in the study. The questionnaire included questions regarding the self-evaluation of overall sleep quality, sleeping hours as well as questions about sleep habits (such as “physiological”, “behavioural”, “sleep stability”, “sleep environment”, “substance use” & “cognitive” habits before or after sleep). Cronbach’s alphas and intraclass correlation coefficients were computed to investigate internal consistency. To explore the factor structure of the LQS, an exploratory factor analysis (EFA) using principal axis factoring with varimax and parallel analysis was performed. Cronbach’s alphas and intraclass correlation coefficients were computed to investigate internal consistency.

Results. 43 items were removed from the initially proposed 77 item set, due to unfit reaction and discrimination indices, as well as EFA results. As a result, seven factors were established. Internal consistency of LQS was $\alpha = 0.90$; for all subscales were within the borders from .67 to .91 that indicates adequate to high internal consistency.

Conclusions. A 34-item questionnaire for sleep hygiene has been developed, fitted specifically for Latvian population. Further steps should be taken for conducting a normative study.

RELATIONSHIP BETWEEN BRAIN ATROPHY, MOTOR RESERVE AND GLOBAL COGNITIVE FUNCTIONING IN OLDER ADULTS

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Keywords. Brain atrophy; General cognitive assessment; Motor reserve; Older adults

Objectives. Aging is a major risk factor for neurodegenerative diseases (Hou et al., 2019). Brain atrophy is strongly associated with cognitive decline, which leads to dementia progression (Sluimer et al., 2008). The presence of physical activity is considered to be one of the most important modifiable factors positively influencing cognitive function, delaying the development and progression of Alzheimer's disease (Tabei et al., 2018). Therefore, this study aimed to evaluate statistically significant associations between brain atrophy, motor reserve, and global cognitive functioning.

Materials and methods. In this study, 61 participants aged 65-85 ($M = 65$, $SD = 5.04$) were included. The Montreal Cognitive Assessment (MoCA, Nasreddine et al., 2005) was used for general cognitive assessment, followed by brain structure analysis by T1.5 Magnetic Resonance Imaging (MRI). The FINBALT Health Monitoring Survey was used to assess participants' motor reserves, after which motor reserve scores were obtained by mathematical calculations.

Results. Global cognitive functioning statistically significant positive correlation with the left parietal lobe atrophy ($r_s = .397$, $p < 0.01$), as well as with the weighted atrophy scale scores ($r_s = .747$, $p < 0.01$); however, there was no relationship between cognitive functioning and motor reserve ($p > 0.05$). Motor reserve showed a statistically significant negative correlation with the left parietal lobe atrophy ($r_s = -.281$, $p = .028$) and total parietal atrophy ($r_s = -.263$, $p < 0.05$).

Conclusions. Increased brain atrophy in the medial temporal lobe might be related to a decline in general cognitive functioning, while life-long involvement in physical activity could be associated with lesser brain atrophy in parietal regions. Future research in a larger sample would be crucial in better understanding the role of physical activity as a preventive or disease-modifying treatment of brain atrophy.

ILLNESS DENIAL QUESTIONNAIRE (IDQ) VALIDATION IN LATVIA

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Keywords. Assessment; Denial; Avoidance; Chronic Disease; Psychometric property

Objectives. The aim of the research is to adapt Illness Denial Questionnaire (IDQ) assessing patients' denial in relation to their illness. To gain a valid instrument for assessing denial in patients with chronic diseases. Illness denial as a defense mechanism is present in many chronic diseases (Ferrario et al., 2017; Goldbeck, 1997) and in short period can protect an individual from distress (Lazarus, 1983; Kreidler, 1999; Sirri & Grandi, 2012), but in the long term being in denial of chronic disease can cause harm by not seeking and receiving appropriate medical help (Goldbeck, 1997; Travis et al., 2011). There is no valid measure to assess denial in chronic patients in Latvia. The Illness Denial Questionnaire is based on theoretical model of three dimensions: denial of negative emotions, resistance to change, and conscious avoidance. Confirmatory factor analysis (CFA) has indicated a three factor structure and good internal consistency $\alpha = 0,87 - 0,96$ (Ferrario et al., 2017). The permission to adapt IDQ was received after successful communication with the main author of the questionnaire. The research will be approved by the RSU Ethical committee.

Materials and methods. For this study is necessary sample of at least 200 Latvian speaking patients with chronic disease. The age range from 18 to 65 years old, men and women. Participants will be asked to fill out demographic data questionnaires (gender, age, occupation) and the Illness Denial Questionnaire (IDQ, Ferrario et al., 2017), the scale of 24 dichotomous (true/false) items. Scoring for "true" = 1, "false" = 0, higher result in questionnaire reflecting greater denial of illness.

Results. It is expected that Cronbach's Alpha for all items will vary from 0,80 to 0,90 which would prove good internal consistency. The item-difficulty index and the item-discrimination index would reach the criteria. By confirmatory factor analysis (CFA) it would show a three factor structure.

Conclusions. The Illness Denial Questionnaire in Latvian sample would show good psychometric properties as in the original research of IDQ validation $\alpha = 0,87 - 0,96$ (Ferrario et al., 2017). The measure would be appropriate for further research of illness denial to acknowledge the problem in patients with chronic diseases.

THE RELATIONSHIP BETWEEN RELIGIOSITY AND DEPRESSION

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Keywords. Depression; Religiosity; Religiosity dimensions

Objectives. Most studies confirm the positive effect of religiosity on reducing depressive symptoms. As the Covid-19 pandemic has not only affected mental health, but also reduced socialization, and as religiosity is one of the mental health factors that has a positive effect on reducing depressive symptoms, it is now important to study samples of women and men in the context of religion and depression. The aim of the study was to investigate the relationship between religiosity and depressive symptoms, and, to explore whether there is difference across different age groups and gender.

Materials and methods. The survey included 678 Latvian speaking participants aged from 18 years to 65 years, 73.9 % female. Religiosity was measured with the Centrality of Religiosity Scale (CRS-5, Huber, 2012, adapted by Trups-Kalne, 2019), while depression was measured with the Patient Health Questionnaire-9 (PHQ-9, Kroenke 2001, adapted by Vrubļevska & Rancāns, 2018). All participants anonymously filled the demographic data questionnaires (gender, age, education, belonging to the religious organization and the pastoral rights).

Results. The results indicated statistically significant, but weak negative correlation between the religiosity index and depressive symptoms in the sample ($r_s = -.21, p < .00$). Religiosity was weakly associated with depression in the women sample ($r_s = -.17, p < .00$), and, in the whole men sample ($r_s = -.21, p < .005$), however when excluding pastors from men sample, the correlations is statistically insignificant and weak positive ($r_s = .11, p > .005$). Religiosity was weakly associated with depression in the two age groups – 35 – 44 ($r_s = .20, p = .00$) and 45 over ($r_s = -.21, p = .00$).

Conclusions. To summarize, there is an association between depression and religiosity in the female and male samples, higher indicators of religiosity might be related to lower depression scores, especially in adults aged over 35; however, it should be noted that the relationship is very weak; there are differences in aspects of religiosity index and depression across gender and age groups.

VACCINATION PREDICTING FACTORS IN ADULTS IN LATVIA USING THE HEALTH BELIEF MODEL DURING THE COVID-19 PANDEMIC

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Keywords. COVID-19; COVID-19 experience; Fear of vaccination; Health Belief Model; Subjective norms; Vaccination motive; Vaccination intention

Objectives. Vaccination intention and effective vaccination strategies development and implementation during the COVID-19 pandemic may reduce the number of hospitalised people with COVID-19, as well as reduce mortality rates related to COVID-19. Despite the availability of vaccines, the vaccination intention is low, and the world is facing global health challenges due to COVID-19 pandemic.

Materials and methods. The study included 539 respondents (52.9% males, 47.1% females, age 18 to 75, $M = 45.35$, $SD = 15.70$) who were not vaccinated against COVID-19, they were selected from a sample representative of the Latvian population surveyed by the INTERFRAME-LV study ($N = 1017$). The data was collected using demographic data questionnaire (gender, age, education, occupation) and instruments based on the Health Belief Model constructs: perceived threat of disease (scale of 3 items), perceived benefits as vaccination motives (scale of 6 items), perceived barriers as fear of vaccination (scale of 5 items), cues to action as COVID-19 experience and subjective norms (scale of 4 items). Data was collected from 10th to 22nd September 2021 by conducting direct interviews at the respondents' residences.

Results. According to the results of the multi-factor linear regression analysis perceived threat of disease, perceived benefits and barriers, and cues to action were statistically significant predictors of vaccination intention ($R^2 = 0.31$, $F(11,525) = 23.21$, $p < 0.001$), explaining 31% of the variation. Demographic factors were not statistically significant predictors of vaccination intention.

Conclusions. The results of this study show the importance of the perceived threat of the disease, the subjective vaccination motive, the belief that the vaccine will not cause significant side effects and long-term consequences, support of the family and other important people in the vaccination behavior and COVID-19 experience to predict the COVID-19 vaccination intention.

CASE REPORTS, SMALL CASE SERIES

INTERNAL MEDICINE I

ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY IN FORENSIC PRACTICE - CASE REPORT OF SUDDEN CARDIAC DEATH

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Keywords. Arrhythmogenic right ventricular cardiomyopathy; ARVC; Sudden cardiac death

Introduction. Sudden cardiac death is the most severe phenotypic manifestation of ARVC, especially in adolescents. It is characterized by the fibrofatty replacement of the myocardium, which progresses from epicardium towards endocardium and tends to be in the “triangle of dysplasia” (outflow tract of right ventricle, inferior all beneath the posterior tricuspid leaflet and the ventricular apex). The prevalence in the general population is estimated to be 1:1000 to 1:2000.

Case description. 18 years old, male, cyclist. Shortly after the competition lost consciousness, a medical emergency was called, CPR was performed, defibrillation, but resuscitation measures have no effect, and death occurs. Heart dimensions 13,5×11×9 cm, weight 505 grams. The epicardium is thickened in the left ventricle, with small red bruises under the epicardium.

The myocardium is fluffy inconsistency, cut reddish-brown in color, thoroughbred. The results of the forensic toxicological investigation are negative. Histological changes in the heart (right ventricular fibrosis, lipomatosis, light infiltration of inflammatory cells) suggest arrhythmic right ventricular cardiomyopathy.

Summary. Although there is no doubt that exercise produces a wide range of benefits for the maintenance of health, some individuals may still be at risk of adverse events, including ARVC.

Conclusions. If a correct diagnosis has not been made before the death, identifying cardiomyopathy at the autopsy is important for forensic and public health issues. . In conclusion, all subjects who wish to practice moderate- to high-intensity exercise are highly recommended to undergo preparticipation screening and annual follow-up.

CASE REPORT: COVID-19 AND DIFFUSE B-CELL NON-HODGKIN'S LYMPHOMA WITH SEVERE SECONDARY IMMUNOSUPPRESSION

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Keywords. Covid-19 disease; Non-Hodgkin lymphoma; Immunosuppression

Introduction. Diffuse large B cell lymphoma is the most common histologic subtype of non-Hodgkin lymphoma and had treated by autologous hematopoietic cell transplantation (HCT). HCT suppress antibodies production, therefore, is frequently associated with immunosuppression. COVID-19 is an infectious disease caused by the SARS-CoV-2 virus. Patients with immunosuppression are at risk for prolonged infection because antibodies have not been produced in the body for SARS-CoV-2.

Case description. In 2019, a 28-year-old man had histologically confirmed diffuse B-cell non-Hodgkin's lymphoma, received three courses of chemotherapy according to the R-CHOP protocol, and later two courses of chemotherapy according to the R-DHAP protocol. In 2020, a patient who used autologous hematopoietic cell transplantation treatment consequently was severe secondary immunosuppression. In 2021 January, the patient had a positive Covid-19 test. The patient had been hospitalized three times with complaints of febrile temperature up to 39.5 °C and shortness of breath. Used treatment was broad-spectrum antibacterial therapy, low molecular weight heparins, Remdesivir, Methylprednisolone. The patient had not developed antibodies to the virus within two months of infection. In addition, his condition isn't improving. The council of doctors of Latvia's crucial hospitals - RAKUS, PSKUS, and the country's head infectious disease specialist, Professor U.Dumpis, decided further patient treatment. Convalescent plasma transfusions and immunoglobulin therapy had used after consultation. For that time in Latvia Anti-SARS-CoV-2 monoclonal antibodies weren't available. The patient's condition improved, he had discharged from the hospital.

Summary. This case portrays a combination of Covid-19 disease and non-Hodgkin's lymphoma, also demonstrates that clinicians should consider this possible treatment with convalescent plasma transfusions and immunoglobulins when managing patients with immunosuppression.

Conclusions. In patients with Covid-19 and diffuse B-cell non-Hodgkin's lymphoma and severe immunosuppression, treatment with convalescent plasma transfusions and immunoglobulins were successful. Furthermore, the patient started to develop IgG antibodies to SARS-CoV-2.

STRONG MUSCLES, WEAK HEART: CARDIOMYOPATHY INDUCED BY ANABOLIC-ANDROGENIC STEROIDS USE

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Keywords. Cardiomyopathy; Heart failure; Anabolic-androgenic steroids

Introduction. To enhance the appearance and physical performance many sportspersons choose to use anabolic-androgenic steroids (AAS). However, AAS use is associated with severe adverse cardiovascular outcomes.

Case description. A 40-year-old, otherwise healthy bodybuilder was seen in the cardiology department at the Lithuanian University of Health Sciences Kaunas Clinics (LUHS KC) with 1 month of progressive exertional dyspnoea, shortness of breath, dry cough. He is employed as a car dealer, does not smoke for 2 years, and do not use alcohol. He denies any family history of cardiomyopathies. The physical examination demonstrated a muscular man, tachycardia, elevated jugular venous pressure, pedal oedema, bilateral basal crepitations, a pan – systolic murmur at the apex of the heart, and a third heart sound. Chest X-ray showed cardiomegaly, and venostasis. An echocardiography revealed a dilated (76 mm) left ventricle (LV), left ventricular ejection fraction (LVEF) of 13,1%, severe mitral regurgitation. Subsequent evaluation showed normal coronary angiogram, negative thyroid and viral, urine toxicology panels. B-type natriuretic peptide (BNP) was 2399 ng/l (normal < 125 ng/l). After discharge, he was referred to the Heart Failure Active Monitoring program at the LUHS KC, where upon further questioning he admitted using AAS for 12 years. The usage of AAS was discontinued, and guideline-directed medical therapy for HF prescribed. Subsequent care revealed resolution of the symptoms by 4 months. A repeat echocardiography after 7 months showed normal dimension of LV (46 mm) with improved LVEF of 42 % and BNP of 16,9 ng/l.

Summary. Using AAS among athletes is a growing public health concern. A 40-year-old bodybuilder with cardiomyopathy induced by AAS is presented. AAS is a rare, but reversible cause of cardiomyopathy in healthy sportspersons.

Conclusions. The diagnosis of cardiomyopathy in young athletes requires a detailed history taking. Discontinuation of AAS usage may improve cardiac function and structure.

GLUTEAL ABSCESS DUE TO *KLEBSIELLA PNEUMONIAE* IN A PATIENT WITH CHRONIC LYMPHOCYTIC LEUKEMIA AND SPONDYLODISCITIS

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Keywords. Gluteal abscess; *Klebsiella pneumoniae*; Intramuscular injection; Chronic lymphocytic leukemia; Spondylodiscitis

Introduction. Abscess formation is an uncommon presentation of *Klebsiella pneumoniae* and is a rare complication after intramuscular injection. The most common *Klebsiella pneumoniae* cause nosocomial infections such as urinary tract infection, pneumonia or bacteremia.

Case description. A 43-year-old man, with a known history of chronic lymphocytic leukemia, was hospitalized with severe lower back pain. Initially, after a week of pain, the patient was hospitalized for the first time for 12 days at a regional hospital where he received therapy with *Ceftriaxone* and analgesics. 7 days after discharge with no improvement, the patient was rehospitalized in a clinical university hospital. The C-reactive protein was elevated – 116,9 ml/L. On the 12th day of hospitalization, L₅-S₁ spondylodiscitis was diagnosed based on symptoms, laboratory findings, and MRI results. Surgical therapy was not indicated, therefore *Meropenem* was initiated. Before diagnosis, the patient had already received antibacterial treatment with *Clindamycin* from day 1.-7. and *Meropenem* from day 3.-9. On the 17th day of hospitalization, the patient had complaints of a painful, reddened, solid formation in the *gluteus dextra* region, where an abscess of 5.0×7.0×20.0 cm was detected by ultrasound. An incision and drainage of the abscess was performed and *K.pneumoniae* was isolated. The patient admitted that he had received an intramuscular injection in this area approximately 2.5 weeks before the appearance of the abscess. On the 31st day of hospitalization, the patient was discharged and ordered to continue treatment with *Ciprofloxacin* 1,5 months after discharge.

Summary. Immunosuppressive factors such as hospitalization, long-term antibacterial therapy, chronic lymphocytic leukemia, intramuscular injection may play a role in patient susceptibility to *Klebsiella pneumonia* and the formation of an abscess.

Conclusions. The development of an abscess of *Klebsiella pneumoniae* after intramuscular injection is uncommon. Therapy in such cases is not different from treatment of other bacterial abscesses, which include abscess drainage and antibacterial therapy.

ABSENCE OF LEFT MAIN CORONARY ARTERY AND EXTENSIVE RIGHT CORONARY ARTERY COLLATERALS IN 74 YEAR OLD PATIENT

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Keywords. Coronary artery disease

Introduction. Reports of absent left anterior descending coronary artery (LAD), left circumflex coronary artery (LCx), or left main coronary artery (LMCA) is rare. The initial presentation with such a condition can be nonspecific, as the first symptoms can be chest pain, palpitations, dizziness, or others that would require further assessment of the patient.

Case description. 74-year-old female was admitted to the emergency room with acute coronary syndrome and pulmonary edema. On the day of admission, high-sensitivity cardiac troponin was 3 pg/ml. The patient underwent emergency coronary angiography after being vitally stabilized. Diffuse coronary atherosclerotic changes with calcinosis and 80% stenosis of right coronary artery (RCA) plus the absence of LMCA artery results in three-vessel coronary artery disease (3VD) diagnosed. The left side of the heart was completely perfused with collaterals of the RCA. Patient also had severe aortic valve stenosis. Further patient was transferred to tertiary care hospital for aortic valve replacement and coronary artery bypass grafting (CABG) surgery. Prior to surgery patient underwent computed-tomographic angiography of the brachiocephalic blood vessels and occlusion of the right proximal part of the internal carotid artery (ACI) was diagnosed. Therefore prior to CABG surgery, percutaneous transluminal angioplasty with stent placement in the right ACI was performed. Under cardiopulmonary bypass, the aortic valve was replaced with bioprosthesis and one aortocoronary bypass graft was made, but the surgeon could not visualize LAD or LCx. Postoperatively formed cerebral ischemia was diagnosed. Gradually the patient recovered and was discharged from the hospital for further rehabilitation.

Summary. 74 year old patient is hospitalized with acute coronary syndrome and initially is diagnosed with 3VD. Patient underwent CABG where LAD or LCx could not be visualised. Despite complex illness, the patient recovered and started rehabilitation.

Conclusions. Patient had developed extensive RCA collaterals that substituted blood perfusion by absent LAD and LCx.

COVID-19 PATIENT WITH SECONDARY SPONTANEOUS PNEUMOTHORAX AND MUCORMYCOSIS

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Keywords. SARS-CoV-2; Spontaneous pneumothorax; Mucormycosis; Nosocomial

Introduction. There is emerging evidence that COVID-19 can lead to both acute sequelae and long-term complications. Secondary spontaneous pneumothorax is an acute, uncommon complication of SARS-CoV-2 pneumonia. Retrospective studies show that pneumothorax occurs in 1% of hospitalized COVID-19 patients.

Case description. 56-year-old unvaccinated man was hospitalized in a regional hospital due to SARS-CoV-2 infection. X-ray showed bilateral lower lobe infiltration, suggesting COVID-19 pneumonia (severe). After 25 days patient developed secondary spontaneous left side pneumothorax, chest drain was inserted. After 10 days patient was referred to Pauls Stradiņš Clinical University Hospital for persisting pneumothorax, SARS-CoV-2 test was negative. CT findings showed diffuse bilateral lung lesions characteristic to post COVID-19 pneumonia, involving all segments, pneumatoceles (5cm diameter in the left lower lobe, and smaller, bilateral in each upper lobe), pneumomediastinum and subcutaneous emphysema. Left side VATS was performed, pneumatocele of the left lower lobe, filled with purulent fluid, was explored, drained, and sutured. Cultures were obtained from the pneumatocele and pleural space. *Corynebacterium amycolatum*, *Enterococcus faecium* and *Rhizopus* microspores were found. Vancomycin, Liposomal Amphotericin B and Metronidazole was promptly prescribed.

Summary. Reported case demonstrates secondary spontaneous pneumothorax, a rare complication of COVID-19, which was further complicated by nosocomial infection by several agents, of which the rarest, *Rhizopus* microspores causing mucormycosis carries a very high mortality rate. Prompt antifungal and antibacterial therapy was started.

Conclusions. Presumably fistula formed in the left pneumatocele, connected it to the pleural space and thus was the cause of persisting pneumothorax. Considering long duration of hospitalization, patient had increased risk for nosocomial infection. *Rhizopus* is opportunistic, rare, and often fatal infection. During hospitalization patient was diagnosed with type 2 diabetes. Evidence suggests that COVID-19 patients who are immunocompromised, including uncontrolled diabetes, have a greater risk for mucormycosis.

GRAFT STENTING IN AORTIC COARCTATION. A CASE REPORT

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Keywords. Aortic Coarctation; Graft Stenting; Secondary Hypertension

Introduction. Aortic Coarctation describes the narrowing of the aorta usually at the level of the aortic isthmus, which is located at the distal part of the aortic arch, close to the ductus arteriosus. This phenomenon leads to increased workload for the left ventricle. Frequent complications include secondary hypertension, aortic dissection and rupture, berry aneurysm and heart failure.

Case description. We report a case of a 30-year-old man with known anulo-ectatic aortic disease and secondary hypertension, who came to the emergency room with fatigue and high blood pressure. Echocardiography and CT showed coarctation of the juxtaductal critical aorta, bicuspid aortic valve, dilatation of the supraaortic trunks and mild aortic regurgitation. Radiograph also showed rib notching due to collateral circulation. Clinical examination showed increased blood pressure but with no significant differences between the arms, also peripheral pulse was present bilaterally and symmetrical. The pulse in the lower extremities was weakly palpable. The patient underwent interventional graft stenting and antihypertensive treatment was adjusted.

Summary. This case emphasizes the importance of in time recognition of aortic coarctation in order to prevent further cardiovascular damages.

Conclusions. The postoperative evolution was favorable, aortography revealed a very good final angiographic result. Further on cerebral aneurysms and other complications were ruled out. ECG at discharge was unaltered in comparison to ECG at admission. The patient is recommended to check up regularly, every two to five years, since the recurrence rate after stenting is up to 15%. Probably the condition is congenital.

LARGE VESSEL OCCLUSION STROKE DUE TO POSSIBLE COVID-19 INFECTION. CASE REPORT

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Keywords. Large vessel occlusion stroke; Covid-19 ; Thrombectomy

Introduction. Ischemic cerebral stroke occurs when a blood clot blocks the blood supply to the brain. One of the most severe types of strokes are considered large vessel occlusion strokes, where rapid treatment is key. It seems that Ischemic stroke is one of the most serious and life-threatening complications in patients with COVID-19 infection.

Case description. A 47-years old woman was referred to Pauls Stradiņš Clinical University hospital for thrombectomy due to clinical worsening during thrombolysis at a regional hospital due to large vessel occlusion stroke (LVO) with NIH stroke scale 9. The middle cerebral artery and internal carotid artery occlusion was diagnosed during digital subtraction angiography. Complete recanalization was achieved after thrombectomy. Examination at the stroke unit revealed left central facial palsy, left hand hemiplegia, deep paresis of the left leg and hypoesthesia of left leg and hand. Furthermore, the patient was known to have a moderate to severe SARS-CoV-2 infection 3 weeks before the stroke occurred. After the examination where no significant change was observed, the patient was discharged in satisfactory state, NIH stroke scale 9 and the modified Rankin scale 4, for further treatment in the rehabilitation centre.

Summary. A patient after SARS-CoV-2 experienced a large vessel occlusion stroke, which was treated successfully with thrombectomy.

Conclusions. Patients with SARS-CoV-2 infection are exposed to hypercoagulable states. This case report highlights the importance of applying appropriate evaluations and interventions to prevent or treat thrombosis. Mechanical thrombectomy is an effective method for LVO.

BILATERAL PULMONARY EMBOLISM AS A COMPLICATION IN A COVID-19 PATIENT: CASE REPORT

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Keywords. COVID 19 pneumonia; Bilateral pulmonary embolism

Introduction. SARS-CoV-2, the virus, COVID-19, endangers the world with its various mutations. This case study elucidates the treatment strategies for an adult who developed bilateral pulmonary embolism (PE) during COVID-19 pneumonia.

Case description. 51-year-old woman, COVID-19-unvaccinated, SARS-CoV-2-positive, presented at the hospital a week after symptom onset with severe shortness of breath (SOB) and cough. Upon admission, she was hypoxic and treated with oxygen support through the non-rebreather mask. CT revealed ground-glass opacities (two-thirds of lung volume). She was started on 6 mg dexamethasone OD (10 days) and prophylactic anticoagulation (40 mg enoxaparin OD). On the 3rd day, hypoxia worsened, oxygen support raised to 60 L/min FiO₂ 100% through a high-flow nasal cannula. With reduction of hypoxia, oxygen support was shifted to simple oxygen mask. On 10th day, she had an episode of SOB, tachypnoea, hypoxia, with light activity. BP -125/75 mmHg, SpO₂-88% with 10 L/min oxygen through simple mask, 97% with 15 L/min through non-rebreather mask. ECG showed sinus rhythm at 80 bpm and inverted T-waves in the precordial leads. With suspected acute PE, therapeutic dose of enoxaparin 80 mg BID SC was initiated. Cardiac biomarkers- normal, D-dimer- elevated. CT angiography revealed bilateral PE. Therapeutic anticoagulation was continued. Patient got discharged on day 18 with no hypoxia at rest with recommendation to undergo post-COVID-19 rehabilitation and continue anticoagulation. An inquisition revealed a history of unprovoked PE in a first-degree relative.

Summary. A patient with bilateral COVID-19 pneumonia developed bilateral PE despite prophylactic anticoagulation. A family history of unprovoked PE could've played a role. She was treated with therapeutic doses of enoxaparin.

Conclusions. This case highlights the hypercoagulability associated with COVID-19. A guideline-compliant prophylactic dose of low-molecular-weight heparin failed to prevent venous thromboembolism (VTE), suggesting a positive family history of VTE as an indicator for increased dose of prophylactic anticoagulation.

THE VARIOUS FACES OF HISTIOCYTOSIS – THERAPEUTIC CHALLENGE OF MYSTERIOUS DISEASE

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Keywords. Langerhans' cell histiocytosis; Epoprostenol; Langerhans' Cells

Introduction. Langerhans' cell histiocytosis (LCH) is a rare systemic disease occurring in 1-2 per 1 000 000 adults. It can be considered as an immune disorder or neoplasm, due to unknown genesis related to clonal proliferation and infiltration of tissues by the significant amount of Langerhans Cells (LC). Usually affected tissues are bones, skin, lungs, liver or hematopoietic system since LCH is rather limited to one organ. Considering mysterious pathogenesis, the treatment remains challenging and initial therapies frequently lack success. When more severe, multi-system variant occurs and affects "risk organs", such as the liver or spleen, the patients are considered to be in life-threatening condition and often receive systemic chemotherapy.

Case description. 62-year old woman suffering from multiple medical conditions, such as chronic diabetes insipidus, diabetes type 2, hepatomegaly, interstitial lung changes, pulmonary hypertension and chronic purulent otitis has been diagnosed with LCH on the base of skin biopsy from ulceration of anogenital mucosa, scalp erythema and extensive infiltrations of subcutaneous tissue of occipital and parietal areas. Nevertheless, characteristic multi-organ clinical manifestations suggested the occurrence of multi-system LCH with special regard to heart and lung tissue. Those led to pulmonary hypertension and life-threatening organ dysfunction. The distinguished diagnosis resulted in systemic cytostatic drug administration (cladribine). Additionally, the patient was exceptionally included in the epoprostenol drug program for pulmonary hypertension connected to LCH and reported relief of occurring dyspnoea.

Summary. When "risk organs" are involved, known therapeutic guidelines and solutions have limited applications and diverse outcomes. Proper treatment requires analysis of potential benefits and drawbacks and therapy adjustment to a particular clinical case.

Conclusions. Patients with disseminated LCH are not only a diagnostic challenge but also a therapeutic one. The disease, particularly with multi-organ involvement remains rare and patients usually present heterogenic and unique clinical manifestations.

CASE REPORTS, SMALL CASE SERIES

INTERNAL MEDICINE II

LIVER INVOLVEMENT IN TUBEROUS SCLEROSIS

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Keywords. Tuberous Sclerosis; Angiomyolipoma; TSC2 mutation

Introduction. Tuberous sclerosis (TS) is a rare, multisystemic genetic disorder with an autosomal dominant inheritance. TS occurs due to mutation in tumor suppressor genes *TSC1* or *TSC2*, leading to abnormal production of proteins hamartin and tuberlin, and therefore to the formation of hamartomas in multiple organs, including central nervous system, heart, lungs, kidneys, eyes, and skin.

Case description. A 25-year-old male patient was referred by a neurologist to a Gastroenterology clinic due to multiple growing in size liver masses found on an abdominal ultrasound screening. It is known that the patient was clinically diagnosed with TS in childhood. Additionally, enucleation of bilateral renal angiomyolipomas (AMLs) was performed 3 years ago. On the day of admission, the patient had no complaints and clinical examination was normal. Complete blood count, coagulation profile test, biochemical blood tests and cancer biomarkers (CA19-9, CEA, alpha-fetoprotein, chromogranin A) were within normal range, only ALT was slightly elevated. Markers for hepatitis B and C viruses were negative. Abdominal MRI showed multiple liver masses, ranging from 1 cm to 6 cm in diameter. Based on the radiological aspects and the clinical context we made the diagnosis of hepatic AMLs. To fully confirm a diagnosis of TS, genetic testing for mutations in *TSC1* and *TSC2* genes was performed and deletion of exons 18-22 in *TSC2* gene was detected. Due to normal liver function, it was proposed that the patient undergo regular follow-up abdominal MRI.

Summary. In this clinical case we present a 25-year-old male patient diagnosed with TS with rare liver involvement. To clarify the diagnosis, the genetic testing for mutations in *TSC1* and *TSC2* genes was done and a pathogenic mutation in *TSC2* gene was identified.

Conclusions. Liver involvement is uncommon in TS patients. They require follow-up evaluations and symptomatic treatment if liver function is impaired.

A RARE CASE OF MASSIVE ABDOMINAL PARAGANGLIOMA

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Keywords. Paraganglioma; Neuroendocrine tumor; Abdominal mass

Introduction. Paraganglioma is a type of neuroendocrine tumor that forms near certain blood vessels and nerves outside of the adrenal glands. Paragangliomas are rare and usually benign tumours. It is estimated that only 2 people out of every 1 million people have paraganglioma.

Case description. A 72-year-old female patient was referred to a gastroenterologist due to a large mass located between the left hepatic lobe, stomach and pancreas that was found during abdominal ultrasound screening. On the day of admission, the patient had no complaints and a hard, uneven, movable, painless mass was palpated in the epigastrium. Complete blood count, metabolic panel and cancer markers (CEA, chromogranin A) were within normal range. During esophagogastroduodenoscopy pressure from the outside to the antrum of stomach was observed. CT and MRI showed a 14,6×9,3×15,0 cm mass spreading from the proximal part of the duodenum and located between the left hepatic lobe, dorsally of the stomach and anterally of the pancreatic head. According to MRI, the mass was most likely a gastrointestinal stromal tumor, however a tumor biopsy confirmed rare neuroendocrine tumor - paraganglioma. The patient was consulted by a surgeon and after evaluating the possibilities and scope of surgical treatment regular follow-up evaluations were recommended.

Summary. In this clinical case we present a 72-year-old female patient diagnosed with rare abdominal paraganglioma. To clarify the diagnosis of unusually large mass in the abdomen, CT and MRI imaging were done and a tumor biopsy of the mass confirmed rare neuroendocrine tumor - paraganglioma.

Conclusions. Abdominal paragangliomas are rare and usually benign tumors. Depending on the size and spread of the paraganglioma, surgery or monitoring is recommended.

RESULTS OF A 5 YEAR FOLLOW-UP OF THE PATIENT WITH RADICAL TREATMENT AND EARLY DIAGNOSED GASTRIC CANCER WITH A MINIMALLY INVASIVE METHODS

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Keywords. Early diagnosis of gastric cancer; Targeted selection; Endoscopic mucosal resection

Introduction. Gastric adenocarcinoma is the fourth most common tumour in the world. Early diagnosis and treatment with endoscopic resection improve cancer 5-year survival by about 95%. Early-stage cancer is defined as o-IA cancerous invasion of the mucosa or submucosa (T1, No, Mo) regardless of the presence of lymph node metastases.

Case description. A 53- years- old man with a positive family history. Fibrogastroscopy (FGS) has been performed regularly since 2011. The patient was diagnosed with chronic active gastritis with signs of atrophy and positive H. pylori. After 6 months, patient underwent a follow-up examination to assess atrophy (GEAS - Distal grade A oesophagitis) He had negative H. Pylori test. After a few years, the patient noticed a growing sensitivity in the stomach area at night. FGS conclusion: gastritis with signs of mucosal atrophy. The patient was included in the targeted selection. Scheduled FGS and histology are performed: erosions in the lower third of the corpus callosum, without histologically severe epithelial dysplasia, but suspected malignancy, H. pylori-negative, OLGA stage III, OLGIM stage III. Tests for tumour markers were performed: elevated CA 72-4. After a few months, FGS and EUS are repeated - thickening of the wall of the body in the focal erythema area. Histologically: well-differentiated gastric adenocarcinoma, stage G1. 02.05.11. the patient underwent endoscopic submucosal dissection of the gastric tumour. Histologically: Mucosa with severe epithelial dysplasia, malignancy after high differentiated adenocarcinoma, Lauren-intestinal type, with growth within the mucosa, pT1aNxMo.Ro. Esomeprazole 40mg 2× daily was prescribed. After 3 months, in FGS with histology no atypia was detected. During the 5 year follow-up period no significant changes were observed.

Summary. A case shows the gastric pre cancer pathology, early diagnostic and effective minimally invasive therapy in the patient's 5-year survival.

Conclusions. This case confirms the importance of regular examination and endoscopic submucosal dissection in patients with early diagnosed gastric cancer.

WAS IT THE RIGHT DECISION? - A CASE REPORT OF THE WOMAN DISQUALIFIED FROM COVID-19 VACCINE

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Keywords. COVID-19 vaccination; Lyme arthritis; Lyme disease

Introduction. In Poland National COVID-19 Vaccination Program began on 27. December 2020. Before vaccination patients are examined by a primary care physician, who decides on their qualification for vaccination. Patients should not receive vaccination if they are undergoing acute, severe illness with fever or acute exacerbation of chronic disease. However, unjustified disqualifications are observed. An example of which is to be presented in our case of a 51-year-old woman, who additionally was misdiagnosed for Lyme arthritis.

Case description. Our patient visited a doctor complaining about arthralgia and finger pain, which had lasted for about 2 months. A month before her appointment she underwent SARS-CoV-2 infection. Initially, tests for rheumatoid arthritis were performed. They came out negative and ruled out this suspicion. The next step was diagnosis for *Borrelia* infection, which was made only on the basis of positive IgM Western blot test. The doctor prescribed doxycycline. After a month of antibiotic therapy the patient reported no improvement of health. Due to the presented medical history, the patient was disqualified from COVID-19 Vaccine. Therefore, she was referred to an infectious disease doctor.

Summary. The infectious disease doctor asserted that there were no contraindications for COVID-19 Vaccine. Besides, in the presented case the diagnosis of Lyme disease was based on the incomplete clinical test, since only the IgM Western blot test was positive. Furthermore, reported symptoms were non-specific for Lyme disease. It is worth mentioning that PCR testing of synovial fluid for borrelial DNA could be helpful for accurate diagnosis of Lyme arthritis.

Conclusions. In the face of the COVID-19 pandemic and necessity of vaccination against this disease, cases of unjustified disqualification from the vaccination are observed. Our case highlights that training of medical staff is required especially when it comes to the conditions of disqualification from vaccination.

DRUG-INDUCED SIALORRHEA CAUSED BY CHRONIC KIDNEY DISEASE

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Keywords. Drug-induced sialorrhea; Drooling Excessive salivation; Glomerular filtration rate; Chronic kidney disease

Introduction. Sialorrhea is described as an excessive production of saliva which cannot be alleviated by swallowing. There are only a few drugs that can cause drooling, therefore excessive salivation is a relatively infrequent side effect. However, chronic kidney disease (CKD) can lead to accumulation of the medication in the body and so increases the risk of the occurrence of side effects, as well as sialorrhea.

Case description. 80 year-old male who had renal function impairment since 2019 was diagnosed with stage 3 CKD in October 2021. Patient's complaints were frequent urination, nocturia and episodic leg swelling. Objectively: renal function is stable, glomerular filtration rate (GFR) is 40,1ml/min/1,73m² and progression risk is high. Patient also has comorbidities: arterial hypertension, ischemic heart disease and benign prostatic hyperplasia. Treatment applied was Ranolazine, Bisoprolol/Amlodipine, Tamsulosin.

One week after the diagnosis the patient had his another outpatient visit complaining with tiring excessive thick brown sialorrhea at night. As patient believed, saliva included blood. Patient was examined by otorhinolaryngologist and no abnormalities were found. Later he underwent a gastroenterological examination including esophagogastroduodenoscopy which showed the presence of gastroesophageal reflux disease without the reflux and had a positive *Helicobacter pylori* detecting stool test. Patient was prescribed with Amoxicillin, Clarithromycin, Esomeprazole in usual dosage. However, the undergoing treatment was not helpful. Later patient noticed balance disorders, dizziness and vomited. He was consulted neurologically and vertebrobasilar artery disease was detected. Finally, doctors found out that drooling was caused by high doses of Tamsulosin and reduction of it led to milder side effects.

Summary. This case represents how important it is to calculate the GFR and medication doses before the usage.

Conclusions. Patients with CKD and consuming large amounts of drugs should be taken into consideration very carefully to avoid the undesirable side effects.

IGF II INDUCED HYPOGLYCEMIA IN PATIENT WITH SMALL ROUND CELL SARCOMA

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Keywords. Hypoglycemia; IGF-II

Introduction. Tumor-induced hypoglycemia is a rare non-islet cell paraneoplastic syndrome that can be commonly associated with intraabdominal tumors of mesenchymal origin. Small round cell sarcoma is a rare mesenchymal tumor. Pathogenetically tumor induced hypoglycemia is associated with high insulin-like growth factor II (IGF-2) secretion by tumor cells that significantly influence patient morbidity and mortality.

Case description. A 69 year old male patient stationed with urinary difficulties and obstipation. For 10 years, it was known that the patient suffered from abdominal pain, which manifested itself in the bending movement. In pelvic CT, it was found that the pathological structure of the pelvis grows in size 19 × 12,3 × 25 cm (LL x AP x CC). Before the planned operation, the patient was found to be inadequate and confused. Initially, the patient was consulted with a psychiatrist, but later discovered that the glucose level at the time was 1,2 mmol/L and that the levels of C-peptides were suppressed - 0,17 ng/dl. The levels of cortisol and thyroid hormones were within the normal range, which excludes glucose counterregulatory hormone deficiency. After the hypoglycemia episode, the patient suffered from hypokalemia, which indicates that the insulin receptor is involved in the pathogenic process. Thus, IGF II genesis hypoglycemia was suspected. Treatment with 8mg methylprednisolone was started in the evening before surgery, which prevented severe hypoglycemia. After surgery, there were no hypoglycemic episodes detected. In tumor immunohistochemistry IGF II immunostaining was done.

Summary. IGF II induced hypoglycemia is a rare but serious paraneoplastic syndrome in mesenchymal tumors that requires more attention to the patient's condition in the hospital.

Conclusions. In the diagnostic plan for patients with mesenchymal tumors, glucose levels must be measured because, on the one hand, hypoglycemia can cause premature death, on the other hand, the patient develops hypoglycemia unawareness following repetitive hypoglycemic episodes.

CUTANEOUS MANIFESTATIONS OF LATE LYME DISEASE

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Keywords. Cutaneous manifestations of Lyme borreliosis; Cutaneous borreliosis; cutaneous Lyme disease; Acrodermatitis chronica atrophicans

Introduction. Lyme disease is one of the most common tick-borne diseases in Europe. The clinical features of Lyme disease vary according to the stage of Lyme disease. The most common clinical manifestations of late Lyme disease are large joint arthritis and neurological manifestations, and less common manifestations include cutaneous findings such as acrodermatitis chronica atrophicans, cutaneous scleroborrelioses and atrophoborrelioses, and panniculitis.

Case description. A 71-year-old woman presented complaints of pain in her left forearm muscles and skin discoloration of the left forearm that persisted for several years. According to the patient, the first symptoms appeared in summer 2016 and included swelling and pain in her left elbow and localized redness. The patient denied having had any prior diagnosed chronic diseases such as diabetes mellitus, hepatitis, and tuberculosis, denied having any prior diagnosed dermatological diseases and allergies. During the examination, the skin on the dorsal surface of the left forearm was dry, with diffuse bluish-red discoloration and tissue paper-like appearance. Local well-defined hypopigmentation approximately 7-8 cm in diameter was also present adjacent to the region of atrophic skin.

Summary. This clinical case describes a patient with complaints of persistent skin discoloration of her left forearm. We present this clinical case because it demonstrates rare skin manifestations of late Lyme disease and proves that late Lyme disease requires a multidisciplinary approach.

Conclusions. Skin manifestations of Lyme disease are not restricted to erythema migrans, which is a classic finding in early Lyme disease. Late Lyme disease skin manifestations, although rare, are multiple and include acrodermatitis chronica atrophicans and panniculitis. There are multiple differential diagnoses for skin hypopigmentation, including post-inflammatory hypopigmentation.

THROMBOTIC MICROANGIOPATHY AS A COMPLICATION OF SARS-COV-2 INFECTION IN PREGNANT WOMEN

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Keywords. SARS-CoV-2 infection; COVID-19 pneumonia; Thrombotic macroangiopathy; Acute kidney failure

Introduction. Thrombotic macroangiopathy (TMA) is a rare life-threatening syndrome affecting microcirculation by the presence of platelet thrombi. TMA presents as hemolytic anemia, severe thrombocytopenia, acute kidney injury (AKI) and includes organ damage. TMA is rare complication of SARS-CoV-2 infection and pregnancy.

Case description. A 45-year-old previously healthy unvaccinated woman at 34 weeks of gestation was admitted at ICU due to severe COVID19 pneumonia. Treatment with high-flow nasal cannula oxygen, dexamethasone, low molecular weight heparin was started. On day 4 pregnancy was resolved with cesarean delivery due to dilatation cardiomegaly and anemia of the fetus. Afterwards patient developed acute kidney failure. Common causes of AKI were ruled out. Immunology was negative, there were no proteinuria and no hematuria. Due to development of pulmonary embolism anticoagulant therapy was increased and kidney biopsy could not be performed. Diagnosis of TMA was made in respect to decreased hemoglobin, increased lactate dehydrogenase, reticulocyte count and the presence of red blood cell fragility in blood, that reached maximum of 32 per mil on day 14. Autoimmune hemolytic anemia and other causes of TMA were ruled out. Corticosteroid therapy was changed from dexamethasone to intravenous methylprednisolone. In consecutive days patient developed cavitory lesions in lungs with secondary pneumonia that was treated with antibiotics. Aspergillosis was ruled out. Patients overall condition improved, erythrocyte fragility and the necessity for oxygen therapy gradually decreased, kidney function resolved, and patient was discharged on day 40. On the follow up a month later patient overall condition was improving, corticosteroid therapy was tapered.

Summary. Previously healthy pregnant woman after severe COVID-19 pneumonia develops TMA with high erythrocyte fragility count and acute renal failure: Patient was successfully treated with steroid treatment.

Conclusions. Severe renal complications as thrombotic microangiopathy can complicate the course of COVID-19 infection.

PERSISTENT MEDIAN ARTERY THROMBOSIS AFTER COVID-19 VACCINATION - A CASE REPORT

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Keywords. Vaccine; COVID-19; Median artery thrombosis

Introduction. SARS-CoV-2 has caused a worldwide pandemic of the COVID-19. Since the development of COVID-19 vaccines there have been reports of thrombosis due to administration of the vaccines.

Case description. We report a case of a 34-year-old female who presented with pain and tingling sensation in her right hand 3 days after administration of Pfizer-BioNTech COVID-19 vaccine. 2 months after first dose the pain and numbness in her hand was still present. Initial blood work and neurography didn't reveal any changes. Duplex ultrasonography examination of the right arm revealed right hand persistent median artery occlusion with thrombus in 1.5 cm long section. Reduced flow along the thrombotic artery was seen proximally and distally from the occluded part with reduced retrograde flow in the distal part. Artery was increased in diameter in the thrombotic segment. The thrombotic artery had minimal effect on median nerve. Patient was referred to neurologist who prescribed 3-month anticoagulant therapy. Additionally, thrombophilia DNA test and echocardiography were performed which were negative. Also, other laboratory studies were ordered and revealed positive ANA test. After 3-month rivaroxaban course her symptoms improved. Duplex ultrasound examination revealed good compensatory flow distally from the artery occlusion which developed during the evaluation period due to the development of collateral vessels. The thrombotic segment of the artery ultrasonographically did not reduce in length.

Summary. Reported case demonstrates a rare case of a persistent median artery thrombosis which manifested 3 days after COVID-19 vaccination. Thrombosis associated with COVID-19 vaccine is rare and an aetiological relationship should only be considered in the appropriate context and after investigation of other, more frequent, causes.

Conclusions. The benefit of the vaccines is a non-discussion point in worldwide COVID-19 pandemic. However, symptoms after receiving COVID-19 vaccination should be considered and followed up carefully to exclude any potential health threatening complications.

LIVER TRANSPLANTATION IN PATIENT WITH WILSON'S DISEASE

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Keywords. Wilson's disease; Copper; ATP7B gene; Liver transplant

Introduction. Wilson's disease (WD) is a rare autosomal recessive disorder caused by a mutation of the ATP7B gene, resulting in abnormal copper metabolism and accumulation in many vital organs, particularly liver, brain and corneas.

Case description. A 22-year-old male patient was admitted to Gastroenterology clinic due to jaundice, hypoalbuminemic edemas in legs, asterixis, muscle cramps, impaired memory and speech, that progressed for one month. The patient was diagnosed with WD caused liver cirrhosis in 2011 and was treated with D-penicillamine, which he stopped using 3 years ago. Metabolic panel showed increased liver enzymes (ALT 209 IU/l, AST 350 IU/l, ALP 187 IU/l, GGT 158 IU/l), hyperbilirubinemia (90 µmol/l), hypoalbuminemia (18 g/l), hyperammonemia (108 µmol/l) and abnormal coagulation profile was also observed (INR 3.1, fibrinogen 0.6 g/l). Accordingly, WD neurological symptoms, acute liver failure, hepatic encephalopathy (HE), which progressed with severe indolence and somnolence, were observed. Genetic testing for mutation in ATP7B gene was performed and homozygous c.3207C>A (p.H1069Q) mutation was detected. Due to WD caused acute on chronic liver failure in presence of liver cirrhosis with significantly impaired synthetic liver function and progressive HE (MELD score 26), it was decided to place the patient for urgent liver transplantation. During 3 weeks waiting period patient received chelation therapy with D-penicillamine (1,5-2,0 g/d), however, his condition did not improve. When ABO-compatible donor was available, successful transplantation without complications was performed and after six months patient's liver function was excellent.

Summary. This case represents a patient who willfully discontinued WD treatment with D-penicillamine and as a result acute liver failure developed which required emergency liver transplantation.

Conclusions. WD treatment is aimed at reducing the amount of copper in the body and may prevent life threatening complications. Discontinuation of chelation therapy could cause acute liver failure, which is fatal without liver transplantation.

BREAST CANCER AS SECOND MALIGNANCY FOR MOTHER AND DAUGHTER WITHOUT GENETIC FINDING: A CASE REPORT

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Keywords. Breast malignancies; History of radiation exposure

Introduction. Around half of breast cancers develop without a known cause, and yet it is important to have early diagnosis. General practitioner should be able to recognize situations and when to interfere, although is not always easy to correlate events as 10% of cases are hereditary and environment factors could be responsible for one third.

Case description. 73-year-old patient receiving polycythemia vera treatment for 6 years presented with painless 2cm lump in right breast. Mammography (R5) and consecutive biopsy showed ductal invasive breast cancer (pT_{1c}N₀M₀G₂R₀). Besides, patient has also undergone basal cell carcinoma treatment in last years. Patient has a significant occupational history – 30 years of ionizing radiation exposure. The patient's daughter (46-years-old), having breast cancer in first-degree female relative, but no complaints, was referred to mammography for early screening. Daughter also has anamnesis of retinoblastoma (diagnosed at 3-years-old, surgically eradicated and treated with radiotherapy). Mammography showed calcium deposits in one breast (R3). After biopsy high grade ductal carcinoma in situ (pTisN₀M₀R₀) was diagnosed. Considering family and individual anamnesis of having 2 malignancies, genetic testing for the available oncology genes was performed, but nothing affirmative was found.

Summary. This case presents interaction of diverse causes and risk factors. Exposure to ionizing radiation is well-established environmental cause of breast cancer. Malignancies as polycythemia vera and retinoblastoma might have higher incidence for breast cancer later on. Most importantly having first-degree relative with breast cancer approximately doubles the risk of breast cancer.

Conclusions. Even without genetic correlation, general practitioner should consider family and individual history of malignancies that could increase the risk of breast cancer as important evidence in the consideration of early check-up, in addition to long-term risk factors.

BURKITT LYMPHOMA WITH CNS INVOLVEMENT - A CASE REPORT

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Keywords. Burkitt lymphoma; Aggressive high-grade non-Hodgkin's lymphoma; Intracranial involvement

Introduction. Burkitt lymphoma (BL) is an aggressive high-grade, non-Hodgkin's lymphoma (NHL) most commonly (75%) caused by reciprocal translocation t(8;14) that leads to the over-expression of c-Myc gene. In 13-17% of cases extranodal BL involves the central nervous system (CNS), as it is a severe and rare form of Burkitt lymphoma.

Case description. A 43-year-old man, in palliative care with known Burkitt lymphoma, dup(1)(q22q25), t(8; 14) (q24;q32) with specific CNS infiltration, presents with severe leg pain, progressive motor axonal demyelinating polyneuropathy of the limbs and ptosis. During chemotherapy, acute hepatic injury of combined genesis had developed and remission was not achieved. The earlier MRI findings show abnormal intracranial tissues at the basal temporal lobe to the medial cranial fossa. There was no midline shift however there is spread along the cavernous sinus, into cavum Meckeli and perineurial spread to the Trigeminal nerve. Other structures involved with the expansions are the transverse sinus, tentorium cerebelli, the infundibular stalk, pineal gland. The recent hypophyseal - parhypophyseal changes demonstrate worsened condition. In addition, there was an abnormal signal on the left vestibulocochlear nerve. Due to the aggressiveness of the disease, and the condition of the patient palliative care with symptomatic treatment was begun. The hospital screening test was positive for SARS-CoV-2. Due to complications patient died two weeks later.

Summary. This clinical case report presents radiological magnetic resonance imaging findings on a patient with Burkitt lymphoma that has CNS involvement.

Conclusions. Accounting to about 1-2% of all adult lymphomas, Burkitt's lymphoma is a rare subtype of lymphomas. This case demonstrates a relatively rare form of extranodal CNS involvement, which has been described in the literature in only 5-40% of BL cases.

OCULAR ISCHEMIC SYNDROME AND NEOVASCULAR SECONDARY GLAUCOMA

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Keywords. Ocular ischemic syndrome; Internal carotid artery; Neovascular glaucoma

Introduction. We present a case report of a 58-year-old man with bilateral carotid artery occlusion which caused ocular ischemic syndrome and neovascular secondary glaucoma.

Case description. In 2012, a 58-year-old-man was diagnosed with primary open angle glaucoma. Due to decompensated intraocular pressure (IOP) despite maximal medical therapy in 2014 laser trabeculoplasty on the patient's left eye was performed. Later in 2014, the patient was diagnosed with an acute myocardial infarction complicated with hemorrhagic stroke.

In March 2015, the patient was complaining of vision impairment lasting for 2 weeks. Visual acuity (VA) in the right eye decreased from 1.0 to 0.03 (decimal). Biomicroscopy revealed rubeosis iridis, retinal hemorrhages, retinal thinning, and ischemia probably due to an event of retinal artery occlusion. Further systemic evaluation revealed complete occlusion of the left internal carotid artery and critical stenosis (> 90 %) of the right internal carotid artery which resulted in successful stent implantation. In May 2015, due to decompensated IOP, low VA, laser cyclodestruction (LCD) was performed. In September 2015, the VA of the left eye started decreasing with development of rubeosis iridis, retinal peripheral hemorrhages which resulted in panretinal photocoagulation of the left eye.

After a few LCD procedures and intravitreal as well as intracameral anti-VEGF injection in the left eye the IOP remained decompensated. After the Ahmed glaucoma valve implantation, the IOP decreased for 9 months, but required the valve revision because of the response of the corneal endothelium.

Summary. Ocular ischemic syndrome is a rare vision – threatening condition, which is caused by ocular hypoperfusion, due to stenosis or occlusion of the carotid arteries.

Conclusions. Ocular ischemic syndrome is a dangerous disease and complications, such as neovascular glaucoma can cause irreversible visual loss and blindness. Both early diagnosis and aggressive treatment are necessary to prevent serious complications.

A RARE CAUSE OF FOCAL HEPATIC LESIONS: A CASE REPORT

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Keywords. T-cell lymphoma; Focal hepatic lesions

Introduction. T-cell lymphoma is a rare type of cancer and is categorized under Non-Hodgkin Lymphoma. It may be either indolent or aggressive and can develop in lymphoid tissues, liver, skin, and gastrointestinal tract.

Case description. A 31-year-old male patient with jaundice, vomiting, fever up to 40°C and abdominal pain was admitted to the hospital. Elevated inflammatory markers, hepatic enzymes, hyperbilirubinemia, and hepatosplenomegaly were observed, as well as, pancytopenia, high levels of triglycerides and ferritin. Bone marrow puncture – biopsy confirmed the diagnosis of hemophagocytic lymphohistiocytosis. Systemic corticosteroid therapy was effective and the patient was discharged. After 3 weeks, the patient developed fever, abdominal pain, rash, dark urine, and pale stools. CT scan showed signs of pleuritis and pericarditis, infiltration in the left lung. Ultrasound showed enlarged right testicle with heterogenous zone, hepatosplenomegaly, heterogeneous, dysmetabolic liver with visible hypoechogenic, heterogeneous masses with suspected air and fluid inclusions, and enlarged lymph nodes in the portal area of the liver. MRT showed signs of the malignant process: multiple contrast accumulating masses in liver, spleen, testicles, and prostate and pathological lymph nodes in abdominal and groin area. Biopsy of the liver and testicle was performed, and diagnosis of aggressive peripheral T-cell lymphoma was confirmed. Before starting etiological treatment, the patient died of cardiopulmonary insufficiency, an autopsy was not performed.

Summary. A patient complained of abdominal pain, fever, skin rash, pale stools, and dark urine. Tests showed signs of possible malignancy in the liver, spleen, testicles, prostate and lymph nodes. Biopsy confirmed the diagnosis of aggressive peripheral T-cell lymphoma. Unfortunately, the patient died before the etiological treatment was started.

Conclusions. This case study shows that T-cell lymphoma may rarely arise in the liver and cause focal hepatic lesions, so it is important to diagnose this condition immediately due to the aggressive course of the disease.

CASE REPORTS, SMALL CASE SERIES SURGERY

KNEE JOINT ENDOPROSTHETIC RECONSTRUCTION FOR ADOLESCENT PATIENT WITH OSTEOLASTIC OSTEOSARCOMA OF DISTAL FEMUR

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Keywords. Osteoblastic osteosarcoma; Endoprosthesis; Reconstruction

Introduction. Osteoblastic osteosarcoma is the most prevalent malignancy among bone tumors and is more common in adolescent patients. Usual osteosarcoma locations are distal femur and proximal tibia. Surgical treatment of osteosarcoma generally involves amputation of the limb, however nowadays alternative methods of treatment, such as limb-salvage procedure with endoprosthetic reconstruction, have been practiced more often and been successful.

No case of knee joint endoprosthetic reconstruction in an adolescent patient with osteosarcoma was performed before in Children's Clinical University Hospital, Latvia. We present the first case of knee joint endoprosthetic reconstruction in an adolescent patient with osteosarcoma performed in Children's Clinical University Hospital, Latvia.

Case description. A 15-year-old girl presented with dynamically progressing pain in right knee joint. A lump was palpated above the knee joint with local swelling. Radiological findings showed pathological 63.8 × 22.0 × 54.9 mm formation. Histopathological examination of the biopsy material revealed osteoblastic osteosarcoma of distal third of the right femur, grown into the epiphyseal plate. Presence of multiple pulmonary metastases was proved by histopathology and CT scan.

The patient had neoadjuvant chemotherapy according to EURAMOS-1 protocol for three months, with following limb-salvage procedure with radical resection of the tumor and knee-joint reconstruction using endoprosthesis implantation (surgery length 4h 40min). Osteotomy of tibial and femoral channels was done. Margin of resection was 2 cm from the tumor. MUTARS Distal Femur hybrid prosthesis was implanted. No local tumor recurrence observed till today.

Summary. This study presents a case of surgical arthroplastic knee joint treatment manifestation in a pediatric patient with distal femur metastatic osteoblastic osteosarcoma combined with scheduled chemotherapy courses and resection of pulmonary metastases.

Conclusions. Knee joint arthroplasty is possible and effective surgical treatment combined with chemotherapy for patients with osteoblastic osteosarcoma. The main purpose of procedure – radical surgery and limb preservation for better quality of life.

BILATERAL SPIGELIAN HERNIA WITH UNILATERAL INGUINAL HERNIA

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Keywords. Spigelian hernia; Inguinal hernia; Laparoscopic mesh repair; TAPP; abdominal surgery

Introduction. Spigelian type hernias are exceedingly rare, with an incidence ranging from 0.12% to 2% of all abdominal wall hernias. It is a protrusion of abdominal contents or peritoneum through a defect called Spigelian fascia, which is comprised of the transversus abdominis and the internal oblique aponeuroses. It typically results from underlying pathology which increases intraabdominal pressure, abdominal wall trauma or degeneration of the aponeurotic layers of the abdominal wall, this hernia can also be idiopathic. Clinical signs include lump while standing, pain but most cases are asymptomatic unless complications occur. Due to the high incarceration rate and subsequent strangulation, surgical repair is recommended and has become the main method of treatment.

Case description. A 74-year-old female patient reached for surgeon consultation with complaints of pain in the right inguinal region and the lump in the right iliac fossa. Abdominal ultrasonography was performed and defects of the right anterior abdominal wall and inguinal area were detected. Incidentally, contralateral abdominal wall defect on the left side was also detected. Bilateral Spigelian and right inguinal hernias were diagnosed. The patient was admitted to the Republic Klaipeda hospital, laparoscopic TAPP surgery with mesh was performed and right Spigelian and inguinal hernias were successfully repaired. The other Spigelian hernia was left under observation and surgical treatment is being planned.

Summary. Spigelian hernias constitute 0.12% to 2% of all hernias. It is difficult to diagnose Spigelian hernias, most of them are asymptomatic and only 50% can be diagnosed through physical evaluation. Due to high rate of incarceration and strangulation, surgical repair is considered to be the first choice treatment.

Conclusions. This report represents a very rare case of bilateral Spigelian hernia with inguinal hernia.

AORTIC VALVE NEOCUSPIDIZATION WITH GLUTARALDEHYDE-TREATED AUTOLOGOUS PERICARDIUM (OZAKI PROCEDURE) OF 51 YEARS OLD PATIENT WITH ASCENDING AORTIC ANEURYSM AND LAD 80% STENOSIS

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Keywords. (AVNeo)-aortic valve neocuspidization; Aortic valve; Ascending aortic aneurysm; (CABG)-coronary artery bypass grafting; Ozaki Procedure

Introduction. Aortic valve disease is the most common cause of cardiovascular death in nations. A novel technique involving neocuspidization of the aortic annulus using autologous pericardium to construct new AV leaflets (the Ozaki procedure) has shown promising outcomes in young adults. In these case report we would like to present one of special case from our 5 years experience of aortic valve reconstruction with using Ozaki's procedure in Georgia performed in our clinic by head of surgical department Zviad Bakhutashvili which was done at the end of 2021.

Case description. A male 51 years old, driver, presented to the hospital complaining of dyspnea and fever persisting for 4 month. The patient with congenital bicuspid aortic valve with stenotic aortic dilatation and Ascending aortic aneurysm shown by echocardiography. Patient also had a anginal pain, coronarography was made, and shown LAD artery =80% stenosis. Surgery was performed through the median sternotomy, using cardiopulmonary bypass with cardioplegia. Firstly we made Aortic valvetomy, prepared novel valve cusps from own pericardium, and was sutured in root. Next we done ascending aortic replacement with artificial graft and finally was made LAD distal anastomosis using Left internal mammary artery. At the end of operation the gradient was optimal normal, LAD and aortic grafts was working without suture lesions. Vital parameters were corrected. Patient discharged 12 days later. He feels well now.

Summary. An autologous pericardium fixed in glutaraldehyde can be infected as easily as a bioprosthetic valve, but the risk is less than a synthetic sewing cuff.

Conclusions. AVNeo is a safe and effective method for an infective aortic valve replacement with good short and midterm results. low gradient is a positive point in the recovery of stressed myocardium. No necessity to use warfarin makes patient's postoperative life safer and better and cuts off the hospital days.

ILIZAROV EXTERNAL FIXATION FRAME FOR 23 YEARS: CASE REPORT

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Keywords. Ilizarov technique; Tibia; Osteosynthesis; External fixation

Introduction. Ilizarov technique is one of the bone transport methods used to treat large bony defects. Usually, duration of the treatment varies from 3 to 18 months. This is a case report of a 55-year-old male who had been living with Ilizarov external fixation frame for almost 23 years.

Case description. In 1995 the patient (at that time 33-year-old) suffered from a gunshot wound made by a shotgun in a lower right leg resulting in severely fractured tibia. Ilizarov fixation technique was performed. Remarkably, the patient abstained from removing external fixation frame, mainly because of fear of surgery. Thus, Ilizarov frame had remained intact for almost 23 years. Eventually, in 2018 the subject presented in emergency care unit with right thigh pain after accident at home. The patient was diagnosed with right supracondylar femoral fracture. After further examination peroneal nerve dysfunction, trophic ulcers surrounding pins, foul odor, atrophic muscles and skin were observed. Also, the pulse of right dorsalis pedis artery was impalpable. Prior to femoral fracture management it was decided to remove Ilizarov frame first. Surgery was successful and without complications. After 4 weeks femoral osteosynthesis using plates and screws was performed and after 11 more days, the patient was discharged.

Summary. In 1995 at the time 33-year-old male suffered a severe tibial fracture, which was treated using Ilizarov technique. The patient abstained from having external fixation frame removed for almost 23 years. Ultimately, the removal surgery was performed and a favourable outcome was achieved.

Conclusions. Even though carrying external fixation frame for such an expanded period of time usually raises many risks and inconveniences, the patient averted severe complications, did not seek medical care and survived.

SEARCHING FOR A PRIMARY TUMOR IN A PATIENT WITH LUNG METASTASES

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Keywords. Lung metastases; Malignant peripheral nerve sheath tumor

Introduction. A malignant peripheral nerve sheath tumor is a rare, aggressive soft tissue tumor that arises from the peripheral nerves. Usually on the limbs, trunk, and in 20% in the head and neck area. We associate half of the cases with previously diagnosed neurofibroma in patients with type 1 neurofibromatosis. The metastases in the lungs, pleura, and bones occur in around 70% of cases. The treatment varies depending on the severity and includes surgery, radiotherapy, or chemotherapy.

Case description. A 42-year-old male presented with round shadows in the lower parts of both lungs on a chest X-ray in January 2020. Further CT confirmed metastatic infiltrations. The abdomen and pelvis CT scan presented fluid in the pleural cavity and multiple, scattered lesions in the lower parts of the lungs. Previously diagnosed with tongue cancer and a neurofibroma in 2008. The patient had a follow-up neck and soft tissues CT in March 2020 regarding a recurrence of tongue cancer. Fine-needle aspiration from exudate present in the left pleural cavity showed atypical cells. The patient was admitted to the cardiothoracic surgery ward with preparation for a wedge resection of the changes in the lungs, a biopsy of pleura, and pleurodesis. After introducing an enormous number of immunohistochemical reactions, the changes in the lungs were metastases of the malignant peripheral nerve sheath tumor. A follow-up neck and soft tissues CT scan in November showed stabilization of the disease with no recent changes and the reduction of the infiltration.

Summary. A follow-up examination is important to detect a recurrence or appearance of metastases, and we should monitor regularly it.

Conclusions. The detailed medical history and proper diagnostic imaging are crucial in the everyday work of physicians. We should direct special awareness to the diseases that are risk factors of cancer.

LOW PLACENTATION WITH PLACENTA ACCRETA SPECTRUM IN PATIENT WITHOUT A PRIOR CESAREAN DELIVERY: CASE PRESENTATION

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Keywords. Low placentation; Placenta previa; Placenta accreta; Cesarean section; Hysterectomy

Introduction. Placenta accreta spectrum (PAS) is a term for describing abnormal adherence of the placenta, including placenta accreta, increta and percreta. The risk factors for PAS are previous Cesarean delivery (CD), maternal age, multiparity, cervico-isthmic implantation and prior gynecological procedures.

Case description. A 37-years-old GIII PII woman at 29+0 weeks gestational age was admitted to Pauls Stradiņš Clinical University hospital with complaints about severe vaginal bleeding without pain. She received Tranexamic acid i/v and neonatal respiratory distress syndrome prophylaxis as per guidelines. The bleeding stopped. Patient had vaginal delivery in 2005 and termination of pregnancy in 2006. In early pregnancy patient was diagnosed with cervico-isthmic implantation. She has placenta praevia totalis and PAS which was diagnosed using US and MRI. On the third hospitalization day the bleeding got worse and patient went into labor. Laparotomy with emergency CD was performed in cooperation with invasive radiologists. Premature baby girl was delivered with Apgar score 6/7 weighing 1580g. Baby was transferred to the Neonatal Intensive Care unit (NICU). After delivery, total hysterectomy and embolization of aa. uterinae were performed. The patient was transferred to Cardiac ICU due to massive blood loss of 6000ml. After delivery, there were complications from peroneal nerve injury. Patient was discharged with recommendations for follow-up.

Summary. Over the last years rates of PAS is increasing as the number of CD is increasing. However, PAS can occur even without CD in anamnesis. This condition can become life-threatening due to severe hemorrhage and even with known diagnosis can severely increase maternal morbidity.

Conclusions. Low placentation and PAS can occur in patients with cervico-isthmic implantation without CD in history. Management of these patients is controversial and includes multidisciplinary approach. Patients with vaginal bleeding during pregnancy should be closely monitored and informed about possible complications.

SUCCESSFUL REPLANTATION OF A FOOT AFTER TRAUMATIC GUILLOTINE AMPUTATION: A CASE REPORT

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Keywords. Amputation; Replantation; Foot; Lower limb; Surgery

Introduction. Many cases of upper extremity replantation have been reported, but little has been published on the replantation of lower extremity. The reasons can be that the recovery is usually poor, also, there is significant development of prosthesis for amputated lower extremities. In this case report we present an example of a successful foot replantation.

Case description. A 53-year old man presented to emergency room after suffering traumatic guillotine amputation of the left foot at distal tibial level and total I, II and III toes' amputation. Treatment options were discussed with a patient and decision was made to perform a limb salvage operation. Patient was presented to operating room immediately. The trauma happened at 11 o'clock and the surgery began at 14:30. The amputate was without blood flow, holding only on a 2 cm skin flap and part of the Achilles tendon. 1 cm resection of tibia and fibula proximal parts was made, so that anastomoses could be made without tension. Microsurgical *a. tibialis posterior*, *a. tibialis anterior* and *v. saphena magna* and *v. tibialis anterior* anastomoses were made and the circulation of the foot was restored at 15:15. Osteosynthesis was performed with 2.0mm K-wires for primary foot stabilization and after two weeks the foot was additionally stabilized with an AO Ex-Fix.

Summary. In this case, replantation of the foot was successfully made 4 hours after the injury. The most important indications for limb salvage surgery are based on surgeon-patient's mutual decision.

Conclusions. Defining criteria for lower extremity salvage following severe trauma continues to be one of the most challenging and controversially discussed fields in orthopedic surgery. Despite the popularity and good functional outcomes of using a prosthesis, in this case, based on AAOS (American Academy of Orthopaedic Surgeons) 2019 guidelines, there are indications for limb salvage.

CLINICAL CASE OF A RARE CONGENITAL BILE DUCT PATHOLOGY IN LATVIA

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Keywords. A type choledochal cyst IV; Roux-en-Y hepaticojejunostomy

Introduction. Choledochal Cyst (CC) is a congenital anomaly of the bile ducts that affects ~ 1 in 100,000 individuals, more common in Asia. CC IV type is rare in the Baltic countries (only 2 cases of CC were found in Children's Clinical University Hospital, Latvia in 21 years). Bile duct cysts usually form in the extrahepatic bile ducts - (I type), but in more complicated cases the intrahepatic bile ducts are affected - (IV,V type).

Case description. A 9-year-old girl with acute abdominal pain and cholestasis at presentation was referred to paediatric surgery for evaluation. In addition to ultrasound, patient underwent magnetic resonance cholangiopancreatography (MRCP) at the Emergency Department. MRCP images showed diffused dilatation of the common bile duct, dilated and tortuous cystic duct suggestive of coexistence of type IVA CC. Intrahepatic biliary tree was also dilated according to type IVA. Patients underwent resection of extrahepatic bile ducts with open Roux-en-Y hepaticojejunostomy using a circular stapler for Roux-en-Y anastomosis. Postoperative haemorrhage on the 6th day after first operation required reoperation where cause of bleeding was not found. The patient tolerated the procedure well, and she was discharged from the hospital 5 days after reoperation. At last follow-up 6 months postoperatively, no dilated intrahepatic biliary ducts or elevated serum bilirubin was found.

Summary. A combined dilatation of the cystic duct and common bile duct as a new variant of type I or type VI variety of CC is described in the literature. Our aim is to describe the characteristics, diagnostics and postoperative outcome to child diagnosed with a unique variant of CC in Latvia.

Conclusions. CC is a congenital anomaly of the bile ducts that poses diagnostic and therapeutic challenge to paediatric surgeons, and MRCP is an excellent modality to discover and demonstrate spatial configuration of CC prior to surgical treatment.

DEVELOPMENT OF DISUSE OSTEOPOROSIS AFTER EXTERNAL FIXATION

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Keywords. Immobilization; Osteoporosis; External fixation

Introduction. Immobilization osteoporosis is bone mass loss due to immobilization or skeletal load reduction. It is classified as secondary osteoporosis and it can occur due to many reasons, for example, low vitamin D level. Some research report that this osteoporosis typically develops 7 months to 2 years after injury.

Case description. 25 years-old healthy male admitted to a hospital with diagnosis of polytrauma. CT scan showed multiple bone fractures. Because of tibia fracture, he was sent for emergency operation – fixation of the right foot joint with an external fixation device. He then received symptomatic therapy. Next operation was after 24 days – right tibia distal end osteosynthesis. After the operation, patient could not rely on the right leg, he needed to move on crutches. After 4 months, the patient arrived for a follow-up visit to a traumatologist. The RTG was made and there was an immobilization osteoporosis of the right lower leg and foot. He was referred to a hospital for removal of the external fixation device and was given recommendations that he should continue to move on the crutches, partially loading the right leg. Continue to immobilize the right lower leg and foot. And to initiate the development of gradual active movements in the right foot joint to reduce foot joint contracture. Also for the prevention of immobilization osteoporosis use vitamin D, in parallel with calcium supplements.

Summary. Incidence of immobilization osteoporosis is clearly unknown. In this case, lack of physical activity and prolonged external fixation could cause this pathology.

Conclusions. Prevention of immobilization osteoporosis is important, especially in young adults. If diagnosed, prophylaxis and treatment should be started as soon as possible.

SURGICAL – ORTHODONTIC TREATMENT OF UNERUPTED MAXILLARY CENTRAL INCISOR: A CASE REPORT

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Keywords. Orthodontics; Surgery; Unerupted teeth; CBCT; Root morphology; Treatment

Introduction. Hereditary and environmental causes are both etiological factors for the delayed eruption of maxillary incisors. Unerupted or impacted maxillary central incisor (ICI) has a major influence not only on the person's facial aesthetics, but also on function, phonetics, and psychology. Affected teeth tend to have different morphological root characteristics compared to normally erupted teeth; more prevalent shortening of the root and more severe dilaceration are observed.

Case description. A 15-year-old patient presented with concerns about an unerupted upper central incisor and a history of early deciduous incisor extractions because of caries complications. Dental analysis revealed space loss in the area of unerupted maxillary left central incisor. CBCT images showed a horizontally impacted incisor with a root length of 13.5 mm and a dilaceration angle of 134°. The main treatment objectives were to create sufficient space and correct the position of the unerupted incisor by using fixed appliances following a surgical exposure (closed flap technique) and forced eruption. Treatment time from the surgery to the correct position of the central incisor in the dental arch was nine months. Afterward, shortening of the roots of both the ICI and contralateral central incisor (CCI) was observed by 2.6 mm and 1.4 mm, respectively. This shortening can be attributed to orthodontically induced root resorption.

Summary. This case report presents a condition of an unerupted maxillary central incisor and the main clinical steps of applied orthodontic treatment. In the case of ICI, CBCT should be used as a diagnostic and treatment progress tool to assess morphological changes in the root as well as the position of the tooth.

Conclusions. Surgical-orthodontic treatment yields clinically successful results; however, it is important to note that the root of ICI was shorter in comparison with CCI both before and after the completion of forced eruption.

RUPTURE OF UTERUS - MIRACLES SOMETIMES HAPPENS

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Keywords. Cesarean section; Uterine rupture; Atony

Introduction. Uterine rupture is very rare, but serious complication of pregnancy. It could be fatal for both, mother and fetus. There are a few golden minutes to save fetus and dramatic fight for parturient life and further fertility.

Case description. 49 years old parturient at 31 weeks of gestation after in vitro fertilization (IVF) procedure was admitted to the hospital due to mild pain and irregular uterus contractions. Her obstetric anamnesis was complicated: one miscarriage at 16 weeks of gestation after IVF procedure, Group B streptococcus colonization, cervical cerclage at 13th week of pregnancy was performed to prevent premature birth, laparoscopic removal of myoma 4 years ago. Patients vital signs were stable, cardiotocography was normal, just minimal vaginal bleeding about 150ml of fresh blood was detected. Placental abruption was suspected. First urgency category Cesarean section was performed under general anesthesia. Two 16G intravenous lines were inserted and infusion with crystalloids was started. Blood products were ordered. After incision of abdominal wall the fetus and placenta were removed from peritoneal cavity together with two liters of blood. Apgar scores 1 and 5 minutes were 5 and 8 respectively. Uterine fundus rupture was detected. As uterine atony was resistant to conservative treatment, total hysterectomy was performed. Total blood loss was 2500 ml. Two units of red blood cells, 2 units of fresh frozen plasma and 6 units of cryoprecipitate were transfused.

Summary. This case report presents a rare complication - rupture of uterus and demonstrates that despite of many risk factors it is hard to predict or prepare to such challenge and good results depend on fast reaction to changing circumstances.

Conclusions. Multiple intrauterine manipulations increases the risk of fatal complications during pregnancy. Even a few milliliters of fresh blood can be a sign of dramatic situation and requires immediate decisions.

CASE REPORT: BCG CYSTITIS

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Keywords. BCG cystitis; Intravesical Bacillus Calmette-Guérin; bladder tuberculosis; Urothelial bladder cancer

Introduction. Standard primary treatment of bladder cancer consists of bladder transurethral resection (TUR) following intravesical therapy of bacillus Calmette-Guerin (BCG). Even though BCG is an effective method that helps to eradicate existing carcinoma, reduces the risk of tumour recurrence and disease progression after TUR, it is also related to possible side effects.

Case description. A 69-year-old male with a medical history of primary arterial hypertension, type II diabetes, microcystic renal disease and benign prostate hyperplasia complaining of frequent urination was diagnosed with bladder cancer pT₁NoMoG₃. Multiple TURs and a course of intravesical instillation of BCG were initiated.

Eight months after the last intravesical instillation of BCG was performed, follow-up CT showed reciprocal hydronephrosis, distal dilatation of the left ureter, constricted and deformed bladder with calcification of mucosa. Tuberculosis of the urogenital system was confirmed after TUR and antituberculosis treatment was initiated.

When the tuberculosis treatment was supposed to be finished, eight months later it was decided to perform cystectomy and a right laparoscopic nephrectomy because of the renal failure. Right laparoscopic nephrectomy and radical cystectomy with ileal conduit were performed which needed a revision. The patient has completely recovered and was cancer-free.

Summary. All patients receiving BCG immunotherapy should be closely monitored for possible side effects and, particularly, the more severe cases should be recognised. The case report highlights the possible toxicity of intravesical therapy of BCG, the course and treatment of one of the most common BCG-related complications BCG cystitis.

Conclusions. Intravesical therapy of BCG shows superior results while treating non-invasive bladder cancer. However, it is related to severe complications which can lead to unfortunate outcomes. Raising awareness and educating medical staff on possible side effects, their diagnostic and treatment are key in managing these side effects and reaching better treatment outcomes.

A COMPLEX CASE REPORT: VASCULAR GRAFT INFECTION TREATMENT BY RECONSTRUCTION WITH OMNIFLOW BIOSYNTHETIC GRAFT

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Keywords. Acute limb ischemia; Vascular graft infection; Axillofemoral bypass; Femoropopliteal bypass; Omniflow vascular graft

Introduction. Vascular graft infection (VGI) is among the most severe complications of vascular reconstructive surgery, that correlates with bad prognosis. To prevent infection in higher risk patients, Omniflow biosynthetic grafts can be used. It is being reported that these grafts resist long-term degeneration and are resilient to infection. We present you a complex and rare case report that demonstrates successful replacement of previously infected Dacron prosthesis with Omniflow vascular graft.

Case description. Male patient (78) presented to the clinic acute pain in the left leg. Anamnesis uncovered aortic occlusion and peripheral arterial disease, formerly treated with aortic bifurcation graft procedure, femorofemoral and femoropopliteal shunts in the right leg. 2 thrombectomies in the right leg. Due to recurring thrombosis, right leg was amputated. After 10 years patient arrived due to acute ischemic pain of the left leg. Computed tomography angiography (CTA) showed occlusion of shunts. Acute limb ischemia was diagnosed. Axillofemoral and femoropopliteal bypass surgeries with 6mm Dacron prostheses was performed. Blood flow was restored. In the early postoperative period lymphorrhea with fever appeared. Microbiological examination detected colistin resistant *Acinetobacter baumannii*. Antibiotherapy was adjusted. CTA was further carried out revealing VGI with fluid collection (size 60×34×18mm). Despite conservative treatment VGI progressed further. Therefore, Dacron prostheses were removed. Extraanatomical axillofemoral bypass surgery was performed again, this time using Omniflow vascular graft. Femoropopliteal bypass surgery with autogenous saphenous vein was performed as well. No significant complications were observed during the hospitalization afterwards the surgery. The patient was discharged from the hospital. No signs of reinfection were observed in the period of 6 month.

Summary. Omniflow biosynthetic grafts can be successfully used to prevent infection in selected high-risk cases.

Conclusions. First step to management of VGI is grounded on prolonged antibiotherapy. However, in most reported cases, antibiotic therapy alone fails to present favorable results. Therefore, graft excision and reconstruction are usually a necessity. Omniflow bioprosthetic graft was an optimal treatment regime in the selected case.

CASE REPORT: MAISONNEUVE INJURY VARIANT WITH PROXIMAL TIBIOFIBULAR JOINT DISRUPTION

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Keywords. Maisonneuve injury; Variant; PTFJ; Dislocation

Introduction. Maisonneuve injury is a rare entity, accounting for about 5% of ankle fractures. Its equivalent with proximal tibiofibular joint (PTFJ) dislocation is even more out of the ordinary with very few published cases available. Thus, this trauma is prone to be overlooked, with a missed diagnosis rate up to 44.4%. Being a plausible source of chronic morbidities such as recurrent dislocation, lateral knee pain and peroneal nerve damage, it is worth to bear in mind the possibility of the aforementioned Maisonneuve injury atypical variant.

Case description. Patient is a 25 years old male who complains of left ankle bilateral pain and swelling after twisting injury. Dual-plane X-ray revealed subluxation of the talus bone accompanied by displaced left medial malleolus fracture (44C3). Rupture of anterior syndesmosis and interosseous membrane came across as intraoperative findings. After open reduction, fibula was repositioned and fixated to the tibia by one position screw, medial malleolus was repositioned as well and fixated internally with two lag screws. Nevertheless, postoperative radiographic examination illustrated remaining subluxation of the talus bone. Due to palpable lateral knee mass unstable PTFJ was suspected and confirmed after additional radiologic assessment. Open PTFJ reduction and fibula fixation with 3 position screws were performed. Consequently, talus bone re-alignment was attained. Immobilization and non-weight bearing for 6 weeks followed. After 8 weeks position screws were removed.

Conclusions. Maisonneuve injury with PTFJ dislocation may be much more common than the literature indicates. Plain radiographs, CT scan often present with none or subtle changes. Nonetheless, comparing radiologic view of injured and healthy leg might prove beneficial. Hence, diagnosis ought to be elicited from the mechanism of the trauma and clinical findings obtained via meticulous examination. Prompt closed or open PTFJ reduction with internal fixation and later immobilization, removal of syndesmosis screws should remain common practice.

FUNCTIONAL MAGNETIC RESONANCE IMAGING (FMRI) IN PATIENTS WITH NORMAL COGNITION AND COGNITIVE IMPAIRMENT

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Keywords. FMRI, Cognitive impairment, Dementia

Introduction. Functional magnetic resonance imaging (fMRI) uses blood oxygenation level dependent (BOLD) imaging to show regional differences in cerebral blood flow, thus indirectly representing brain activation patterns. fMRI could serve as an imaging modality for early cognitive impairment diagnostics and improving cognitive impairment diagnostics in early stages.

Case description. In this study, we analyzed resting state fMRI data of 3 patients. The cognitive assessment prior to the study was done based on Montreal Cognitive Assessment (MoCA). The patient with the highest MoCA score (28) had the highest blood oxygen levels in the hippocampus, frontal, parietal and temporal lobes. The patient with a mild cognitive impairment MoCA score (25) had regions of high blood oxygenation in the temporal lobe and hippocampus but had regions of lower oxygenation in the parietal and frontal lobes. The patient with the lowest MoCA score (19) had regions of high blood oxygenation in the temporal lobe, but the frontal and parietal lobes had large regions of low oxygenation.

Summary. Functional magnetic resonance imaging (fMRI) is emerging as a compelling method for measuring subtle functional changes in the brain of patients with cognitive impairment. fMRI has several potential advantages, one of them is being a non-invasive imaging technique that does not require injection of contrast agents or expose the patient to radiation, thus it can be used during longitudinal studies. Most importantly fMRI may provide significant details about the functionality of brain networks that support memory and other cognitive domains even while the patients are at a resting state.

Conclusions. Our case reports show that the BOLD signals in the resting state fMRI of the brain could be associated with cognitive performance.

HISTIOCYTIC SARCOMA. THE RELAPSE NODE FIXED TO THE GASTRIC, GROWS IN THE DIAPHRAGM AND IS CLOSELY ASSOCIATED WITH TRUNCUS COELIACUS

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Keywords. Histiocytic sarcoma; Local recurrence; Radical surgery; Subcostal laparotomy

Introduction. Histiocytic sarcoma (HS) is a rare malignant neoplasm originating from the hematopoietic system, composed of cells exhibiting morphological and immunophenotypical characteristics of mature tissue histiocytes.

Case description. A 66-year-old female, underwent extensive surgery in 2014. Condition after liver Sg2, Sg3 atypical resection, gastric proximal resection, D2-lymphodissection. In 2021, a local relapse was detected, which confirms the relapse node, which is 10.8 cm in diameter, fixed to the gastric, also grows in the diaphragm and is closely associated with the truncus coeliacus 5 cm in a long stage, but does not grow. In view of the previous diagnosis, the patient have disease progression. The patient needs surgical treatment. In October 2021 total gastrectomy, together with an excision of the relapse node, has been performed. Post operative period without complications. Immunohistochemistry: CKAE1/3 positive epithelium cells, CD68 positive, Ki67 18%, glypican negative, LCA positive, vimentin positive, CD30 negative. Additional immunohistochemistry: S100 positive, CD1a negative, EMA, desmin negative, SONG positive in blood wire walls. Additional immunohistochemistry: CD117 and DOG1 negative. Diagnosis: no epithelial tumor (carcinoma) is found in the given material. Having regard to the morphological picture, and immunohistochemically, this is histiocytic sarcoma.

Conclusions. Histiocytic sarcoma is a rare disease, is an aggressive neoplasia without standardized therapeutic guidelines. Managed using different types of treatment including surgery, radiotherapy, chemotherapy and combinations thereof, depending on the stage of the disease. The treatment option in this case was surgical treatment, because the process does not involve important structures in organs.

EPISIOTOMY SUTURING TASK TRAINER FOR REMOTE LEARNING – TECHNICAL REPORT

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Keywords. Simulation-based learning; Task trainer; Episiotomy suturing

Introduction. In order to learn a clinical skill safely for both the professional and the patient, clinical skills task trainers are often used in medical universities. Due to COVID-19 pandemics and the transition of universities to remote work, students temporarily did not have the opportunity to develop their practical clinical skills in person at the clinical simulation center. This problem can be partially solved by sending clinical task trainers and all the necessary disposable medical equipment home to students and instructing them remotely. Commercial clinical skills simulators, despite their good quality, are expensive and serviced by specialists. The goal of our work was to develop an episiotomy suturing task trainer that could be produced in large quantities and at low cost.

Case description. A model of mediolateral episiotomy was created from sculptural plasticine. The model was fixed and filled with an acrylic-based material, after the material hardened and the previously made model was removed from it, an acrylic mold was obtained. Further, a colored two-component silicone (ZA 00-20) was poured inside the mold. Once hardened, the silicone took on an elastic consistency that was similar to human soft tissue. The resulting clinical skill simulator was supplemented with the necessary medical equipment: a suture kit, scalpel, surgical gloves, and surgical sutures. The average price for the production of a mannequin is 10EUR, with the equipment included – 20EUR. The production time for one simulator is 2 hours. 30 sets were created and sent to students, individual response from mentors was obtained.

Summary. The resulting simulator turned out to be cheap, production – fast. Simulator received excellent reviews from mentors.

Conclusions. The resulting simulator cost is at least 10 times cheaper compared to commercial ones.

DEATH CAUSED BY COMPRESSION WITH MOTOR VEHICLES: A CASE SERIES

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Keywords. Motor vehicle compression; Flail chest; Compression asphyxia

Introduction. Being unintentionally crushed by a motor vehicle while trying to repair it can be fatal. Autopsy findings in these cases usually include flail chest, compression asphyxia, a crushed head and neck, emphysema, haematomas, fractured sternum or spine.

Case description. 3 cases of men being compressed by motor vehicles and their injuries were examined. Case 1: Multiple wounds and skin abrasions were observed on the face, arms, subcutaneous haematomas of the eyelids, chest, abdomen, lumbar and pelvic areas, legs, sternal and bilateral multiple fractures of the ribs, vertebrae, pelvis, legs and arm bones, intestinal mesentery ruptures. Injuries were incompatible with life. 0.95 ‰ ethyl alcohol was found in the blood. The cause of death was multiple skeletal bone fractures with internal organ injuries that resulted in flail chest. Case 2: Ecchymosis of the thorax, soft tissue bruises on the left side of the neck and thorax with II - VI rib fractures, internal organs plethora, conjunctival, heart and lungs petechiae was observed. The cause of death was compression of the neck and chest. Case 3: Bilateral V - X rib fractures with surrounding soft tissue haematomas, venous plethora of internal organs and swelling of the brain and lungs were observed. 2.25 ‰ ethyl alcohol was found in the blood. The cause of death was asphyxia due to compression of the chest and abdomen.

Summary. Death from compression with motor vehicle is usually caused by compression asphyxia - a condition in which breathing movements become impossible due to external pressure to the chest wall. Other autopsy findings include - rib fractures, flail chest, haematomas, petechiae, internal organs plethora.

Conclusions. Motor vehicle compression usually causes injuries that are incompatible with life. It is important to always ensure your safety and not consume any alcohol while trying to repair a vehicle.

PERCUTANEOUS TRANSLUMINAL ANGIOPLASTY AND STENTING OF INTERNAL CAROTID ARTERY IN A PATIENT WITH IMPAIRED SPEECH FUNCTION

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Keywords. Percutaneous transluminal angioplasty; Internal carotid artery stenosis; Impaired speech

Introduction. Percutaneous transluminal angioplasty procedure performed on a stenotic left internal carotid artery resulting in positive changes of present neurological symptoms - numbness of the right leg, dizziness, quick onset of fatigue, dysarthria.

Case description. A clinical case of a 77 year old male is presented. The patient complains of heavy-headedness, dizziness, quick onset of fatigue, right leg numbness, impaired memory and speech function ongoing for one year. During examination, MRI brain scan was performed - areas of vascular leukoencephalopathy as well as first degree internal and external hydrocephaly were discovered. Duplex scan of precerebral arteries revealed an atherosclerotic plaque present in the left internal carotid artery with a 70-75% stenosis, 50% stenosis of the left external carotid artery as well as 50-70% stenosis of the right internal carotid artery. Percutaneous transluminal angioplasty procedure was performed, during which, 75% stenosis of both left internal and external carotid arteries was confirmed. The right carotid artery and vertebral arteries were revealed to be stenosis-free. Stenting of the left internal carotid artery using a CGUARD 9×40 mm stent was performed, followed by a post-dilation using a 4.5×20 mm balloon. Control angiography revealed good arterial flow post-procedure. Angioseal system was used for hemostasis.

Summary. No complications were observed during of after the procedure. The patient experienced positive changes in his condition - speech function improved, leg numbness decreased.

Conclusions. The percutaneous transluminal angioplasty with stenting of the internal carotid artery was successful in improving patient's neurological symptoms of impaired speech and leg numbness by improving arterial bloodflow to the brain one year after the onset of symptoms.

GENITAL AREA RECONSTRUCTION IN A TWO-YEAR-OLD BOY WITH A III-DEGREE CHEMICAL BURN

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Keywords. Chemical burns; Pediatric reconstructive surgery; Rotation flaps

Introduction. Burns are among the most common types of injury in children. Only 1-7 % are chemical burns which typically affect the buttocks, perineum area. Most cases of burn injuries to genitals are managed conservatively and approximately 5% undergo surgical procedures. Reconstructive surgery in the pediatric population is technically challenging due to the smaller size of vessels, nerves, and the need for future growth.

Case description. A two-year-old boy was admitted to the emergency department with III-degree chemical burns affecting the scrotum, penis, perineum, bilateral inguinal, and left cheek region due to direct contact with sodium chloride. The patient received appropriate initial care. On the 2nd day of injury debridement (total perineal, scrotum, and penis area) and circumcision was performed. It was found that the patient has extensive damage to the perineum (epidermis and dermis layers). On the 6th day – repeated debridement and reconstruction with bilateral pedicled groin flaps (penis coverage, scrotum reconstruction) and bilateral V-Y transversus gracilis myocutaneous flaps (perineal reconstruction) were preferred due to a high risk of contracture development and the size of the affected area. Early postoperative period without complications. On the 3-year follow-up – the patient active, moving around independently. Full passive range of motion in hip joints.

Summary. Increasing technical advances and availability of reconstructive surgery allows treating rare cases such as this successfully, taking into account physiological changes of a child as well as functional and esthetic aspects.

Conclusions. Although only a small percentage of genital burns require surgical interference it is substantial for a successful outcome to having a well-established multidisciplinary team. Experienced microsurgeon and urologist who can select the most suitable flaps, perform surgery. Along with a physiotherapist whose role is to improve overall movement, range of motion. For exceeding results, the involvement of parents is crucial.

PRIMARY MALIGNANT MELANOMA IN THE URETHRA

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Keywords. Malignant melanoma; Urethral neoplasm

Introduction. A melanoma is a malignant tumour that can be found in any place on the skin surface and in mucous membranes of mouth, nose and genital tract. Primary malignant melanoma in the genitourinary area is very rare, less than 1% of all melanomas. More commonly found in the women population.

Case description. Women, 71 years old, presented at a hospital RAKUS in 2021 with complaints about dark formation on the urethra, spot on the left labia. She had symptoms of smearing discharge when urinating. After radiological examination, there were no data about the local or distal metastatic spread of pathology. It was decided to resect the formation from the left labia and do the resection of the outer opening of the urethra. Pathological examination of the resected tissue revealed that formation consisted of melanocytes morphologically and in immunohistochemistry, that corresponded to urethral melanoma (>4mm deep).

Summary. The case report is about women with local primary malignant melanoma in the urethra, who received surgical treatment. According to the TNM classification, the tumour fits pT4aNoMoRo.

Conclusions. In most cases, urethral melanoma presents in the distal third of the urethra and/or in the meatus. Most commonly it presents with symptoms such as discharge, pain, bleeding and the presence of tumour mass in the urogenital area. As the melanomas of this area are poorly diagnosed, the prognosis of it is usually poor. Histological and immunohistochemical findings are very helpful for the diagnosis of genitourinary tract melanoma.

RARE SYMPTOMATIC PEDIATRIC ARTERIOVENOUS MALFORMATION IN SOLE: A CASE REPORT

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Keywords. Arteriovenous malformation; Pediatric AVM; AVM's embolization; AVM's open surgery; AVM MRA

Introduction. Arteriovenous malformations (AVMs) are defects of the circulatory system that arise during early embryonic period development. They are comprised of entangled arteries and veins without capillaries that pass blood directly from arteries to veins. It is relatively rare for them to cause clinical symptoms during childhood. The symptoms progress as the child grows and therefore treatment is usually started at the age of 5–7 years or before puberty.

Case description. A redness and swelling in the sole of the foot were observed as soon as the girl was born. The derivation of the foot progressed, became more prominent and palpable accompanied by the worsening pain, which prevented her from walking. The patient was admitted to the hospital. A vascular surgeon with ultrasound suspected AVM and magnetic resonance angiography (MRA) was performed. MRA confirmed the diagnosis. The patient was too young for surgery, but due to severe symptoms it was decided to undergo surgery. Because AVM was localized and not widespread, it was decided to remove it radically, for the best treatment results. The operation was successful, and no symptoms or recurrence occurred 10 years after surgery.

Summary. Pediatric AVMs are rare disorder and symptoms are even less common. Although embolization is the most common treatment for AVM, the optimal management for pediatric AVMs remains controversial. Intervention is not recommended at an early age, but should be performed in the presence of symptoms. The best results are obtained when the AVMs can be radically removed.

Conclusions. This case report reveals rare symptomatic pediatric AVM and successful treatment.

MANAGEMENT OF ENTEROATMOSPHERIC FISTULAS OF THE SMALL BOWEL USING VACUUM-ASSISTED CLOSURE AND FISTULOCLYSIS: A CASE REPORT

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Keywords. Enteroatmospheric fistula; EAF; VAC

Introduction. A small-bowel enteroatmospheric fistula (EAF) is a serious complication following intestinal perforations, laparotomies, surgical re-explorations and complex abdominal traumas. EAF treatment is challenging due to its anatomy, the loss of fluids, electrolytes, minerals and proteins, which lead to malnutrition and sepsis. The most promising results in the treatment of EAF are seen by applying fistuloclysis followed by vacuum-assisted-closure (VAC).

Case description. Our patient is a 50-year-old man, presenting with EAFs of the small bowel. 15-years ago, the patient underwent a laparotomy for abdominal trauma. Before admitting to the Surgery Department, the patient had an injury to the anterior abdominal wall, that caused leakage of the small intestine due to the formation of a fistula. During hospitalization, a laparotomy with adhesiolysis was done, part of the small bowel with fistula was resected. Despite being given treatment, the post-operative course was complicated. The wound leaked several more times, small bowel EAFs started to form. Profuse secretion was observed through EAFs, patient's nutritional status deteriorated. EAFs were treated with VAC and fistuloclysis. Treatment lasted for 1.5 months, with short-term improvements. Due to high-fistulas, malnutrition started to progress and parenteral nutrition was prescribed. However, the patient's condition slowly deteriorated during the course of treatment and after becoming critical the patient died.

Summary. A 50-year-old patient presented with EAFs of the small bowel with high-grade malnutrition. For EAFs treatment, VAC and fistuloclysis were performed, parenteral nutrition was given. The success of the treatment has been observed for a short time. Due to high-grade malnutrition, the patient's condition got worse and after 3 months of treatment, the patient died.

Conclusions. EAF is a challenging complication, which requires long and thorough treatment.

A CASE REPORT OF RECONSTRUCTION OF SOFT TISSUE DEFECT IN SCROTUM REGION AFTER COMPLICATED FOURNIER GANGRENE

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Keywords. FG; Necrotizing fasciitis; Inguinal rotated flap; Diabetes mellitus.

Introduction. Fournier's Gangrene (FG) life threatening situation, is type of necrotising fasciitis of genitalia and perineum. Progress very rapidly, without treatment is fatal. Mostly involves superficial fascia, superficial, deep adipose tissues, rarely muscle fascia/aponeurosis. High mortality rate about 67%. Clinical diagnosis – inflammation, redness, necrosis, scrotal region pain, crepitus. Radiological findings important to detect air, fluid in soft tissues and deep layers. Risk factors are obesity, diabetes, chronic alcoholism, smoking, immune deficiency. Causes mostly bacteria also viruses, fungi. Local microtrauma throes which etiological agents penetrates tissues.

Case description. A 49-year-old man 171 kg, with diabetes mellitus. Referred to Jūrmala Hospital for further treatment after scrotal necrectomy related to FG. Treatment stage one conservatively, after local improvement definitive surgical intervention. Was made preoperative investigations. USG+DOPLER was done to evaluate inguinal rotated flap superficial circumflex iliac artery blood flow. Soft tissue defect debridement, lavage with saline and chlorhexidine. Incision film (as template) marked size of defect. Inguinal flap borders was marked of the left groin region. The inguinal flap was harvested, rotated, tailored and defect covered without tension. Penrose drains was placed between sutures. Sterile bandage was applied. Postoperative events – seroma, which was successfully drained and secondary wound healing in some regions.

Summary. FG life threatening situation. Necessary diagnose, start treatment in first 24h. Glycaemic control also important. Main thing – stop infection spreading. In healing process should receive granulation tissues, clean wound. Important is to cover defected tissues. In this case decided to rotate vascularized inguinal flap, vessels was found before operation using USG+DOPLER. Inguinal rotated flap, safe, feasible option.

Conclusions. Despite multiple risk factors, inguinal flap taken root without much compunction. Satisfactory visual, functional, aesthetic appearance of scrotal area. Unfortunately patient out of sight, there is no way to follow up.

RECONSTRUCTION OF A LOWER POLAR ARTERY FOR KIDNEY TRANSPLANTATION USING DONOR OVARIAN VEIN

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Keywords. Kidney transplantation; Arterial reconstruction; Ovarian vein; Polar artery

Introduction. In the case of complicated kidney transplantation, when the accessory artery is severed, the main task is to decide whether to restore renal blood flow and which method should be used.

Case description. Kidney transplantation using an ovarian vein was performed for a 34-year-old woman with end-stage renal disease in the Hospital of LUHS Kaunas Clinics. A lower accessory renal artery was severed during kidney explantation. As the ovarian vein of the donor remained and matched the diameter of the severed vessel, it was decided to use it as an insertion between the main renal artery and the accessory renal artery of the inferior pole. A month after transplantation, the patient's condition and daily urine output were normal and the serum creatinine level decreased rapidly. Fifteen months after the surgery, the function and structure of the transplant remained normal and there was no evidence of serious vascular complications on CT scans. This is the first case where graft function was verified after transplantation using three-dimensional CT angiography.

Summary. In this report, we present a successful kidney transplantation with vascular reconstruction using an ovarian vein as an interposition graft between a larger branch of the main renal artery and the lower polar artery which was severed during kidney explantation.

Conclusions. If an inferior polar artery is severed, vascular reconstruction must be performed to preserve the function of the graft. Usually, the gonadal vein is available during donor nephrectomy; therefore, it can be explanted without additional difficulties or incisions. We have not reported any complications, and presented the alternative approach for the reconstruction of short renal arteries.

CASE REPORTS, SMALL CASE SERIES

PEDIATRICS AND GYNEACOLOGY

REFRACTORY IDIOPATHIC THROMBOCYTOPENIC PURPURA WITH COMPLICATIONS. A CASE REPORT

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Keywords. ITP; Splenectomy; Children

Introduction. Acute form of Idiopathic thrombocytopenic purpura (ITP) is the most frequent haemorrhagic disease in children. ITP is characterised by low platelet count ($<100 \times 10^9/L$, often $<20 \times 10^9/L$) haemorrhagic episodes, epistaxis, petechiae, even spontaneous intracranial bleeding. Most children do not need any treatment unless they have severe bleeding. Children with ITP usually achieve spontaneous remission.

Case description. We report the case of a 7 year boy who presented to the Children's Hospital's Department of Emergency Medicine with petechia all over the bod, ecchymosis on the body and legs, hematomas and mucosal haemorrhage. Laboratory finding showed platelet count 8 000 μL and positive rotaviruses antigen in faeces. Initial medication was pulse IV(intravenous) methylprednisolone therapy, IV Immunoglobulins, p/o prednisolone without any laboratory improvement. Patient had regular and severe epistaxis due to low platelet count (1 000-12 000 μL) following with severe anaemia. Additional therapy was started s/c pegintron and cyclosporine A, which cause PRES (Posterior Reversible Encephalopathy Syndrome) with vision loss and seizures. Intravenous rituximab was started followed and partly combined with pulses of iv methylprednisolone therapy, repeated IVIG without clinical and therapeutical effect. After 4 months of ineffective treatment of ITP decision to perform splenectomy was made. Preoperatively patient received, i/v immunoglobulin combined with high-dosage methylprednisolone. Platelet count raised till 84 000 μL , and surgery was performed successfully. Early follow up revealed that the platelet count rapidly rise showing thrombocytosis.

Summary. Rare case of of a 7 year boy with medication resistant ITP, treatment induced PRES syndrome leaving only option for splenectomy after 4 months of diagnosis.

Conclusions. Splenectomy is effective treatment in 60-80% cases it is not recommended sooner than 1 year after diagnosis of ITP. However this was a case when it was necessary and one of the last option for a boy with unmanageable symptoms of bleeding.

METASTATIC OSTEOLASTIC OSTEOSARCOMA: A CASE REPORT ON REPEATED BILATERAL THORACOTOMIES IN AN ADOLESCENT PATIENT

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Keywords. Osteoblastic osteosarcoma; Chemotherapy; Thoracotomy; Metastases

Introduction. Surgical resection of pulmonary metastases can lead to a longer survival of a patient with metastatic osteoblastic osteosarcoma compared with only chemotherapy approach, thereby thoracotomy of metastatic lesions is widely accepted in osteosarcoma patients.

Current study represents a case of patient with recurrent pulmonary metastatic lesions of osteoblastic osteosarcoma managed by repeated bilateral thoracotomies.

Case description. A 15-year-old girl presented with dynamically progressing pain due to the growing lump in the right knee joint in July 2020. Radiological and histopathological findings revealed osteoblastic osteosarcoma of the right distal femur. CT scans proved the presence of multiple bilateral pulmonary metastatic lesions. Patient received neoadjuvant chemotherapy treatment for three months according to EURAMOS-1 protocol with following primary tumor resection and endoprosthetic knee joint reconstruction. After three months post-reconstruction bilateral thoracotomy was performed in two stages with resection of 29 metastatic lesions from right lung and 46 metastatic lesions from left lung. Patient underwent a high-dose methotrexate chemotherapy course. Control CT scan revealed multiple metastases with new lesions in both lungs and bilateral thoracotomy was repeated with extraction of 10 pulmonary metastases from left lung and 15 formations from right lung. Two additional chemotherapy courses were given to the patient. Control CT scan revealed decies of metastases and no new lesions.

Summary. This report demonstrates a case of combined treatment consisting of chemotherapy courses, endoprosthetic reconstruction of the knee joint and thoracotomies with resection of pulmonary metastases in a pediatric patient with distal femur metastatic osteoblastic osteosarcoma.

Conclusions. Patients with pulmonary metastases of osteosarcoma benefit from surgical excision of lesions. Lung metastases after thoracotomies are present, but decreased in number, which according to protocol allows to eliminate dissemination of lesions resulting in prolonged survival compared to cases without surgical removal of pulmonary metastases.

PRE-SYMPTOMATIC TREATMENT FOR A 17 DAY OLD INFANT WITH SPINAL MUSCULAR ATROPHY

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Keywords. 5q spinal muscular atrophy; Newborn screening; Pre-symptomatic therapy advances

Introduction. Spinal muscular atrophy 5q (SMA5q) is one of the most severe and common genetic diseases. It affects 1 out of every 9091 newborn infants in Latvia. The most severe and most common form, type 1 SMA, is associated with early mortality in most cases and severe disability in survivors. Nusinersen, an antisense oligonucleotide, promotes production of full-length protein from the pseudogene SMN2. The treatment prolongs survival of patients with SMA and gives an opportunity to reach several motor milestones.

The best results have been obtained in pre-symptomatic patients. Newborn screening gives an opportunity to diagnose patients pre-symptomatically.

On the 1st of December 2020, pilot screening for newborns with SMA started in Latvia. Due to this screening, the first SMA patient in Latvia had been diagnosed before symptoms had appeared. The first SMA pre-symptomatic patient in Latvia to have started therapy early.

Case description. This case report demonstrates a pre-symptomatically diagnosed SMA infant, who started disease modifying therapy being seventeen days old. With the consent of the parents, the patient took part in a pilot project for SMA newborn screening. The patient was diagnosed with SMA fourteen days after birth.

After six months of therapy, the patient has been administered five doses of intrathecally injected Nusinersen. Due to the pre-symptomatic diagnosis and therapy, the six-month-old patient has been able to reach motor development milestones.

Summary. Newborn screening, resulting in pre-symptomatic treatment, improves the outcome in children with genetically proven SMA and should be made available for all infants in Latvia for a better disease outcome.

Conclusions. This case report highlights the importance of newborn screening for SMA as well as pre-symptomatic disease modifying treatment for patients with 5q SMA.

TRAUMA AND PSYCHOSIS – REVEALING SEXUAL ABUSE IN A SCHIZOPHRENIC CHILD: CASE REPORT

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Keywords. Child; Sexual abuse; Trauma; Psychosis

Introduction. Biopsychosocial approach to psychosis is trending in modern psychiatry. The impact of trauma to a child is hard to measure, but trauma is to be considered when dealing with psychiatric conditions. In this case report we describe a child, who presented with symptoms of psychosis and was later revealed to have suffered sexual abuse.

Case description. 11 year old girl was treated in the Republican Vilnius' Psychiatric Hospital for 186 days (5 hospitalisations) in 10 months. Firstly, main indication was disorganised, aggressive, uncontrollable behaviour, in 5 months her condition worsened – symptoms of severe psychosis (hallucinations, catatonia, formal thought disorder) were observed and diagnosis of hebephrenic schizophrenia was established. The communication with our patient was always difficult, there were many episodes of no contact (catatonia, psychomotor excitement), most of the time patient's answers to questions consisted of only a few words or were unrelated to the question. Patient's mother was non-cooperative. During the 5th hospitalisation patient opened up and with the help of drawings described her 1 year length ongoing experience of sexual abuse at home, mother's alcoholism and fear of future sexual abuse.

Summary. A girl presented with severe psychosis and was diagnosed with hebephrenic schizophrenia. During treatment history and possible ongoing sexual abuse was revealed and proper measures to stop the abuse were implemented. The beginning of sexual abuse preceded psychosis.

Conclusions. Building trust and exploring all areas of patient's life help understand patient's psychopathology and might reveal very important facts. Medical treatment alone is inefficient when the psychosocial environment of the child is unsafe, abusive or other ways disrupted. Careful approach to patient's treatment, taking small steps to build rapport and art therapy can help reveal the history and details of sexual abuse.

ATYPICAL PRESENTATION OF PEDIATRIC LYME NEUROBORRELIOSIS: A CASE REPORT

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Keywords. Lyme neuroborreliosis; Borrelia; Children; Seizures

Introduction. Lyme neuroborreliosis (LNB) is a tick-borne nervous system disorder caused by *Borrelia burgdorferi* (Bb), rarely affecting children. Common clinical presentations of pediatric LNB are facial nerve palsy and lymphocytic meningitis. Its diagnosis relies on neurological symptoms, cerebrospinal fluid (CSF) pleocytosis, and intrathecal Bb-specific antibodies. Antimicrobial regimens against LNB are based on doxycycline or ceftriaxone.

Case description. A 5-year-old boy experienced a first, unprovoked seizure with aphasia, nystagmus, and left-sided facial nerve palsy. Upon admission, initial neurological examination revealed altered consciousness and weakness of the left upper and lower extremities. The patient did not have any fever or meningeal signs. Initial EEG was normal, whilst MRI showed significant signs of vascular changes in the right frontal lobe consistent with encephalitis. After some days, a repeated EEG detected epileptic discharges on the right frontotemporal side. Multiple focal seizures followed during the first days of hospital stay, which is why antiepileptic treatment with levetiracetam was started. Due to seizures, structural changes and EEG findings autoimmune encephalitis was suspected, but autoantibody analyses were negative. The following CSF analysis exhibited 23 Leu/ μ L and an increased IgM and IgG *Borrelia* index. CSF levels of proteins, serology and oligoclonal bands were normal. ELISA detected increased serum levels of anti-Bb IgG and IgM antibodies and Bb-specific CSF/serum antibodies index. However, Western blot studies were negative and serological studies excluded other infective agents. A negative chemokine CXCL13 test pointed out the late phase of LNB. A diagnosis of LNB was made and treatment with ceftriaxone was established.

Summary. A 5-year-old boy presenting with seizures and without any fever or meningeal signs was diagnosed and treated for LNB despite the diagnostic challenge due to a rare presentation.

Conclusions. Awareness of uncommon clinical manifestations in pediatric patients with LNB is crucial for clinicians to successfully diagnose and treat the disease.

A NOVEL PTEN GENE VARIANT DETECTED FOR A PATIENT WITH COWDEN SYNDROME: A CASE REPORT

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Keywords. PTEN; Macrocephaly; Cowden syndrome

Introduction. *PTEN* is a tumor suppressor gene, located at chromosome 10q23, which loss of function is a widely known cause in cancer development. Germline mutations are observed in PTEN Hamartoma Tumor Syndrome – an autosomal dominant disease, which includes Cowden syndrome, a condition causing increased risk for malignancies (lifetime risk for breast cancer 85%, thyroid cancer – 35%, renal cancer – 34%, endometrial cancer – 28%) and benign hamartomatous overgrowth of tissues. The goal of this case report is to present an observed novel *PTEN* gene variant and overview its impact on the patient's health.

Case description. Our patient is a 17-year-old girl, presenting with macrocephaly (occipital frontal circumference 60 cm, >97th percentile). She was diagnosed with ovarian cancer at age 10 (dysgerminoma on the left and teratoma on the right). At age 16 – diagnosed with breast fibroadenoma and bone cysts in the hip. Family history – unremarkable. Next-generation sequencing (*OncoGeneSG* panel with *Illumina, NextSeq*) was performed and a novel frameshift heterozygous *PTEN* gene (NM_000314.6) variant c.982dupG, p.Ala328GlyfsTer3 was found. This variant is a null variant (frameshift) and in gene *PTEN* for which loss of function is a known mechanism of disease. It is also at extremely low frequency in *gnomAD* population databases. The variant c.982dupG is classified as likely-pathogenic. The patient's clinical symptoms and genetic testing results were compatible with Cowden syndrome diagnosis.

Summary. A female patient, diagnosed with ovarian dysgerminoma and teratoma, breast fibroadenoma and bone cysts was consulted suspecting a hereditary cancer syndrome. The oncogene panel was performed and a novel likely-pathogenic heterozygous *PTEN* gene variant was detected. Cowden syndrome diagnosis was made.

Conclusions. We detected a likely-pathogenic novel *PTEN* gene variant for our patient. This led to the diagnosis of Cowden syndrome and implementation of a specific management plan to detect possible tumors in early stages.

FIRST CASE OF NTRK-REARRANGED SARCOMA IN LITHUANIA: DIAGNOSTIC CHALLENGE

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Keywords. Sarcoma; NTRK; Neurotrophic tyrosine receptor kinase; Pediatric; Oncology

Introduction. Sarcomas are heterogeneous malignancies, which arise in soft tissue. The clinical variety of disease subtypes makes the diagnostic approach and management challenging. Recently, the discovery of neurotrophic tyrosine receptor kinase (NTRK) gene unveiled the possibility to characterize different genetic profiles of malignancies, namely ETV6-NTRK3 fusion being the most found and best characterized in infantile fibrosarcomas. However, we describe LMNA-NTRK1 fusion gene, which characteristics are scarce and not well established.

Case description. We report the first case of NTRK fusion soft tissue sarcoma in Lithuania. The patient is a 9-year-old girl, who presented with a mass on her left thigh, posteriorly above popliteal region for about one year. She complained of episodic pain in her left thigh and weight loss. MRI of lower extremities revealed a large tumor of the thigh (69×54×115 mm) without signs of overgrowth into the femur, with MTS foci on both thighs and calves. Chest CT scan revealed signs of multiple pulmonary MTS. The histology did not confirm high-grade sarcomas and indicated a low-grade sarcoma consisting of monomorphic spindle cells. The tumor cells expressed CD34 and S100, and they showed 100% positive staining for pan-TRK. Next-generation sequencing showed the presence of LMNA-NTRK1 fusion and loss of CDKN2A/B CDKN2A and CDKN2B. Whole-body MRI following one month after initial diagnosis confirmed no progression.

Summary. This case describes emerging type of pediatric soft tissue tumor harboring variant NTRK fusions (ETV6-negative). The clinical and histologic features of these variant NTRK tumors are not well characterized, therefore may pose diagnostic challenge without genomic profiling. Recognition of this tumor is highly relevant because of the recent availability of targeted therapy.

Conclusions. In this case report we discussed the diagnosis of nonspecific morphology tumor highlighting the importance of screening for NTRK fusions as part of the tumor genomic.

A 15-YEAR-OLD GIRL WITH ANEURYSMAL BONE CYST - A RARE CASE REPORT OF SPINAL TUMOR

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Keywords. Spine; Tumor; Aneurysmal bone cyst

Introduction. Aneurysmal bone cyst (ABC) is a rare benign skeletal tumor composed of numerous blood-filled channels. It represents about 1% of all primary bone tumors and predominantly affects those before the age of 20 years. Patients usually present with bone pain and stiffness that worsen at night. Occasionally a pathologic fracture can occur since the lesion can be locally aggressive inducing osteolysis. Even more rarely, neurologic symptoms of varying severity appear due to spinal cord or nerve roots compression.

Case description. A 15-year-old girl reported to the Orthopedic Department due to abnormalities of gait and movement. She had presented 7 days earlier to another hospital after slip and fall injury. Radiographs of thoracic and lumbar spine had showed no signs of trauma. She had reported worsening pains in her lower extremities. Computed tomography (CT) scan was performed, which showed solid, heterogeneous lesion with signs of calcification at the level of Th10-Th11 vertebrae, approximate size 69×46×47 mm. The tumor protruded into the spinal canal and caused compression of meninges and spinal cord, and significant destruction of middle and posterior portion of Th10 vertebra. Magnetic resonance imaging (MRI) was performed to better visualize the tumor and adjacent tissues. It showed lesion consisting of numerous small cysts with fluid-fluid levels. MRI fat saturation sequence revealed small hyperintense areas corresponding to extravasated blood. These findings confirmed aneurysmal bone cyst diagnosis.

Summary. Aneurysmal bone cyst (ABC) is a rare benign skeletal tumor. Of particular note is the ABC of spine, which can lead to dangerous neurological complications.

Conclusions. Imaging modalities such as CT and MRI play significant role in diagnosis of spine tumors, because not all lesions can be visualized with a simple radiography. Additionally, they provide essential information for planning the surgical procedure.

A 7-YEAR-OLD BOY WITH CEREBRAL VENOUS THROMBOSIS AS A COMPLICATION OF DIABETES MELLITUS AND OTITIS MEDIA

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Keywords. Venous thrombosis; Diabetes mellitus; Otitis media

Introduction. Cerebral venous thrombosis in childhood is a rare disorder, occurring most often in the neonatal period, with mortality approaching 10%. Clinical symptoms are frequently nonspecific and include: seizures, depressed level of consciousness, coma, lethargy, nausea, vomiting, headache, visual impairment, papilledema and hemiparesis, which may often obscure the diagnosis and delay treatment.

Case description. A 7-year-old boy was admitted to the Department of Pediatric Endocrinology and Diabetology due to newly diagnosed diabetes mellitus. For several days, the child had been presenting following symptoms: polydipsia, polyuria, nycturia and weakness. He had vomited several times since 2 days. In the medical history, the boy had been treated for acute otitis media a week earlier. Laboratory tests showed: hyperglycaemia, high CRP and electrolyte abnormalities, which indicated a ketoacidosis. On admission he was in average general condition, sleepy with Kussmaul breathing. Physically he had tachypnoe, tachycardia and dry mouth. The next day neurological examination revealed: decreased muscle tone in the upper and lower limbs, positive Kernig's sign and Brudzinski's neck sign. Because of suspected cerebral edema, a non-contrast head computed tomography (CT) was performed, which showed hyperdense vein of Galen, superior sagittal sinus and left transverse sinus. The diagnosis of cerebral venous thrombosis was confirmed in magnetic resonance imaging (MRI).

Summary. Cerebral venous thrombosis is a rare condition with multifactorial etiology. Early diagnosis with management along with plan for secondary prevention can save from catastrophic consequences.

Conclusions. Imaging modalities such as CT and MRI play significant role in diagnosis of spine tumors, because not all lesions can be visualized with a simple radiography. Additionally, they provide essential information for planning the surgical procedure.

ATYPICAL LOCALIZATION BORRELIAL LYMPHOCYTOMA IN A CHILD - RARE DERMATOLOGICAL MANIFESTATION OF LYME DISEASE

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Keywords. Lyme disease; Borrelial lymphocytoma; Areola; Paediatric dermatology

Introduction. Lymphocytoma cutis is the rarest dermatological manifestation of Lyme disease. It presents with painless papulonodular erythematous swelling, which in children is typically found on the ear lobe or scrotum, however in adults more common localization is areola. In case of borrelial lymphocytoma diagnosis is essential as it may be the only early symptom of Lyme disease.

Case description. Otherwise healthy 9y/o girl presented to the paediatrician with painless swelling and enlargement of her right areola. Symptoms began 2months earlier with itch, redness and swelling of areola. There were no signs of secretion, ulceration or scaling and no systemic symptoms. Her parents did not recall any history of a tick bite, erythema migrans or fever. Ultrasonography was performed and revealed non-specific site of inflammation. She was then referred to a paediatric surgeon who described it as unknown etiology mastopathy and referred her to a dermatologist for a further assessment. Dermatologist started an initial therapy with Cr.Eloconi 2x/day for 7days and Tab.Xyzali 5mg 1tab./day. Patient returned to the dermatologist a week later with no significant improvement. Patient's blood sample was taken for B.Burgdorferi, somatotrophic hormone and insulin-like growth factor (IGF-1) to rule out hormone related changes. The blood sample showed increased B.burgdorferi IgG antibodies (126 AU/mL) which confirmed that the patient has borrelial lymphocytoma cutis. The patient then was treated with amoxicillin Ospamox Tab.1000mg 1x/day per os for a total of 21days and in 3months the areola gained back it's initial appearance.

Summary. Infectious diseases have always played a significant role in dermatology since many infectious diseases can have primary skin manifestations. Latvia is located in an endemic region and tick-borne diseases are relatively common. When treated properly, borrelial lymphocytoma cutis is a mild disease with great prognosis.

Conclusions. This case shows the importance of holistic approach to patients and the doctors, especially in endemic regions, should always consider the possibility of common infectious diseases and their dermatological manifestations, also the rare ones, in this case - Lyme's disease and lymphocytoma cutis.

THE USE OF MR SPECTROSCOPY IN DIAGNOSING BRAIN TUMOR - A CASE REPORT

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Keywords. Tumor; Brain; Spectroscopy; MR; Neoplasm

Introduction. Imaging techniques such as magnetic resonance (MR) perfusion and spectroscopy are increasingly essential in the management and treatment plans of brain neoplasms. They play a significant role in diagnosing, molecular/genetic typing and tumor classification, complementing biopsy results and increasing accuracy, to monitoring treatment and response.

Case description. A 6-year-old girl was admitted to the Department of Neurology due to trembling of the upper limbs and positive Romberg symptom. The first MRI performed in May 2021 showed the features of the cerebral edema with a shift of the midline structures to the right side. In the spectro-MR examination of the head: the level of N-acetylaspartate (NAA) in the patient's tissue is lowered compared to the unaffected side, which may indicate cancer or inflammation. Creatine and choline levels are comparable on the sick and healthy side. In the follow-up spectro-MR from June 2021: clearly higher levels of myoinositol on the diseased side. The NAA level in the diseased tissue is clearly lowered compared to the healthy side, the choline level is slightly higher on the diseased side, and the creatinine level is slightly higher on the healthy side. In the first examination, lower level of NAA on the diseased side speaks for the mild nature of the process.

Summary. In the first examination, lower level of NAA on the diseased side speaks for the mild nature of the process. Due to spectroscopy results, a follow-up study showed that myoinositol levels with not very elevated choline levels and reduced NAA levels may suggest low grade glioma (astrocytoma).

Conclusions. MR spectroscopy is increasingly promising for the diagnosis and monitoring of hyperplastic brain lesions in a noninvasive manner. Moreover, it allows the identification of genetic subtypes and potentially susceptibility to molecularly targeted therapies.

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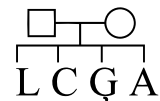


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