RĪGA STRADIŅŠ UNIVERSITY
INTERNATIONAL STUDENT CONFERENCE

HEALTH AND SOCIAL SCIENCES

ABSTRACT BOOK

Health Sciences

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RĪGA STRADIŅŠ UNIVERSITY   RSU SP

RĪGA, LATVIA

Authors are responsible for their Abstracts.

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CONTENTS

PREFACE

Dear participants,

It is my great honor and pleasure to welcome you all on behalf of Rīga Stradiņš University to the International Student Conference *Health and Social Sciences*. As the hosts of this event we take great pride in the fact that the RSU Student Conference has grown to become the largest student conference in the Baltics. More than 500 submitted theses, around 400 young researchers and over 1000 attendees – these figures clearly indicate that we have not only satisfied the set target, but even exceeded the current framework and might consider a multiple-day event in the years to come.

In figures, students from 22 countries responded to our invitation to submit theses for the conference with scientific works from 15 countries, which turns the event into a buzzing international hub that facilitates exchange of knowledge, generation of ideas and expansion of professional networks. *International* is by no means a coincidence, neither in the title of the conference, nor in the strategy of RSU. The universities of tomorrow need to think globally, and for that particular reason we put export of education and research high on our agenda. Only by going global we can achieve a vibrant economy, healthy society and individual welfare.

I wish you all a successful conference and fruitful discussion! May it pave the road for future research in both healthcare and social sciences!

Professor Jānis Gardovskis
Rector of Rīga Stradiņš University

Dear participants, colleagues and friends,

We are very honoured to welcome you at Rīga Stradiņš University International Student Conference *Health and social sciences* 2017. This year marks the 66th time the annual student scientific conference has been organized in our university. For the 3rd year the conference is held on an international scale. Expanding internationally for us means aiming higher and to rising the quality standards of the conference year by year with the help of Rīga Stradiņš University teachers together with leading professors from Europe. We are thankful to all the doctors and experts without whom this event would not be possible.

We, the students of the RSU Student council, are proud to organize and host such a massive event, giving students from Lithuania, Estonia, Poland, Norway, Ukraine and other countries an opportunity to share their knowledge and experience. This year our conference has already experienced enormous interest from all over the world by getting more than 500 abstract applications submitted. More than 180 of which coming from more than 20 countries That means you have already passed a very close competition to have your abstract accepted. Both of you, health science and social science participants, will be able to enjoy the event together, share your achievements in health sciences and social sciences, discuss with world-renowned professors, participate in workshops and take part in plenty of other activities.

You will not regret a decision to be a part of our conference, and we wish you all the luck in presenting your scientific work. Enjoy your time at RSU ISC 2017 and make the most out of this experience by gaining more knowledge and meeting new friends and future colleagues!

Artūrs Šilovs
Chair of the Organising Committee

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I. INTERNAL MEDICINE:
CARDIOLOGY, PULMONOLOGY

A CORRELATION BETWEEN ECHOCARDIOGRAPHY PARAMETERS AND CONSUMPTION OF DIURETICS IN PATIENTS WITH HFPEF DIAGNOSIS AT DISCHARGE

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Keywords. Heart failure, ejection fraction, echocardiography, diuretics.

Introduction. Many patients presenting with heart failure have a normal left ventricular ejection fraction (HFpEF). There is still a discussion about optimal management and effective therapies of this syndrome.

Aim. To find a correlation between echocardiography parameters and consumption of diuretics in hospitalized patients with heart failure with preserved ejection fraction (HFpEF) diagnosis at discharge.

Materials and methods. Medical records were reviewed retrospectively and hospitalized patients having HFpEF as secondary or primary discharge diagnosis were included in the study. The population consisted of 300 patients (64.7 % women and 35.3 % men). Mean age was 71.06 ± 12.57 years for women and 70.38 ± 13.1 for men. Values of echocardiography parameters [left ventricular myocardial mass index (LV MMI), left atrial volume index (LA VI), estimated pulmonary capillary wedge pressure (ePCWP, equation calculated by Nagueh), E/A ratio, LV hypertrophy (assessed by relative wall thickness and LV MMI) were compared to guidelines for diagnosis of HFpEF. Data were analysed using SPSS v23 statistical package.

Results. LV MMI was measured for 88.3 % of the patients (mean 125.17 ± 34.21 g/m^2 women and – 136.28 ± 31.6021 g/m^2 men), 43.3 % LA volume index (mean 53.35 ± 32.1521 ml/m^2), 38 % PCWP (mean 15.54 ± 6.21 mmHg), 68.7 % E/A (mean 1.08 ± 0.71). B-type natriuretic peptide (BNP) was tested for 137 patients (mean 527.53 ± 680 ng/l). Using NPar tests statistically significant differences between genders BNP results, LA VI and E/A were found. According to One-Sample T-Test, statistically significant differences from quotas of MMI (for men), PCWP (for women) and HFpEF diagnostic guidelines were found. Using Chi-square test statistically significant difference was found between women's and men's PCWP parameter and it was higher for women. According to Kendall's and Spearman's correlation tests, statistically significant mild negative correlations between LV MMI, LA VI, ePCWP, LV hypertrophy and consumption of diuretics were found. 63 % (n = 189) of all patients were using diuretics, of whom 46.56 % were prescribed diuretics without testing their BNP. Out of all patients who had their PCWP measured it was elevated for 64.91 % patients, however only for 44.59 % diuretics were included in treatment plan.

Conclusion. LV myocardial mass index, LA volume index, estimated pulmonary capillary wedge pressure, presence of LV hypertrophy significantly correlate with consumption of diuretics in hospitalized HFpEF patients however the consumption was insufficient.

ADHERENCE TO PHARMACOTHERAPY IN PATIENTS 6 MONTHS AFTER ACUTE CORONARY SYNDROME

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Keywords. Acute coronary syndrome, adherence to pharmacotherapy.

Introduction. Acute coronary syndrome (ACS) is the most frequent cause of the death in all cardiovascular diseases. It is argued that despite readily available and highly effective treatment the mortality rates in ACS patients are still very high. Adherence to secondary prevention medications following acute coronary syndrome (ACS) is low, standing around 40–75 % by various estimates.

Aim. To assess adherence to pharmacotherapy and analyse reasons for patient non-compliance.

Materials and methods. A prospective study includes patients with ACS, hospitalized in Pauls Stradins Clinical University Hospital. During the period from December 2015 until March 2016 44 patients were interviewed. All participants provided written informed consent. Data from medical records were collected. 6-month follow-ups were conducted by telephone interview. The obtained data were analysed by IBM SPSS.

Results. At discharge for 40 out of 44 patients (90.9 %) dual antiplatelet therapy (DAPT) was recommended. At 6-month follow-up 52.3 % (n = 23) use DAPT. Ticagrelor was recommended to 72.7 % (n = 32), after 6 months 36.4 % (n = 16) take it. 22.7 % (n = 10) take clopidogrel, 11.3 % (n = 5) use aspirin monotherapy.

Statin therapy was recommended to 95.4 % (n = 42), after 6 months 68.2 % (n = 30) take statins. Atorvastatin 80 mg was recommended to 84.1 % (n = 37), after 6 months 38.7 % (n = 17) take the same dose. Atorvastatin 40 mg was recommended to 4.5 % (n = 2), after 6 months 4.5 % (n = 2) take it. Atorvastatin 20 mg was recommended to 2.3 % (n = 1), after 6 months 4.5 % (n = 2) take it. Rosuvastatin 40 mg was recommended to 4.5 % (n = 2), after 6 months 4.5 % (n = 2) take it. Rosuvastatin 20 mg was not recommended to any of patients, after 6 months 9 % (n = 4) take it.

Main reasons for poor compliance to antiplatelet therapy: reimbursement discontinuation (15.9 %), adverse effects (4.5 %). In 20.45 % changes in pharmacotherapy were attributed to decision of cardiologist or general practitioner (GP). Poor compliance to statin therapy was mainly due to lack of motivation (6.8 %). For 13.6 % cardiologist or GP changed the statin therapy.

Conclusion. Reported data are preliminary results from pilot study. Adherence to pharmacotherapy at 6-month follow-up was poor. Reasons for non-compliance depend on group of medicine. For statin therapy it was mainly lack of motivation, for antiplatelet therapy – discontinuation of reimbursement and adverse side effects. In majority of cases changes in pharmacotherapy at 6-month follow-up were attributed to decision of consulting cardiologist or GP.

ASSOCIATION OF *PITX2* GENETIC VARIANT RS2200733 AND RECURRENCE OF ATRIAL FIBRILLATION AFTER SUCCESSFUL CURRENT CARDIOVERSION

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Keywords. Atrial fibrillation, cardioversion, PITX2.

Introduction. Direct current cardioversion (DCC) is one of methods to restore sinus rhythm in patients with atrial fibrillation. Despite the high successes rate, more than 30 % have a relapse one month after procedure and less than 50 % remain in sinus rhythm after one year. Genetic variant rs2200733, located near paired-like homeodomain transcription factor-2 (*PITX2*) gene, has one of the most significant association with atrial fibrillation (Afib).

Aim. To investigate a potential association of variant rs2200733 and one and six month outcome after successful direct current cardioversion (DCC) of atrial fibrillation.

Materials and methods. A total 47 patients with persistent and long-standing persistent atrial fibrillation undergoing first-time elective DCC were enrolled into the study. Patients with thyroid hyper- or hypo- function were excluded. After successful DCC a six-month follow-up was performed. Patients were interviewed by phone in order to assess a recurrence of Afib. DNA was extracted from venous blood and rs2200733 genotyping was performed by PCR-RFLP assay. Fisher's exact test was used to determine difference in outcome in different genotype groups.

Results. Mean age of patients was 59.9 ± 10.7 years and 24 (62 %) were males. Mean time of Afib duration untill first-time elective DCC was 29.6 ± 106.3 months. Sinus rhythm was restored in 100 % patients. Follow-up was performed for 39 (83 %) patients. 37 (95 %) patients were prescribed antiarrhythmic drugs after discharge (class Ic or III). One and six months after DCC 11 (28 %) and 19 (49 %) patients respectively had a recurrence of Afib. One-month outcome varied significantly in different genotype groups (Afib recurrence was 100 % in TT, 21.4 % in CT and 22.7 % in CC). TT genotype was found to be associated with Afib recurrence one month after DCC (patients with relapse TT *vs.* CT+CC = 100 % *vs.* 22 %, p = 0.018). There was no statistically significant effect of rs2200733 genotype on six-month outcome (Afib recurrence was 100 % in TT, 42.9 % in CT and 50 % CC, p = 0.27).

Conclusion.

1. Genotype TT for genetic variant rs2200733 is associated with higher risk of one-month recurrence of atrial fibrillation after successful restoration of sinus rhythm with direct current cardioversion.
2. Further research is needed to assess the influence of variant rs2200733 on long-time outcome after direct current cardioversion.

BLOOD PRESSURE LOWERING EFFECT OF RENAL SYMPATHETIC DENERVATION PERSISTS AT 2 YEARS FOLLOW-UP IN PATIENTS WITH RESISTANT ARTERIAL HYPERTENSION

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Keywords. Resistant arterial hypertension, renal sympathetic denervation, blood pressure.

Introduction. Renal sympathetic denervation (RSD) is a procedure aimed at treating resistant arterial hypertension (RAH) by ablating and thus lowering sympathetic activation of renal artery wall nerves. In recent years, there has been a growing interest in RSD clinical trials, nonetheless there are only few trials investigating the delayed efficacy of the procedure. The present study investigates RSD effects on long-term blood pressure (BP) control.

Aim. The aim of our study was to investigate the impact of renal artery sympathetic denervation on blood pressure in long term follow-up.

Materials and methods. The prospective, open-label, single centre study, enrolled 40 (age 57.1 ± 7.1, 20 (50 %) male, mean office BP 190/107 ± 23/11 mmHg, using 6.2 ± 1.5 antihypertensive drugs) patients with confirmed RAH, who underwent bilateral RASD between March 2012 and November 2014. Both office BP and 24-hour ambulatory BP measurements were obtained before the procedure and at 3, 6, 12, 24 months follow-up. Continuous variables were checked for normal distribution by Shapiro-Wilk statistic. Normally distributed variables were compared by paired Student's t-test, while non-normally distributed variables were compared using the Wilcoxon signed rank test. A p value < 0.05 was considered statistically significant. Data was analysed using SPSS v22 statistical package.

Results. Mean office BP was significantly reduced from 190/107 to 158/91($p < 0.001$), 153/89 ($p < 0.001$), 160/93 ($p < 0.001$) and 163/93 ($p < 0.001$) mmHg at 3, 6, 12 and 24 months, respectively. Moreover, measurements of 24-hour BP also demonstrated significant results. Systolic 24-hour ambulatory BP reduced from 162 to 151 ($p = 0.001$), 147 ($p < 0.001$), 153 ($p = 0.026$) and 149 ($p = 0.003$) mmHg, diastolic BP – from 97 to 90 ($p = 0.003$), 90 ($p = 0.003$), 92 ($p = 0.049$) and 90 ($p = 0.003$) mmHg at the same follow-up periods.

Conclusion. RSD significantly reduces both office and 24-hour ambulatory blood pressure after a relatively short period of time after the procedure and this effect persists at 2 years follow-up in patients with resistant hypertension.

CHARACTERISTICS OF HOSPITALIZED PATIENTS WITH HFPEF DIAGNOSIS AT DISCHARGE

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Keywords. Heart failure, ejection fraction, echocardiography, diuretics.

Introduction. Many patients presenting with heart failure have a normal left ventricular ejection fraction. Diagnosis of heart failure with preserved ejection fraction (HFpEF) is frequently challenging and relies upon careful clinical evaluation and identification of symptoms.

Aim. we aimed to investigate reasons for admission, symptoms, signs, rehospitalization and death rate of hospitalized patients having HFpEF as secondary or primary diagnosis at discharge.

Materials and methods. Medical records were reviewed retrospectively during 46 months and all patients hospitalized in the tertiary hospital (1175 beds) having HFpEF diagnosis at discharge were included in the study. The population consisted of 300 patients (194 women (64.7 %) and 106 men (35.3 %). Mean age was 71.06 ± 12.57 years for women and 70.38 ± 3.1 for men (min – 28 years, max – 102 years). All data were processed using MS Excel, IBM SPSS Statistic 22.0 programs.

Results. The most frequent complaints at admission were: dyspnoea (77.3 % women and 68.9 % men), peripheral edemas (54.1 % women and 52.8 % men), fatigue (35.1 % women and 33 % men), chest pains (37.6 % women and 35.8 % men), palpitations (12.9 % women and 9.4 % men). On examination pulmonary rales were present in 43.3 % women and 34.9 % men, 14.9 % women and 31.1 % men had hepatomegaly. Patients suffering from HFpEF usually had comorbidities such as primary arterial hypertension (273 patients – 92.8 % women and 87.7 % men) and type 2 diabetes mellitus (70 patients – 24.7 % women and 22.6 % men). Chi-square test showed no statistically significant difference in symptoms and signs between genders, except for hepatomegaly (p-value = 0.001). During study period 98 patients (32.7 %) were rehospitalized in the same hospital and 12 patients (4 %) died there. 41 patients were rehospitalized only once, 31 patients – 2 times and 18 patients were rehospitalized 3 or more times. Care was delivered more often in general medicine wards (53 %) than in cardiology units (33.3 %). The most frequent diagnosis at admission were worsening of heart failure (n = 61, 20.3 %), unstable angina (n = 44, 14.7 %), stable coronary heart disease (n = 38, 12.7 %), heart rhythm and conduction disorders (n = 19, 6.3 %), and pulmonary disorders (n = 15, 5 %).

Conclusion. The study showed that HFpEF is a frequent diagnosis in hospitalized patients – 300 patients had HFpEF diagnosis at discharge in 46 months time. The most frequent admission diagnosis was worsening of heart failure and it took 20 % of all admissions. A third of all patients were rehospitalized to the same tertiary hospital in 46 months.

CLINICAL OUTCOMES OF CORONARY ARTERY DISEASE PATIENTS 6 MONTHS AFTER ACUTE CORONARY SYNDROME

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Keywords. Acute coronary syndrome, clinical outcomes.

Introduction. Despite available treatment acute coronary syndrome (ACS) patients still have a high cardiovascular mortality rate, as about 20 % die within 1 year. About 1 in 4 patients who are discharged from hospital after an ACS will experience acute myocardial infarction, stroke, or cardiovascular death within the following 5 years. The risk of experiencing 1 of these events is particularly high in the first year.

Aim. To assess clinical outcomes in coronary artery disease patients 6 months after ACS.

Materials and methods. A prospective study includes patients with ACS, hospitalized in Pauls Stradins Clinical University Hospital. During the period from December 2015 until March 2016 44 patients were interviewed. All participants provided written informed consent. Data from medical records were collected. 6-month follow-ups were conducted by telephone interview. The obtained data were analysed by IBM SPSS.

Results. Mean age of patients was 61.7 years (SD = 9.6), 70.5 % were men. 59.1 % of patients had ST-elevation myocardial infarction (STEMI), 40.9 % – Non-ST-elevation myocardial infarction (NSTEMI). Mean duration of hospitalization was 6.1 days (SD = 3.6). 84.1 % of patients underwent revascularization. Out of those patients 86.4 % received drug-eluting stent.

Clinical outcomes 6 months after discharge: 8 (18.8 %) lost to follow-up, 1 (2.3 %) died from acute heart failure, 1 (2.3 %) had stroke, 2 (4.5 %) had myocardial infarction, 2 (4.5 %) had hypertensive crisis.

In 19 (43.2 %) patients physical stress test was performed within 6 months after discharge. At the beginning of the test for 6 patients (31.6 %) pulse was within the range of 60 to 70 beats per minute (bpm) (M = 64.3; SD = 3.2), for 13 patients (68.4 %) it was 70 or bpm (M = 81; SD = 11.6). Arterial blood pressure (BP) at baseline was < 120/80 mmHg for 4 (21.1 %) patients, 6 (31.6 %) had BP of 120–129/80–84 mmHg, it was 130–139/85–89 mmHg for 2 (10.5 %) patients and 7 (36.8 %) had BP in the range of 140–159/90–99 mmHg. During the test 11 patients (57.9 %) reached submaximal pulse. For 6 (31.6 %) reason to stop the test was non-cardiac. 1 patient (5.3 %) had rhythm disturbances and 1 (5.3 %) developed angina.

Conclusion. Reported data are preliminary results from pilot study assessing clinical outcomes after ACS. 4 major adverse cardiac events (1 cardiac death, 1 stroke, 2 myocardial infarctions) were observed in studied patient subgroup during 6-month period after acute event.

According to physical stress testing in significant proportion of patients pulse and arterial blood pressure targets were not reached.

CORRELATION BETWEEN ATRIAL FIBRILLATION
TYPE AND QUALITY OF LIFE

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Keywords. Atrial fibrillation, quality of life.

Introduction. Atrial fibrillation (AFib) in an arrhythmia type that is characterized by irregular heart rhythm and influences the quality of life. AFib is divided in three types – paroxysmal, persistent and permanent.

Aim. Evaluate the AFib types influence on the quality of life for high-risk AFib patients.

Materials and methods. Altogether 120 patients, 52.5 % (n = 63) women, 47.5 % (n = 57) men; mean age 71.01 years (yrs) (SD 9.646) with high risk AFib was enrolled in a survey that was held in P. Stradins clinical university hospital, Latvian Cardiology center October 2016 – February 2017.

Patients were questioned about their age, gender, diagnosis and the quality of life from short form SF-36. Collected data were analysed with SPSS 10, calculating the internal consistency, and further using descriptive and inferential statistic methods.

Results. Paroxysmal AFib had 21.7 % (n = 26) of patients (mean age 69.96 (SD 9.788) yrs, persistent – 42.5 % (n = 51) (mean age 67.787 (SD 10.99) yrs) and permanent – 31.7 % (n = 38) with the mean age 75.51 (SD 5.843) yrs.

Chronbach's alfa for physical functioning section – 0.871, emotional well-being – 0.765, energy/fatigue – 0.702.

There was a statistically significant difference (p = 0.001; 95 % CI 9.84–36.45) in physical functioning section compared persistent (74.20 %) and permanent AFib (51.05 %).

Comparing energy/fatigue section there was a statistically significant difference (p = 0.012) for paroxysmal (58.08 %) compared to permanent (43.42 %) and persistent (57.45 %) compared to permanent (p = 0.005; 95 % CI 4.43–23.63). Comparing general health aspect there was a difference between permanent (33.55 %) and paroxysmal (55.77 %) (p < 0.0005; 95 % CI 10.55–33.89) and permanent with persistent (48.53 %) AFib (p < 0.0005; 95 % CI 5.15–24.80).

Comparing role limitations due to physical health there was a difference (p = 0.037) between paroxysmal (57.69 %) compared to permanent (31.58 %) and persistent (62.75 %) compared to permanent (p = 0.003; 95 % CI 10.52–51.81). In all the other compared areas there were no statistically significant difference (p > 0.05).

A weak correlation with age was only in physical functioning area (r = −0.22).

There were no correlation between the diabetes mellitus and quality of life (p > 0.05).

Conclusion. AFib type has a convincing influence on person's quality of life, with the lowest scores for permanent AFib patients. Age has a little impact on quality of life and diabetes mellitus has no impact on quality of life.

DEMOGRAPHIC DATA IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME AND PHENOMENON IN LATVIA

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Keywords. WPW, pre-excitation, accessory pathway, demography.

Introduction. Wolff-Parkinson-White (WPW) syndrome and phenomenon is a form of pre-excitation of heart ventricles with overall prevalence 0.36/1000 with a peak of 0.61/1000 at the age of 20–24 years. It occurs due to the anatomical substrate – an accessory atrio-ventricular conduction pathway in the heart. Nowadays typical treatment for this condition is catheter ablation and this method has proven to be effective as it lowers the risk of sudden death for these patients.

Aim. The aim of this study is to summarize and analyse the demographic and clinical data about patients with WPW syndrome and phenomenon in Latvia.

Materials and methods. In the retrospective study 297 patients with WPW phenomenon or syndrome administered to the Pauls Stradins Clinical University Hospital from 01.01.2009 to 31.12.2016 were identified by archive search. 292 patients were selected as the research population by certain inclusion criteria. Following parameters were analysed – age at the time of admission, gender, age at the time of diagnosis, clinical presentation and electrocardiogram (ECG) findings. Descriptive statistical analysis was performed using IBM SPSS v.22 software.

Results. Mean age of the patients admitted to hospital was 38.4 ± 15.5 ([95 %CI: 36.6–40.2]) and the majority of the patients were 40–49 years old (23.6 % [18.5–28.4]). The symptoms of arrhythmia in symptomatic patients and WPW pattern in ECG findings presented for the first time at the age of 0–9 in 12.3 % [8.6–16.1] cases, 10–19 in 26.4 % [21.2–31.8], 20–29 in 20.5 % [16.1–25.0], 30–39 in 14.4 % [10.3–18.8], 40–49 in 8.2 % [5.1–11.6] and later in life in 8.6 % [5.5–11.6] cases. 57.5 % [51.7–63.0] of patients were male. Regarding ECG findings, mean PQ interval was 111 ± 31 ms [108–115], mean QRS complex was 107 ± 2.6 ms [104–110] and delta wave presented in 70.9 % [65.4–76.0] cases. 93.2 % [89.7–95.9] of the patients have experienced clinical symptoms of arrhythmia. 90.8 % [87.3–93.8] complain of fluttering sensation. It is important to note that 15.4 % [11.3–19.5] of the patients suffered from dizziness or loss of consciousness at least once in a lifetime. The majority of them were patients at the age of 30–39 (17 patients, 37.8 %).

Conclusion.

1. WPW syndrome and phenomenon mostly presents in youth.
2. Majority of the patients are male.
3. Findings of ECG correspond to the pattern of WPW phenomenon first described by Wolff L., Parkinson J. and White P.D. in 1930 and others.
4. Almost every patient has suffered some symptoms of arrhythmia, mostly fluttering sensation. Loss of consciousness is not so common, it may be accident-prone, especially in young patients.

DIAGNOSTIC ROLE OF ECHOCARDIOGRAPHY IN PULMONARY HYPERTENSION

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Keywords. Pulmonary hypertension, echocardiography, diagnostics.

Introduction. Pulmonary hypertension (PH) is a hemodynamic and pathophysiologic condition defined as an increase in mean pulmonary artery pressure (MPAP) of ≥ 25 mm at rest as assessed by right-heart catheterization (RHC). Echocardiography is a key screening tool in the diagnostic algorithm and several echocardiography features, including right atrium diameter, right ventricle basal diameter, intraventricular septum thickness, may suggest PH diagnosis. A TAPSE of < 15 mm is associated with a significantly higher risk of mortality and is recommended by treatment guidelines as a prognostic indicator in pulmonary arterial hypertension for the assessment of disease severity and response to therapy

Aim. Analyse echocardiography features associated with PH and compare these features between patients diagnosed with precapillary and post capillary PH.

Materials and methods. Prospective study of patients who underwent right heart catheterization in Pauls Stradins Clinical University Hospital in a time period of 01.11.2015–30.12.2016. Following variables were collected: age, gender, right heart catheterization results: LA, RV, PA, PCWP, Ao, LV, CO, CI, PVR, outpatient echocardiography data: TAPSE, right atrium diameter, right ventricle basal diameter, intraventricular septum thickness.

Statistical analysis of data was pooled and analysed using IBM SPSS v22.0.

Results. Overall from 19 patients 73.7 % (N = 14) were women and 26.3 % were men (N = 5). Median age was 66 years (range: 25–77). All patients had a confirmed diagnosis of pulmonary hypertension, which was confirmed by right heart catheterization. Hemodynamically 63.2 % (N = 12) were diagnosed with precapillary PH and 36.8 % (N = 7) with post capillary PH. Analysis of outpatient echocardiography data showed that 22 % of precapillary PH patients and 50 % of post capillary PH patients had TAPSE < 15 ($p > 0.05$). All patients with precapillary PH and 80 % of post capillary PH had enlarged right atrium ($p > 0.05$) and 50 % of precapillary PH and 60 % of post capillary PH patients had enlarged right ventricle ($p > 0.05$). Increased intraventricular septum thickness was found in 77.8 % of precapillary PH and 85.7 % post capillary PH patients ($p > 0.05$).

Conclusion. Most of analysed echocardiography features, such as enlargement of right atrium and ventricle and increased intraventricular septum thickness, were found in different proportions to patients diagnosed with PH. There was no significant difference in analysed echocardiography features between patients diagnosed with precapillary and post capillary PH. Reduced TAPSE was more often to patients diagnosed with post capillary PH, although difference was not statistically significant.

DOES THE ORAL ANTICOAGULANT TYPE HAVE AN INFLUENCE IN THE QUALITY OF LIFE FOR HIGH RISK ATRIAL FIBRILLATION PATIENTS?

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Keywords. Atrial fibrillation, quality of life, oral anticoagulants.

Introduction. Atrial fibrillation is a disease that needs consistent therapy. (Afib) patients quality of life can be influenced also from oral anticoagulant usage, for example, regular INR checking, difficulties to keep INR within normal range, anticoagulant caused bleeding. All these things can lower the quality of life.

Aim. Aim of this study is to understand whether the usage of different oral anticoagulant types (warfarin compared to novel oral anticoagulants (NOACs) has an influence on the overall quality of life.

Materials and methods. Altogether 120 high risk Afib patients (47.5 % (n = 57) men and 52.5 % (n = 63) woman, mean age 71.01 years (SD 9.646) were interviewed during their hospitalization in Latvians Cardiology center during October 2016 – February 2017. The survey included questions about age, gender, used medication and short form SF-36. All collected data were analysed with SPSS 10 using descriptive and inferential statistics, including independent samples test, Pearson's Correlation coefficient calculation.

Results. From all 120 interviewed patients 37.5 % (n = 45) used warfarin and 32.5 % (n = 39) – dabigatran or rivaroxaban. 30 % (n = 36) didn't use any kind of anticoagulant. Comparing warfarin with NOAC users there is a significant difference between physical functioning scores (warfarin: 60 %; NOAC: 73.85 %; p = 0.049) and general health scores (warfarin: 38.89 %; NOAC: 48.71 %; p = 0.042). Although in the sections of role limitations due to physical health, emotional problems, energy/fatigue, emotional well being, social functioning were no statistical difference, we could see the tendency that the answers in NOAC group were slightly with higher mean score than in warfarin group.

Comparing these two groups with a group of Afib patients that doesn't use oral anticoagulants, there is a statistically significant difference in physical functioning between NOAC (73.85 %) and non-users (57.22 %; p = 0.025).

Pearson's Correlation between physical functioning and age is -0.217, which represent a low negative correlation.

Conclusion. Afib patients that use NOAC have statistically higher scores evaluating physical functioning section and overall general health. Anticoagulant usage correlates with better evaluation of general health. Further research should be needed whether different oral anticoagulant types have an impact on other sections of quality of life.

ELECTROPHYSIOLOGICAL CHARACTERISTICS AND EFFICACY OF RADIOFREQUENCY CATHETER ABLATION IN PATIENTS WITH WOLFF-PARKINSON-WHITE PHENOMENON AND SYNDROME

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Keywords. WPW, RFCA, accessory pathway.

Introduction. Radiofrequency catheter ablation (RFCA) is the first-line therapy for patients with Wolff-Parkinson-White (WPW) phenomenon and syndrome. Natural history of this condition depends more on electrophysiological characteristics of accessory atrio-ventricular conduction pathways (AP) than on clinical symptoms.

Aim. The aim of this study was to evaluate efficacy of RFCA and to analyse electrophysiological characteristics of APs in the heart in patients with WPW phenomenon and syndrome.

Materials and methods. In a retrospective study 297 patients with WPW syndrome and phenomenon administered to the hospital from 01.01.2009 to 31.12.2016 were identified by archive search. 261 cases were selected to achieve the aim of the study. Descriptive statistical analysis was performed using IBM SPSS v.22 software.

Results. AP was localized: right-postero-septal in 16.7 % [95 % CI:12.0–21.0], left-antero-lateral in 12.0 % [8.3–15.9], left-lateral in 14.5 % [10.5–18.8], left-postero-lateral in 15.6 % [11.2–19.9], left-posterior in 15.9 % [12.5–20.3] and other in less than 10 % each. In 4.2 % [1.9–6.8] two APs were identified in one patient.

18 patients were asymptomatic and 6 of them had right-postero-septal AP (33.3 %), 3 – left-postero-lateral (18.8 %), 2 – left-posterior (12.5 %), 2 – AP connected to the cardiac conduction system (12.5 %). There was no correlation between the localization of AP and clinical manifestation.

The way of the AP conduction in 63.9 % [58.3–69.8] was bi-directional, only retrograde in 31.7 % [25.8–37.3] and only antegrade in 4.4 % [2.0–7.1]. Bi-directional conduction was present mostly in right-postero-septal (18.0 % [12.4–23.6]), only retrograde – in left-postero-lateral (22.5 % [13.8–32.5]) and only antegrade – in right-postero-septal localization (36.4 %).

The procedure was acutely successful in 88.8 % [85.1–92.7], in 4.3 % [1.8–6.9] it was not performed, in 4.7 % [2.5–7.6] AP remained conductive and it was still possible to arouse arrhythmia, in 2.2 % [0.7–4.0] AP remained conductive, but arrhythmia could not been aroused.

It was needed to repeat RFCA in 15.2 % [11.2–19.9] of the cases. Most frequently it was done for left-lateral APs (9 cases, 21.4 % of all repeated).

Conclusion.
1. Some localizations of AP are more common than the others.
2. The majority of APs conducts bi-directionally.
3. Clinical manifestation has no correlation with localization of AP, which confirms the results of previous studies.

The efficacy of RFCA for APs is high in a short and long-term.

5 April 2017

IMPROVEMENT OF SYSTOLIC FUNCTION IN STABLE CORONARY ARTERY DISEASE PATIENTS AFTER REVASCULARISATION

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Keywords. Myocardial strain, percutaneous coronary intervention (PCI), left ventricular (LV) systolic function, stable coronary artery disease (SCAD).

Introduction. Myocardial strain detected by echocardiography is a relatively novel way for evaluating systolic function. Impact of coronary revascularisation on systolic function in SCAD patients remains an object of research.

Aim. To determine myocardial strain values before and after PCI.

To determine how myocardial strain value changes differ by stenosis localization and diastolic function.

Materials and methods. 23 SCAD patients with single lesion in left anterior descending artery (LAD) undergoing PCI were included in a prospective study in Latvian Center of Cardiology from December 2015 to January 2017.

Patients with previous myocardial infarction, coronary vessel occlusions, stents in LAD or left main (LM) artery, PCI in previous 3 months time in left circumflex (LCx) or right coronary artery (RCA), atrial fibrillation at the time of study were excluded.

In study group there were no patients with medium or pronounced LV hypertrophy, IInd–IIIrd degree regurgitation, any valve stenosis, hypo- or akinetic segments visually, or changes in ejection fraction.

Transthoracic echocardiography was performed the day before PCI and 3 months after. Acquired images were measured by TOMTEC ARENA, using 16 segment model and results were analysed using SPSS 24.

Results. Mean age in the study group was 65 years. Out of 23 patients, 13 (57) were men. 10 (43 %) patients had proximal 1/3 LAD stenosis, 10 (43 %) had diastolic dysfunction. Mean GLS before and after the revascularisation was 16.28 ± 1.14 % and -19.59 ± 1.42 respectively ($\Delta = 3.3$; $p = 0.000$).

When comparing results in subgroups, delta (change) after revascularisation in proximal LAD group was 3.93 % ± 2.03 and in middle 1/3 LAD group 2.82 % ± 1.24, however difference between results in these subgroups were not statistically significant.

Delta in normal diastolic function group and diastolic dysfunction group were 3.31 ± 2.05 and 3.3 ± 1.15 respectively, and difference between subgroup was not statistically significant.

Conclusion. In this small prospective cohort study PCI in SCAD patients was associated with statistically significant LV myocardial strain improvement.

LENGTH OF INPATIENT STAY AND PROGNOSIS OF ACUTE PULMONARY EMBOLISM ACCORDING TO ANTICOAGULATION THERAPY

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Keywords. Pulmonary embolism, inpatient, direct oral anticoagulants, vitamin K antagonists.

Introduction. Acute pulmonary embolism (APE) is the third most frequent cardiovascular disease *(ESC Guidelines 2014).* Recent clinical trials have shown that direct oral anticoagulants (DOAC) may decrease length of hospital stay compared to vitamin K antagonists (VKA). Early discharge of selected low-risk patients with pulmonary embolism is as safe as inpatient treatment *(Zondag et al., ERJ 2012).*

Aim. To analyse length of inpatient stay, time from initial dose of oral anticoagulants till discharge and prognosis according to two most commonly used anticoagulant groups.

Materials and methods. The prospective cohort study was conducted to analyse patients with APE. The study included 170 patients from a single centre in time period from June 2014 till December 2016. Only oral anticoagulant therapy was analysed. Individuals were excluded if they received anticoagulants before hospitalization. The data were analysed by SPSS 21.0 and PE Severity index (PESI) calculator.

Results. 58 patients (34.12 %) used VKA and 112 (65.88 %) – DOAC. Mean length of inpatient stay ± standard deviation (SD) was 11.03 ± 4.76 [95 % confidence interval 9.78–12.28] days in patients treated with VKA and 9.51 ± 3.76 [8.81–10.21] with DOAC (p = 0.024).

Time from initial dose of oral anticoagulant to discharge was not significantly different between both groups: VKA – 6.84 ± 2.91 [6.08–7.60], DOAC – 7.58 ± 3.71 [6.88–8.28] days (p = 0.187).

In 2014 inpatient time was significantly higher in patients treated with VKA compared to DOAC: 12.33 ± 6.01 *vs.* 9.37 ± 3.30 days (p = 0.039). In patients, who were treated in 2015 and 2016, significant differences in inpatient time were not found, however in both anticoagulant groups inpatient time was gradually decreased. In VKA group mean hospital stay period decreased from 12.33 to 10.06 days, into DOAC group from 9.37 to 8.84 days.

Statistically significant difference in PESI value was observed between VKA and DOAC groups – 93.17 ± 25.79 [86.39–99.95] *vs.* 83.63 ± 31.08 [77.81–89.45], respectively (p = 0.044).

Conclusion. Patients with lower value of PESI were treated with DOAC. DOAC were associated with shorter inpatient time compared to VKA; however, time from initial dose of oral anticoagulant to discharge was not significant. In 3 year study period inpatient time in both anticoagulant groups decreased but did not reach statistical significance.

PERCEPTION OF THE DISEASE AND ITS IMPACT ON LIFE IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS

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Keywords. Chronic obstructive pulmonary disease, questionnaire, smoking, social life, risk factors.

Introduction. Chronic obstructive pulmonary disease (COPD) affects more than 65 million people around the world. According to the literature, despite the wide prevalence of the disease, patient awareness is still not sufficient.

Aim. To assess how COPD patients understand their disease – its etiology, risk factors, treatment, to evaluate COPD impact on patient social life, emotional status and future expectations.

Materials and methods. In the year 2013–2017 a prospective study in the Vilnius University Hospital Santariskiu Clinics center of Pulmonology and Allergology was performed. A questionnaire created about patients understanding of the disease, risk factors, treatment, use of inhalers, impact on social life, expectations for the future.

Results. 81 COPD patients (male 92 %, female 8 %, mean age 68 years) were questioned. The average time of illness was 14 years. 47 % of the patient know the exact name of the disease they are suffering from. 43 % thought they had another disease and 10 % could not say what disease they had. 85.19 % were ex-smokers. 86.42 % quit smoking after first symptoms of the disease occurred (14.3 ± 1.76 years). 46 % think that the reason of getting COPD were harmful work environment, 37 % chronic respiratory tract diseases, and only 40 % name smoking as the main reason. When testing patient inhaler technique, up to 52 % made mistakes. 54 % correctly described the effect of the drug. Most of the patients named COPD as their biggest burden. The patients scored their life quality 5.5 ± 2 points on a scale from 1 to 10. 29.3 % believed that their disease will get worse in the future, while 43.21 % hoped to feel better.

Conclusion. COPD patients lack knowledge of their disease and smoking. The majority of the patients don't quit at all. The quality of life is affected not only by worsening of physical status but also by patients social problems associated with the disease.

POTENTIAL DRUG INTERACTIONS BETWEEN HIGH-RISK ATRIAL FIBRILLATION PATIENTS

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Keywords. Atrial fibrillation, oral anticoagulants, drug interaction.

Introduction. Atrial fibrillation (AFib) is a serious and potentially life-threatening disease that requires combination therapy, anticoagulants included, to prevent cardiovascular events. It is common that medications may interact with one-another, therefore increasing the complication risk.

Aim. Evaluate the frequencies of drug interactions within oral anticoagulant users with high risk atrial fibrillation.

Materials and methods. Altogether 84 high-risk AFib patients with daily anticoagulant use 51 % (43) men and 48.8 % (41) woman, with a mean age 69.98 years were interviewed during their hospitalization in Latvian Cardiology center over the period of October 2016 – February 2017. There were data collected about their gender, age, daily and frequently used medication and food supplements and diagnosis. Collected data were analysed with SPSS 10 using descriptive statistical methods. As potential risk medication that interact with anticoagulants most often were defined aspirin, clopidogrel, NSAID, rosuvastatin, fish oil, spiranolacton, selective serotonin reuptake inhibitors (SSRIs) and antacids.

Results. Altogether 50 % (n = 42) of patients had drug interactions, from which 76.2 % (n = 32) had single drug interaction, but 23.8 % (n = 10) had multiple drug interactions. 35.71 % (n = 30) of patients had moderate and 21.42 % (n = 18) had major drug interaction. Warfarin used 53.6 % (n = 45), dabigatran 21.4 % (n = 18) and rivaroxiban 25.9 % (n = 22) patients. The most frequently interactions were found in dabigatran users (50 %; n = 9), following warfarin group (44.4 %; n = 20) and riwaroxaban group (36.4 %; n = 8). NSAIDs used 8.9 % (n = 4) in warfarin group, dabigatran – 5.6 % (n = 1) and 4.6 % (n = 1) in rivaroxaban group. Aspirin was used in 8.9 % (n = 4) in warfarin group. Amiodaron was used in 15.6 % (n = 7) in warfarin group, dabigatran – 22.2 % (n = 4) and rivaroxaban – 18 % (n = 4). Fish oil was used in 15.6 % (n = 7) in warfarin group, dabigatran – 11.1 % (n = 2) and rivaroxaban – 9 % (n = 2). Rosuvastatin was used in 8.9 % (n = 4) in the warfarin group. Spironolactone was used in 5.6 % (n = 1) in dabigatran group. SSRIs were used in 4.5 % (n = 1) in rivaroxaban group. Antacides, such as omeprazole and pantoprazole were used in 15.6 % (n = 7) in warfarin group, 27.8 % (n = 5) in dabigatran group.

Conclusion. Drug interactions with anticoagulants for high-risk AFib patients are very common (50 %). All of the interactions increase the risk of bleeding events, therefore the chosen therapy should be strictly evaluated and tried to avoid drugs that can interact with one another.

PREDICTIVE VALUE OF LABORATORY STUDIES
FOR LONG-TERM ALL-CAUSE MORTALITY
AFTER ACUTE PULMONARY EMBOLISM

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Keywords. Pulmonary embolism, mortality, creatinine clearance.

Introduction. Patients after acute pulmonary embolism (APE) are exposed to increased risk of dying, especially within the first year (Søgaard et al., 2014). There are no definite prognostic laboratory markers to predict long-term mortality for these patients (Dentali et al., 2015).

Aim. To assess possible predictive value of routine biochemical laboratory findings for 90-day and one-year all-cause mortality after APE.

Materials and methods. The prospective cohort study included consecutive patients in a single centre from June 2014 till October 2016 presenting with symptomatic APE, who were followed up at 90 days and one year. Ninety-day and one-year mortality analysis included 147 and 95 eligible patients, respectively. Examined values, obtained at admission, were assessed for impact on 90-day and one-year mortality. Statistical analyses were conducted using IBM SPSS 23.0.

Results. Ninety-day and one-year mortality was 10.9 % (n = 16) and 21.1 % (n = 20), respectively. Mean age was higher among non-survivors (years, mean (standard deviation): 73.3 (12.7) for 90-day non-survivors *vs.* 64.2 (16.7) for survivors, p = 0.039; and 73.5 (13.1) *vs.* 62.6 (16.0) for one year, p = 0.007). Presence of active cancer was strongly associated with higher mortality (37.5 % *vs.* 4.6 % for 90-day non-survivors, p < 0.001; and 35.0 % *vs.* 4.0 % for one year, p = 0.001). No other comorbidities – arterial hypertension, chronic heart failure, diabetes, history of myocardial infarction, atrial fibrillation – or haemodynamic values – heart rate, respiratory rate, systolic blood pressure – were statistically significant. The following serum biochemical values demonstrated an association with both 90-day and one-year mortality: creatinine clearance (CrCl) (Cockcroft-Gault) (p = 0.015 and p < 0.001, respectively), D-dimer (p = 0.015 and p = 0.016) and high-density lipoprotein (p = 0.017 and p = 0.048). Total cholesterol, triglycerides, low-density lipoprotein, troponin I, brain natriuretic peptide, and haemoglobin levels had no significant predictive value.

Cox regression analysis for variables with p < 0.05 was performed. The only statistically significant independent predictive laboratory value for mortality when adjusted for age and presence of cancer was CrCl (for 90 days: p = 0.011; hazard ratio (HR) 0.971, 95 % confidence interval (CI) [0.949–0.993]; for one year: p = 0.006; HR 0.974, 95 % CI [0.974–0.992]). Presence of cancer also remained significant (p < 0.001 and p = 0.009, respectively).

Cut-off value of 70 mL/min for CrCl was determined by ROC curve. CrCl < 70 mL/min was associated with higher mortality in both 90 days (p = 0.029; HR 5.560, 95 % CI [1.194–25.888]) and one year (p = 0.009; HR 7.460, 95 % CI [1.638–33.969]).

Conclusion. Lower CrCl upon admission was demonstrated as an independent predictive factor for 90-day and one-year all-cause mortality after APE; 70 mL/min could be used as a cut-off value.

PULSE WAVE ANALYSIS: VALIDATION OF THE MOBIL-O-GRAPH IN COMPARISON WITH THE SPHYGMOCOR DEVICE

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Keywords. Pulse wave velocity, aortic augmentation index, Mobil-O-Graph, SphygmoCor.

Introduction. Carotid-to-femoral pulse wave velocity (cfPWV) and aortic augmentation index (AIx) are parameters of arterial stiffness and wave reflection. The most widely employed methods for evaluating pulse waveforms are those based on applanation tonometry, although oscillometric ambulatory blood pressure monitoring devices (ABPM) have been proposed for assessing arterial stiffness.

Aim. The aim of this study was to compare the mean values of cfPWV and the AIx based on an oscillometric method using 24hr ABPM device (Mobil-O-Graph) against a validated tonometric system (SphygmoCor).

Materials and methods. Study was conducted in Vilnius University hospital Santariskiu klinikos, Centre of Cardiology and Angiology and included 82 patients of arterial hypertension. All patients underwent detailed assessment of the physical status, anthropometry, and cardiovascular risk profile. Subjects were asked to refrain from smoking, heavy exercise, drinking alcohol, caffeine-containing beverages for at least 2 h before the examination. At first we measured AIx corrected for heart rate 75, and cfPWV using Sphygmocor device. The Mobil-O-Graph device for arterial stiffness parameter monitoring was used on the same day and started within 2 hours after measurements using Sphygmocor were done. 24hr ABPM estimates of cfPWV and AIx were compared pair-wise with results from the SphygmoCor device. We used correlation coefficients and t-test to analyse the two methods.

Results. Tonometric and oscillometric estimates of mean AIx (%) (26.76 ± 9.92 v.s. 26.93 ± 8.42) were similar but the mean cfPWV (m/s) was higher for SphygmoCor (10.57 ± 2.61 v.s. 8.72 ± 1.26). The mean difference for the estimated cfPWV and AIx between both devices was 1.84 ± 2.16 (95 % CI = 1.37–2.32), $p < 0.001$ and −0.17 ± 9.70 (95 % CI = −2.33–1.99), $p = 0.878$. The correlations of the cfPWV and the AIx as assessed with the Mobil-O-Graph with the values obtained using SphygmoCor ($r = 0.57$, $p < 0.001$; $r = 0.45$, $p < 0.001$, respectively) were highly significant.

Conclusion. The correlations of Mobil-O-Graph are highly significant compared to the tonometric appraisal of cfPWV and AIx. The Mobil-O-Graph device is therefore suitable to determine arterial stiffness and wave reflection.

STATISTIC REVIEW OF PATIENTS WITH CARDIOLOGIC EVENTS WHO ARE USING ANTICOAGULANTS – TOTAL AMOUNT OF DAILY USED DRUGS AND WITHIN THOSE THE NUMBER OF DRUGS THAT CAN INTERACT WITH ANTICOAGULANTS

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Introduction. Cardiac patients use anticoagulants to prevent thromboembolic events. However, these patients often have comorbidities that require daily use of additional drugs. Several medications have mechanistic interactions with anticoagulants, caused by P450 CYP3A4 inhibition or P-glycoprotein inhibition. Drug-drug interactions and different clinical factors impact anticoagulant plasma levels that can lead to both undertreatment or overtreatment.

Aim. The aim of the study is to collect statistics about of total number drugs used by cardiac patients who use anticoagulants, and to identify within those the number of drugs that can interact with anticoagulants.

Materials and methods. We performed analysis of 284 patients' cases who used anticoagulants in Pauls Stradins Clinical University – Latvian Center of Cardiology between August 1, 2016 till January 4, 2017. The method used was patients surveys.

Results. Out of 284 total patients 128 (45.1 %) were women and 156 (54.9 %) were men. Overall, 14 (4.9 %) patients used 2 drugs daily, 29 (10.2 %) used 3 drugs, 42 (14.8 %) patients used 4 drugs, 56 (19.7 %) used 5 drugs, 57 (20.1 %) used 6 drugs, 34 (12.0 %) used 7 drugs, 26 (9.2 %) patients used 8 drugs, 14 (4.9 %) patients used 9 drugs, and 12 (4.2 %) patients used 10 drugs daily. Additionally, of the 284 surveyed patients, 61 (21.5 %) used 1 medicament that has interaction with anticoagulants. 137 (48 %) patients used 2 drugs that interact with anticoagulants, from which 95 (69.3 %) used at least one excessive P-glycoprotein inhibitor ($p < 0.005$). 66 (23.2 %) patients used 3 drugs that can interact with anticoagulants, from which 61 (92.4 %) used at least one excessive P-glycoprotein inhibitor ($p < 0.005$). There were 15 (5.3 %) patients who used 4 drugs with anticoagulant interaction, and all of them (100 %) included at least 1 excessive P-glycoprotein inhibitor ($p < 0.005$). Respectively, 4 (1.4 %) and 1 (0.4 %) used 5 and 6 drugs that can interact with anticoagulants.

Conclusion. Cardiac patients who use anticoagulants used, on average, 4 additional drugs daily. 8 out of 10 cardiac profile patients use 2 or more drugs that can interact with other drugs. There is statistically significant data that patients who use 2–4 drugs with drug-drug interactions in majority of cases have at least one excessive P-glycoprotein inhibitor.

THE INCIDENCE OF CARDIOVASCULAR EVENTS AND ATRIAL FIBRILLATION RECURRENCE RATE ONE YEAR AFTER ELECTRIC CARDIOVERSION

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Keywords. Atrial fibrillation, electric cardioversion.

Introduction. Electric cardioversion is widely used to restore sinus rhythm in patients with atrial fibrillation. However, the long term clinical event and sinus rhythm maintenance rates following electrical cardioversion are variable among studies.

Aim. This study evaluated one year incidence and risk factors of cardiovascular events and atrial fibrillation recurrence in a single centre practice.

Materials and methods. In a prospective study 188 patients with electrocardiographically confirmed atrial fibrillation who underwent electric cardioversion were enrolled. Patient follow-up was done one year after cardioversion. Mean patient age was 65.4 ± 10.1 years and weight 93.6 ± 20.1 kg. Arterial hypertension was present in 89.1 %, diabetes mellitus in 16.0 % and congestive heart failure in 76.1 % of patients. The proportion of patients with a history of stroke or transient ischemic attack (TIA) was 6.9 % while 15.0 % reported of having a myocardial infarction in their life. The proportion of patients whose atrial fibrillation paroxysm lasted less than 48 hours was 11.1 %. The majority of patients (87.8 %) underwent elective cardioversion with amiodarone and anticoagulation pretreatment. More than a half of study population (57.7 %) had a history of electric (42.3 %) or pharmacologic (15.4) cardioversion. According to CHA2DS2-VASc score, 81.4 % of patients had ≥ 2 points. Data statistical analysis was performed with PSPP 0.8.5. software. Results with $P < 0.05$ were considered statistically significant.

Results. The success rate after electric cardioversion was 90.4 %. During a year after cardioversion one patient (0.6 %) suffered myocardial infarction, three patients (1.9 %) had a stroke/TIA, three patients (1.6 %) died and three patients (1.9 %) reported having a bleeding event that required hospitalization. The only factor that showed a tendency to increase the risk of the combined event rate of myocardial infarction, stroke/TIA and bleeding without reaching statistical significance was diabetes mellitus ($P = 0.096$). At follow-up 30.0 % of patients reported having atrial fibrillation and during the year 62.2 % had suffered at least one atrial fibrillation paroxysm. The proportion of patients who underwent additional cardioversions after the initial hospitalization was 32.5 % of whom 83.0 % underwent electric cardioversion. The factors that significantly increased the risk of atrial fibrillation relapse was history of stroke/TIA ($P = 0.014$) and increased LAVI on echocardiography ($P = 0.039$) while increased LA showed a tendency towards increased risk ($P = 0.087$).

Conclusion. Cardiovascular event rate a year after electric cardioversion was low. Electric cardioversion had a high immediate success rate, however, maintenance of stable sinus rhythm in the long term was low.

VASCULAR MICRORNAS AS POTENTIAL BIOMARKERS IN THE PREDICTION OF VULNERABLE ATHEROSCLEROTIC PLAQUES IN PATIENTS WITH STABLE CORONARY ARTERY DISEASE: PRELIMINARY RESULTS

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Keywords. Stable coronary artery disease, percutaneous coronary intervention, microRNA, iMAP-intravascular ultrasound.

Introduction. Altered expression of microRNA (miR) 126, miR145 and miR155 are proven to have a significant role in atherosclerosis and inflammatory response related processes. These miRs are involved in endothelial cell proliferation, inflammatory cell activation and migration and smooth muscular cell differentiation after a vascular injury. IMAP-intravascular ultrasound (IVUS) is an imaging software for atherosclerotic plaque tissue characterization and could be used to detect vulnerable plaques.

Aim. The aim of this study was to evaluate the correlation of plaque tissue characteristics assessed by iMAP-IVUS with miR expression and to analyse whether vascular injury caused by percutaneous coronary intervention (PCI) changes the expression pattern of these miRs after PCI.

Materials and methods. IVUS and miR analysis was done in 10 patients with stable coronary artery disease undergoing PCI. Fasting blood samples were obtained before cardiac catheterization and 2 weeks post-stenting. Within 4 hours after blood collection plasma was separated by centrifugation and stored at −20 °C. Total RNA was isolated from plasma using miRNeasy Serum/Plasma Kit (Qiagen, CA, USA). To normalize for the miRNA content, plasma samples were supplemented with miRNeasy serum/plasma spike-in control *Caenorhabditis elegans* miR39 (cel-miR39). Total RNA was reverse transcribed with Taqman miRNA reverse transcription kit (Applied Biosystems, CA, USA) and TaqMan miR126, miR145, miR155 and cel-miR39 RT primer assays. Real time polymerase chain reaction was performed to measure the expression of circulating miRs. The relative cycle threshold (CT) for cel-miR39 was used as an endogenous control to normalize miR126, miR145 and miR155 CT. During PCI lesions in the culprit artery were imaged by 40-MHz iMAP-IVUS and the proportion of plaque fibrotic, necrotic, lipidic and calcific tissue was determined. Data statistical analysis was performed with PSPP 0.8.5. software. Results with $P < 0.05$ were considered statistically significant.

Results. Mean patient age was 57.7 ± 7.71 years and weight 89.9 ± 9.53 kg. No significant correlations were found in miR expression with patient age, gender, weight, body mass index, smoking status, and lipid profile. Plasma miR155 negatively correlated with

plaque fibrotic tissue content (r = −0.70; p = 0.037) and positively with plaque lipidic (r = 0.77; p = 0.015) and necrolipidic tissue content (r = 0.8; p = 0.009). MiR126 expression correlated with plaque necrotic (r = 0.68; p = 0.045) and necrolipidic tissue content (r = 0.73; p = 0.027). A tendency towards correlation with plaque volume was observed both with miR126 (r = 0.62; p = 0.073) and miR155 (r = 0.61; p = 0.08). MiR expression after 2 weeks did not show any significant changes from baseline (p = 0.794; p = 0.627 and p = 0.746 for miR126, −145 and −155, respectively).

Conclusion. The preliminary results of this study indicate that miR126 and miR155 expression are associated with vulnerable plaque characteristics. MiR expression 2 weeks after coronary stenting did not change significantly.

II. INTERNAL MEDICINE: GASTROENTEROLOGY, ENDOCRINOLOGY, NEPHROLOGY, HAEMATOLOGY, RHEUMATOLOGY, GERIATRICS

THE EFFECT OF TREATMENT WITH RADIOIODINE THERAPY ON THE ANTIOXIDANT/OXIDANT BALANCE IN ACTIVE GRAVES' DISEASE

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Keywords. Graves disease, radioiodine therapy, oxidative stress.

Introduction. Graves' disease is an autoimmune disorder characterized by hyperthyroidism and, less frequently, orbitopathy. Oxidative stress plays an important role in hyperthyroidism-induces tissue damage. Increased reactive oxygen species (ROS) generation and the consequent oxidative damage are involved in the development of Graves' disease.

Aim. The aim our study was to evaluate the influence of radioiodine therapy on some parameters of oxidant/antioxidant balance in patients with Graves' disease.

Materials and methods. We studied 28 patients with Graves' disease, aged 19–48 years. As a control group 11 normal adults were studied. All the patients were treated unsuccessfully by antithyroid drugs. The effective half-life measured by the use of radioiodine uptake (RAIU) after 24 and 48 h was more than 3 days at the time of treatment. Malondialdehyde (MDA) as a marker of oxidative stress, glutathione (GSH) and glutathione peroxidase (GPx) activity as a parameters of antioxidant system, were evaluated in the investigated groups before and 6 months after radioiodine therapy. The serum fT4, fT3, TSH, TSHRAb were evaluated before and monthly up to 12 months after RIT. Thyroid ultrasound, and thyroid scan with thyroid RAIU were done before and after 12 months of radioiodine therapy. The activity dose was calculated by Marinelli's formula and was ranged between 280 and 600 MBq. The absorbed dose ranged between 120 and 200 Gy, Follow-up control was done every 4 weeks.

Results. In patients *vs.* controls there was an increase in MDA level ($P < 0.05$), with significant decrease in GPx activities ($P < 0.05$) and GSH level. A significant decrease of MDA level with significant increase of GSH level and GPx activities was observed after 6 months of radioiodine therapy in patients who achieved euthyroidism. In 20 patients euthyroidism was achieved, 4 patients received L-thyroxin replacement therapy due to hypothyroidism, two patients were in subclinical hyperthyroidism, and hyperthyroidim persist in 2 patients. Reduction in thyroid volume after radioiodine therapy was about 48 %.

Conclusion. Our results confirm the imbalance of the antioxidant/oxidant status in patients with Graves' disease. Untreated hyperthyroidism is associated with an increase of several parameters of oxidative stress Radioiodine therapy improved these balances in Graves' disease.

DIFFERENCES OF GASTROESOPHAGEAL REFLUX DISEAESE TREATMENT IN GENERAL PRACTICE

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Keywords. Gastroesophageal reflux disease, proton pump inhibitors, diet.

Introduction. Treatment of gastroesophageal reflux disease (GERD) is based on combination of diet, lifestyle recommendations and effective medicine. If any of the components are missing, the effectiveness of treatment drops. Diet recommendations are known as a part of treatment success.

Aim. To evaluate diet and pharmacological treatment recommendations for patients with GERD prescribed by general practitioners in Latvia according to their work experience.

Materials and methods. Prospective study performed from September 2016 – December 2016. General practitioners (GP) registered in The National Health Service database filled quantitative survey questionnaire; 201 completed replies were received. The data were analysed using Microsoft Excel 2016 and SPSS 24.0.

Results. 201 GPs (average age 49 years) from five regions of Latvia. All respondents were divided into five groups according to their work experience: group 1 – 0.5–10 years (n = 35), group 2 – 11–20 years (n = 41), group 3 – 21–30 years (n = 74), group 4 – 31–40 years (n = 43), group 5 – 41–55 years (n = 8). The most popular diet and pharmacological treatment recommendations in all groups were analysed. Majority recommended to avoid spicy foods (group 1 – 29 % (n = 30); group 2 – 23 % (n = 27); group 3 – 25 % (n = 54); group 4 – 29 % (n = 37), group 5 – 26 % (n = 7), avoid sweets (group 1 – 22 % (n = 23); group 2 – 20 % (n = 23); group 3 – 15 % (n = 31), group 4 – 13 % (n = 17); group 5 – 19 % (n = 5) and to avoid citrus fruits (group 1 – 19 % (n = 20); group 2 – 16 % (n = 18); group 3 – 15 % (n = 31); group 4 – 17 % (n = 22); group 5 – 19 % (n = 5)). Most popular proton pump inhibitor in group 1 – 34 % (n = 24) and in group 2 – 29 % (n = 32) was *esomeprazole*. GPs in group 3 – 31 % (n = 59) and group 4 – 30 % (n = 28) chose *pantoprazole*, but in group 5 – 47 % (n = 7) – *omeprazole*. First choice antacids in group 2 – 41 % (n = 26), group 3 – 38 % (n = 48) and group 4 – 38 % (n = 26) were aluminium and magnesium based. Most popular antacids in group 1 – 37 % (n = 20) were aluminium, magnesium and benzocainum based. GPs in group 5 equally chose aluminium and magnesium, aluminium, magnesium and benzocainum and calcium carbonate based antacids. Most popular prokinetic in group 1 – 33 % (n = 15), group 2 – 47 % (n = 29) was *domperidone*, but in group 3 – 35 % (n = 39 %), group 4 – 35 % (n = 21) and in group 5 – 50 % (n = 4) was *metoclopramide*.

Conclusion. Our data showed that diet recommendations are not related to GPs work experience (p = 0.0000), but there are differences in pharmacological treatment recommendations (p = 0.0000); depending on the years of work experience, the decision making varies between *esomeprazole*, *pantoprazole* and *omeprazole*. Use of H_2 antagonists was low in all groups. The most used antacids were aluminium and magnesium based, and the most used prokinetics were *metoclopramide* and *domperidone*. Pharmacological treatment of GERD is related to GPs work experience, but diet recommendations are equally the same.

INCIDENCE OF POST-TRANSPLANT GLOMERULONEPHRITIS AND ITS IMPACT ON ALLOGRAFT OUTCOME

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Keywords. Glomerulonephritis, kidney transplantation, graft failure.

Introduction. Recurrence or *de novo* development of glomerulonephritis (post-transplant glomerulonephritis) is the third most common cause of graft failure, ranking only behind immunologic rejection and patient death with a functioning graft. Glomerulonephritis (GN) of all types may recur or develop soon after kidney transplantation and the incidence of post-transplant GN depends on the original underlying kidney disease. The most common post-transplant GN forms are membranoproliferative GN (MPGN), focal segmental glomerulosclerosis (FSGS), IgA nephropathy and membranous GN.

Aim. To identify frequency of post-transplant GN among kidney transplant patients from Latvia.

Materials and methods. This was the survey of clinical records of all 160 patients who had undergone renal transplantation in Latvian Transplant center during 2012–2014 time period. In addition potential risk factors of kidney allograft function loss were evaluated (age, gender, overweigh, blood type, residual kidney function, donor type, treatment methods, episodes of cellular or humoral rejection, previous history of kidney allotransplantation) and odds ratio (OR) were calculated.

Results. Analysis of 160 records showed, that the most common primary kidney disease was chronic glomerulonephritis (n = 47), but only in 21 of cases the type of GN has been recognized: 10 MPGN, 3 FSGS, 5 pANCA vasculitis, and other 3 patients had following types of GN: IgA nephropathy, mesangiocapillary GN and endocapillary proliferative GN.

Median follow-up time was 43 month (Q1–Q3 34–52). During follow-up 6 post-transplant GN were diagnosed and 19 % of all patients (n = 30) had kidney allograft function loss (6 due to GN recurrence, 24 due to chronic rejection). Five of post-transplant GN were MPGN (median graft survival 36 month) and in one case pANCA vasculitis recurrence was present (graft survival 6 month).

Significantly increased risk of allograft function loss of all patient showed episode of humoral rejection OR = 4.191 [95 % CI 1.830–9.600], delayed allograft function OR = 3.524 [95 % CI 1.504–8.256] and patient female gender OR = 2.691 [95 % CI 1.167–6.205]. All other evaluated factors showed no significant difference.

Conclusion. Post-transplant GN seems to be low in population from Latvia and is only over 12 %. The most common recurrent glomerulonephritis is MPGN. During 3 year period half of MPGN patients had lost their kidney allograft function due to the recurrent MPGN. Only episode of humoral rejection, female gender and delayed allograft function showed significant increased risk of allograft function loss.

ESTIMATING KIDNEY FUNCTION WITH A QUICK SURVEY

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Keywords. Renal function, survey.

Introduction. Patient care consists of hundreds of aspects, one of which is renal function. It always helps to know if the patient is at higher risk group and most doctors want to know this as fast as possible. This need for a quick and effective method of risk assessment lead to our work.

Aim. To test our simple, patient oriented survey of its capability for patient stratification into risk groups by renal function.

Materials and methods. Study was done in Vilnius University Hospital Santariskiu Clinics. We reviewed 150 surveys, 110 (73.3 %) were selected for further examination. Conditions that had to be met: serum creatinine measured less than 180 days prior to examination, adult patient and fully completed survey. Our survey consisted of 5 questions about risk factors which may have an impact on patient's renal function. Data for patients' age, gender, serum creatinine measurement date and the result were acquired from hospital's internal database. Patients were stratified into two groups using eGFR (calculated using CKD-EPI formula): < 60 mL/min/1.73 m² and > 60 mL/min/1.73 m².

Results. 11/110 patients (10 %, 95 % CI: 6.2–19.7 %) had < 60 mL/min/1.73 m² eGFR. Patients' mean age was 52, women 41.8 % (n = 46), men 58.2 % (n = 64). Mean date difference between serum creatinine measurement and examination was 41 (± 60) days, median 27. Survey's sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) in detecting patients with lower than 60 mL/min/1.73 m² eGFR were calculated. Sensitivity (73.08 %, 95 % CI: 52.21–88.43 %), specificity (39.66 %, 95 % CI: 32.44–47.23 %), PPV (14.96 %, 95 % CI: 11.93–18.61 %), NPV (91 %, 95 % CI: 84–96.14 %).

Conclusion. This survey, though having better than average result in sensitivity (73.08 %) when used for detecting patients with low eGFR, shows greater promise in negative predictive value (91 %) which ultimately means there is a possibility for such survey to be used as a quick determination whether the patient may not be in need for full renal function examination.

EVALUATION OF SLEEP QUALITY BETWEEN EARLY AND LATE SHIFTS IN HEMODIALYSIS PATIENTS

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Keywords. End-stage renal disease, hemodialysis, sleep, sleep quality, actigraphy, questionnaire.

Introduction. Sleep disorders play an important role in overall health and quality of life in the general population. Patients with end-stage renal disease (ESRD) have more sleep complaints, which are increasing interest of clinicians caring for hemodialysed patients.

Aim. To compare night time sleep quality variables of ESRD patients undergoing early-shift hemodialysis (HD) versus late-shift using wrist actigraphy and sleep quality questionnaire.

Materials and methods. Cross-sectional study enrolled 15 patients with ESRD undergoing thrice-weekly in-center HD between September 2016 and December 2016. Patients were divided into two groups according to HD time. Early-shift patients (53.3 %) started their HD treatment at or before 8:00 AM, and the late-shift group (46.7 %) started after 8:00 AM. Subjective quality of sleep was measured using the Pittsburgh Sleep Quality Index (PSQI) after patients completed self-rated questionnaires. Wrist actigraph was worn for two nights. Measurements of total sleep time (TST), sleep efficiency (SE), sleep onset latency (SOL), wake after sleep onset (WASO) and fragmentation index (FI) were derived from wrist actigraphy. Sleep outcomes were analysed using nonparametrical (Mann-Whitney U test) and t test with SPSS v23 statistical package.

Results. Sleep quality assessment was performed in 15 patients, 13 (86.6 %) of them were males, their mean age was 59.7 ± 13.69 years. Mean TST and SE were greater in late-shift HD patients than in early-shift group: 377.3 ± 120.10 min *vs.* 303.0 ± 117.65 min and 77.7 ± 13.33 % *vs.* 63.6 ± 24.50 %, but there were no significant differences (p = 0.248, p = 0.199). Late-shift HD patients required a shorter period of time to fall asleep compared to those on early-shift, SOL was 26.8 ± 21.79 min *vs.* 54.2 ± 47.69 min (p = 0.271). WASO and FI appeared to be similar in both groups: 58.1 ± 29.49 min *vs.* 66.3 ± 44.75 min and 33.0 ± 10.58 *vs.* 33.2 ± 17.50 (p = 0.728, p = 0.979). Majority patients questionnaires (73.3 %) showed poor sleep quality (PSQI > 5), surprisingly, early-shift patients evaluated better their sleep quality than late-shift patients (PSQI 7.3 ± 4.59 *vs.* 12.0 ± 4.40), however these results were not statistically significant (p = 0.062).

Conclusion. Both wrist actigraphy and self-rated questionnaires showed poor sleep quality. Wrist actigraphy sleep results appeared to be better in late-shift patients than in early-shift group, but there were no significant differences in sleep quality between these two shifts and perhaps a bigger study population is needed to prove this.

THE USE OF ANTIBACTERIAL THERAPY IN INFLAMMATORY BOWEL DISEASES: SIX YEAR ANALYSIS OF TWO LARGEST HOSPITALS IN LATVIA

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Keywords. Inflammatory bowel disease, Crohn's disease, ulcerative colitis, antibacterial therapy.

Introduction. According to the European Crohn's and Colitis Organisation (ECCO) guidelines antibiotics should not be used as the first choice treatment in inflammatory bowel diseases (IBD) especially in ulcerative colitis. Nevertheless, our previous studies show that antibiotics are used more often than suggested.

Aim. The aim was to review two university hospitals in Riga (Latvia) to distinguish the possible differences in antibacterial therapy trends in patients with IBD.

Materials and methods. Based on our previous research in this field, we reviewed hospitalization cases with Chron's disease (CD) and ulcerative colitis (UC) in Riga Eastern Clinical University Hospital (REUCH) and Pauls Stradins Clinical University Hospital (PSCUH) in a six-year time period (2010–2015). Antibacterial therapy trends in both hospitals were compared to ECCO IBD treatment guidelines (2012). Using original developed study protocol, database was made and statistics analysis performed using SPSS 23.0.

Results. There were 1243 hospitalization cases together in both hospitals: 629 female and 614 male patients; mean age 48.2 and 39.7 years, respectively. There were 700 (56.3 %) hospitalization cases in REUCH and 543 (43.7 %) in PSCUH. 353 (56.1 %) female and 337 (54.9 %) male patients had UC and 217 (34.5 %) female and 240 (39.1 %) male patients had CD. Mean length of IBD anamnesis was 3.3 years. 662 (53.3 %) patients did receive antibiotics during hospitalization. Most frequently used antibiotics were Ciprofloxacin (119 (17.2 %) in UC, 69 (15.1 %) in CD), Metronidazole (266 (38.6 %) in UC, 208 (45.5 %) in CD) and Ceftriaxone (75 (10.9 %) in UC, 79 (17.3 %) in CD). In REUCH most patients (53.4 %) did not receive antibiotics (n = 374), in PSCUH most patients (54.3 %) did receive antibiotics (n = 295). The mean antibacterial therapy in REUCH was shorter than in PSCUH: 3.3 *vs.* 4.3 days, respectively (p = 0.1). Most patients in REUCH were tested for microbial cultures (59.6 %) and 10 patients were Extended spectrum beta-lactamase producing *Enterobacteriaceae* positive, 7 had *Cl. Difficile* infection. In PSCUH 26.2 % were tested for microbial cultures and 1 had *Cl. Difficile* infection.

Conclusion.
1. In both hospitals a great proportion of IBD patients received antibiotics during the hospitalization which does not fully comply with the ECCO IBD treatment guidelines.
2. In PSCUH more IBD patients receive antibiotics, antibacterial therapy was longer and patients were less frequently tested for microbial cultures.

EMOTIONAL STATE ACCORDING TO THE WHO-5 QUESTIONNAIRE IN WOMEN WITH TYPE 1 DIABETES, AND ITS INFLUENCING FACTORS

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Keywords. Diabetes, WHO-5, emotional state.

Introduction. The risk of depression in people with diabetes mellitus (DM) is estimated to be twice higher than in non-diabetic people, women being at a higher risk than men.

Aim. To assess the emotional state according to the WHO-5 questionnaire in women with type 1 DM, and to assess the sociodemographic and medical factors influencing emotional state.

Materials and methods. An anonymous survey of women with type 1 DM was conducted in LUHS Kauno Klinikos Department of Endocrinology and in diabetic women's Facebook chat groups during 1 February – 20 December 2016. The questionnaire had 22 original questions on sociodemographic factors and 13 questions on medical factors. Women were asked to indicate any cardiovascular, digestive, urinary tract, respiratory, or gynecological diseases or complications of DM (eye, renal, or cardiovascular, neuropathy, or frequent hyperglycemic or hypoglycemic conditions). In addition, the validated WHO-5 Well-Being Index was used for evaluating person's emotional state. It consists of 5 questions, each scored from 0 to 5. The total score is multiplied by 4. If the final score is < 50, the person may have a mood disorder. Descriptive and comparative statistical data analysis was performed with SPSS 17.0, using Pearson's Chi-Squared test, crosstabs, Fisher's exact test, and Student's and the Mann Whitney tests. The values were considered to be statistically significant when $p < 0.05$.

Results. The data of 95 women were analysed. Mean age was 28.9 ± 7.9 years. The mean final score of the WHO-5 in women with DM was 57.1 ± 18.4. 33.7 % of women had the score below 50. BMI, education level, marital status, smoking, alcohol consumption, or the number of children did not have any significant impact on the WHO-5 score. Women who lived in rural area compared with those living in the city had depressed mood more often (52.9 % and 27.9 %, respectively) ($p = 0.049$). Women with neuropathies more often had depressed mood compared to those without such complication (48.7 % and 21.7 %, respectively) ($p = 0.009$). Women who had a history of vaginitis more often had depressed mood than those who did not have such condition (41.2 % and 20.6 %, respectively) ($p = 0.048$). Neither other comorbidities had any significant impact on the emotional state, nor did the glycated hemoglobin value ($p > 0.05$).

Conclusion. Mood disorders in women with type 1 DM were not expressed. Evaluating the sociodemographic factors, only the place of residence affected emotional state. Women with nervous system disorders or those with vaginitis significantly more frequently reported symptoms of mood disorders.

RISK FACTORS FOR GUT COLONIZATION WITH ESBL PRODUCING *ENTEROBACTERIACEAE* IN AMBULATORY ULCERATIVE COLITIS PATIENTS: PRELIMINARY STUDY RESULTS

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Keywords. Ulcerative colitis, risk factors, ESBL.

Introduction. Risk factors for gut colonization with ESBL producing *Enterobacteriaceae* (EPE) in the general population include advanced patient age, underlying diseases, surgeries, immunosuppressive therapy, previous and prolonged hospital stay, exposure to antimicrobial drugs and international travel.

Aim. The aim of the study was to determine possible risk factors for gut colonization with EPE in ambulatory ulcerative colitis (UC) patients.

Materials and methods. A cross-sectional study was conducted analyzing all patients with clinically, endoscopically and histologically confirmed UC diagnosis previously hospitalized in Riga Eastern Clinical University Hospital and Pauls Stradins Clinical University Hospital during a 6-year period (2010–2015). Patients were asked to participate in out-patient interviews regarding the risk factors for gut colonization with EPE, rectal swabs were obtained, *Enterobacteriaceae* were cultured and analysed for ESBL presence according to EUCAST guidelines.

Results. A total of 92 patients with confirmed UC diagnosis, 56.5 % (n = 52) male and 43.5 % (n = 40) female patients with the mean age of 44.28 (SD = 15.52) years, were included in the study. EPE colonization was found in 12 % (n = 11) of the cases. We found that 5.4 % (n = 5) of the patients used antibiotics at the time of testing and 40.2 % (n = 37) of the patients had used antibiotics during the past 12 months. Patients who were taking antibiotics at the time of testing were more often colonized with EPE – 60 % (n = 3), comparing to the patients who were not taking antibiotics at the time of testing – 9.2 % (n = 8), (p = 0.011). Such EPE colonization differences were not observed in antibiotic use during the past 12 months. Immunosuppressive therapy, including budenoside, methylprednisolone, azathioprine and infliximab, was administered to 28.3 % (n = 26) of the patients. Patients who were taking xenobiotic immunosuppressants (budenoside, methylprednisolone, azathioprine) during the past 12 months were more frequently colonized with EPE – 25 % (n = 6), comparing to patients who were not taking these medications – 7.4 % (n = 5), (p = 0.032). Such differences were not observed between patients receiving and not receiving biological immunosuppresants (infliximab). No statistically significant differences were found in gut colonization rates with EPE regarding patient age, gender, severe underlying diseases, surgeries, use of proton pump inhibitors, hospital stay and international travel during the past 12 months.

Conclusion. Current antibiotic use and xenobiotic immunosuppressant (budenoside, methylprednisolone, azathioprine) administration in the past 12 months might be a risk factor for gut colonization with ESBL producing *Enterobacteriaceae* in ambulatory UC patients.

RESULTS OF REPEATED KIDNEY TRANSPLATATION

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Keywords. Kidney transplantation, patient and graft survival.

Introduction. In Latvian Transplantation centre almost 20 % of all transplantations were retransplantations and about 21 % of patients were waiting for repeated transplantation in 2013. It is stated that a longer waiting time on dialysis negatively affects the outcomes of transplantation [Meier-Kriesche et al., 2000]. However, there are not enough data about this statement in the case of repeated transplantation.

Aim. To evaluate influence of the dialysis vintage before the last transplantation on graft function and patient and graft survival in the case of repeated transplantation.

Materials and methods. In retrospective study were included patients who underwent repeated kidney transplantation between 2005. and 2012. Patients were divided in groups based on the dialysis vintage before the last transplantation. 1 and 3 years graft and patient survival were assessed by Kaplan –Meier analysis. Delayed graft function was defined as need for dialysis within the first week after transplantation. All rejection episodes were proved by the biopsy. GFR was assessed by MDRD formula. For statistical analysis IBM SPSS Statistics 21.0 was used.

Results. Of 64 adult participants 44.4 % were men. Mean age was 41.0 ± 12.6 years. 85.7 % underwent second transplantation, 11.1 % – third and 3.2 % – fourth kidney transplantation. In 19 patients' dialysis vintage was 0–6 months (1st group), in 22 patients 7–24 months (2nd group) and > 25 months in 22 patients (3rd group). Delayed graft function was observed in 10.5 % in the 1st group, 27.3 % – 2nd group and in 22.7 % in the 3rd group (p = 0.39). Acute rejection developed in 42.1 % – 1st group, 45.5 % – 2nd group, 72.7 % – 3rd group (p = 0.02) and it was significant risk factor for the graft loss. Mean GFR after a year was – 46.9 ml/min/1.73 m² – 1st group, 44.5 ml/min/1.73 m² – 2nd group and 37.6 ml/min/1.73 m² – 3rd group. After 3 years – 39.5 ml/min/1.73m², 38.7 ml/min/1.73 m² and 38.7 ml/min/1.73 m² respectively (p = NS). 1 year graft survival in the 1st group was 94.7 %, 86.4 % in the 2nd group and 81.8 % in the 3rd group (p = NS) but 3-year graft survival was statistically significantly better in the 1st group – 89.5 % – 1st group, 81.8 % – 2nd group and 63.6 % – 3rd group (p = 0.033). Mean graft survival time in the 1st group was 117.6 months (95 % CI 101.37–133.89), in the 2nd group 95.07 (95 % CI 74.60–115.54), 3rd group 66.31 (95 % CI 47.30–85.32). Patient survival in all groups was statistically equal (p = 0.9)

Conclusion. Our results support the statement that a shorter waiting time on dialysis is associated with better graft function and statistically significantly better long term graft survival after repeated kidney transplantation, but had no effect on patient survival.

ENDOSCOPIC CHANGES IN PATIENTS WITH GASTROESOPHAGEAL REFLUX DISEASE

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Keywords. Gastroesophageal reflux disease (GERD), gastroesophageal reflux (GER), body mass index (BMI).

Introduction. Gastroesophageal reflux (GER) is a physiologic process by which gastric contents move retrograde from the stomach to the esophagus. In contrast, GERD is a spectrum of disease usually producing symptoms of heartburn and acid regurgitation. GERD is a consequence of the failure of the normal antireflux barrier to protect against frequent and abnormal amounts of refluxed material (Joel E. Richter et al., 2016). The range of GERD prevalence estimates was 18.1–27.8 % in North America, 8.8–25.9 % in Europe, 2.5–7.8 % in East Asia (El-Serag HB et al., 2013).

Aim. The aim of study was to compare severity of symptoms, lifestyle habits in out-patients with endoscopy-positive/negative GERD undergoing upper endoscopy in Riga Eastern Clinical University Hospital.

Materials and methods. In this study 32 outpatients in Riga Eastern Clinical University Hospital participated in survey leading to upper endoscopy. Symptoms and GERD risk factors were evaluated and compared to endoscopy results.

Results. The study included 32 inpatients – 9 males and 23 females. The mean age of the patients was 56 years. GERD symptoms were observed in 7 men and 13 women. Endoscopy confirmed A and B type esophagitis in 3 men and 3 women. Endoscopy positive GERD patients had BMI of 27.87, endoscopy negative patients – 26.35, followed by patients with no GERD – 23.99.

No significant statistical difference was found in heartburn severity, symptom provoking factors as smoking, alcohol consumption and diet in both GERD groups. GERD patients had associated conditions as chronic cough, asthma, laryngitis, tooth erosion, while GERD – free patients had none of them. Patients with GERD often do not fulfill recommendations to decrease consumption of coffee, tea, citrus fruits, tomatoes, chocolate, sparkling drinks, which stimulates reflux.

Conclusion. GERD symptom severity does not directly correlate with degree of esophageal injury. Prevalence of esophagitis in GERD patients in this study is similar to worldwide statistics. Higher BMI is associated with higher esophagitis risk. Ensuring patients to make lifestyle and diet changes may lead to decrease in GERD morbidity.

INTRAOPERATIVE PARATHYROID HORMONE AND NEXT DAY SERUM CALCIUM ASSAY IN PRIMARY HYPERPARATHYROIDISM

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Keywords. Primary hyperparathyroidism, serum calcium, parathyroid hormone, hypocalcemia.

Introduction. Primary hyperparathyroidism (PHPT) is the unregulated overproduction of parathormone (PTH) resulting in abnormal calcium homeostasis. The clinical presentation of parathyroid carcinoma and parathyroid adenoma is usually related to symptoms caused by the effects of markedly elevated serum PTH and hypercalcemia. To improve the success rate of parathyroidectomy (PTX) the intraoperative parathyroid hormone (IoPTH) level is monitored.

Aim. The study was designed to determine intraoperative parathyroid hormone (IoPTH) drop after PTX and compare with the risk of postoperative hypocalcaemia.

Materials and methods. A full retrospective case-control study was performed on 45 patients with PHPT operation since October 2015. Two hundred ten (210) patients require full data analysis with unaccomplished case-control study from 2012 till October 2015. IoPTH was measured three times – preoperatively, before the pathological parathyroid gland was mobilized and, 20 minutes after the gland was excised respectively. The operation to be considered successful the IoPTH measurement after 20 minutes should decrease more than 50 % compare to the initial highest IoPTH level. The level of serum calcium (Ca) was taken the day after surgery. The descriptive statistics were used to summarize the data.

Results. Study included 5 male (11.1 %) and 40 female (88.9 %) patients. The mean age was 60 years (24–79 y.). Preoperatively 40 (88.8 %) of PHPT patients had hypercalcemia (mean 2.89 mmol/L) and 5 (11.2 %) were normocalcemic (2.31 mmol/L). In 44 cases (97.8 %) PTH level decrease was greater than > 50 % and decrease range was from 52 to 90 % (mean value 74.04 %). While only one patient IoPTH level was measure below 50 %, 41 % respectively. Postoperative hypocalcemia (Ca < 2.1 mmol/L) occurred in 8 cases (mean value 2.03 mmol/L). Mean PTH decrease in postoperative hypocalcemia group was > 80 %. Average Ca level fall after PTX 18.7 % (0.53 mmol/L).

Conclusion. The PTH assay revealed to be an important prognostic tool for parathyroid surgery success in patients with PHPT. IoPTH decrease greater than > 80 % was associated with higher risk of postoperative hypocalcemia – which can impact further quality of the life and treatment costs.

THE EFFECT OF RISK FACTORS AND COMPLICATIONS ON DEVELOPMENT OF SEXUAL DYSFUNCTION IN WOMEN WITH DIABETES MELLITUS

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Keywords. Female Sexual dysfunction, diabetes mellitus.

Introduction. Diabetes mellitus (DM) is one of the most common chronic diseases worldwide and it is the leading cause for sexual dysfunction, which occurs in up to 60 % of women with DM [Lindau et al., 2007]. Studies show the significant correlation between FSD with DM and many risk factors such as dyslipidemia, arterial hypertension (AH), increased values of glycosylated hemoglobin and smoking. Whereas complications are depression, decreased sexual desire and arousal [Shalender Bhasin et al., 2016].

Aim. To explore the effect of risk factors and complications on development of female sexual dysfunction (FSD) in women with DM.

Materials and methods. This was a cross-sectional descriptive study where women were interviewed using Latvian version of *Female Sexual Function Index (FSFI)* queried about their sexual life. SD was evaluated according to questionnaire of DM. Evaluation criteria were age, duration of DM, AH, smoking, dyslipidemia, assessment frequency and values of glycosylated hemoglobin. Data collection and statistical analysis was performed using SPSS 22.0 and Excel 2010.

Results. In the study were included 100 women aged between 24 and 75 years. The mean age was 53.82 (± 14.33) years. 75 % of patients had type 2 DM, 19 % had type 1 DM and 6 % had other type of DM. Most of participants (32 %) were suffering from DM less than 5 years. The average duration of DM was between 10 and 20 years. According to the total FSFI scores, 71 % of the women had SD. The results showed that age of participants and level of glycosylated hemoglobin has statistically significant importance ($p < 0.05$) on FSDI. Meanwhile it was statistically significant ($p < 0.05$) that AH, dyslipidemia and assessment frequency of glycosylated hemoglobin has not importance on FSDI.

Conclusion. Result of this study of 71 % female diabetes patients experiencing SD can be rated as high if compared to other available data. Although seven different risk factors and indicators of DM were evaluated, only two of them – age and the level of glycosylated hemoglobin – had a significant impact on FSD. While age is a debatable factor because of its generality, the glycosylated hemoglobin is a direct depiction of the metabole compensation of DM. This conclusion evokes a discussion about the importance of glucose level control of DM in the development of SD. Surprisingly, other metabolism control indicators as AH, dyslipidemia and assessment frequency of glycosylated hemoglobin are proven to have no impact of the development of SD.

S. AUREUS AND METICILLIN-RESISTANT *S. AUREUS* SCREENING IN NEPHROLOGICAL PATIENTS

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Keywords. *S.aureus* colonisation, *S.aureus* screening, MRSA screening, dialysis-related infections.

Introduction. *S.aureus* is one of the most widespread agents causing infections in patients with haemodialysis and peritoneal dialysis (PD). *S.aureus* carriage in general public is around 15 % and MRSA carriage 1–3 %, while *S.aureus* carriage in nephrological patients can be up to 50 %. The colonisation of *S.aureus* increases the risk of development of *S.aureus* infections (especially bacteremia) up to five times for patients with renal problems in comparison with other patients.

Aim. To investigate how many nephrological patients admitted to the PSKUS Nephrology Centre carry S. aureus and MRSA.

Materials and methods. All the swabs were obtained from February 2016 till January 2017 from patients admitted to the PSKUS Nephrology Centre. Nasal and inguinal swabs were obtained from dialysis free and haemodialysis patients, from PD patients swabs were additionally obtained from place of peritoneal dialysis catheter. Microbiological analysis was performed after overnight swab culturing on trypticase soya broth, then on mannitol-salt agar, egg-yolk-salt agar, and blood agar. Pure cultures were microscoped using Gram staining. Coagulase detection, catalase test and latex agglutination (Oxoid) were performed. For bacterial identification VITEK-2 (bioMerieux) system was used. The antibiotic susceptibility testing was performed according to the EUCAST Version 4.0, 2016. All *S.aureus* cultures were frozen at −80 °C.

Results. 130 patients were included in this study. 65 (50 %) were female, 65 (50 %) were male. 26.9 % (n = 35) carried *S. aureus* (VITEK-2 detection rate ranged 91–99 %). Out of 28 dialysis free patients, 28.6 % (n = 8) carried *S.aureus*, but out of 49 haemodialysis patients, 20.4 % (n = 10) carried *S.auerus*. Out of 53 patients with PD, 32.1 % (n = 17) carried *S.aureus*. 80 % (n = 28) of all isolated *S.aureus* were from nasal swabs. Four *S.aureus* were isolated from PD catheters. No MRSA were detected. One culture was resistant against ciprofloxacin, tetracycline, co-trimoxazole, rifampicin, erythromycin and gentamycin. During our study there were no MRSA outbreaks in the hospital.

Conclusion. *S.aureus* was widespread in nephrological patients. PD patients were the most frequent carriers. As serious complications can occur, screening for *S.aureus* should be done and decolonisation procedures must be considered.

ROLE OF LIFESTYLE RECOMMENDATIONS FOR TREATMENT OF GASTROESOPHAGEAL REFLUX DISEASE IN GENERAL PRACTICE

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Keywords. Gastroesophageal reflux disease, GERD.

Introduction. Gastroesophageal reflux disease (GERD) is a common gastrointestinal disorder where first line treatment standard includes proton pump inhibitors (PPI). Previous data showed up to 20 % efficacy of lifestyle modifications used in the treatment for GERD.

Aim. To evaluate the lifestyle recommendations for patients with GERD prescribed by general practitioners (GP) from different territorial areas of Latvia with different work experiences.

Materials and methods. General practitioners (GP) registered in The National Health Service filled quantitative survey questionnaire; 201 completed replies were received. The data were analysed using Excel and SPSS 24.0.

Results. From 201 GPs 56 % (n = 121) believe that lifestyle has a strong positive effect on GERD patient condition. 49 % (n = 98) of respondents believe that changing lifestyle will improve the symptoms > 20 % of GERD patients and 71 % (n = 142) think that only < 25 % of GERD patients are ready to make changes in their lifestyle.

All respondents were divided in to five groups according to their work experience: group 1 – 0.5–10 years (n = 35), group 2 – 11–20 years (n = 41), group 3 – 21–30 years (n = 74), group 4 – 31–40 years (n = 43), group 5 – 41–55 years (n = 8).

The most popular lifestyle recommendations in all groups were analysed. Majority recommended to stop smoking (group 2 – 15 % (n = 36), group 3 – 15 % (n = 63), group 4 – 15 % (n = 33)), reduce weight, if overweight (group 1 – 15 % (n = 32), group 2 – 15 % (n = 35), group 5 – 14 % (n = 7)), avoid eating before lying down (group 1 – 15 % (n = 32), group 5 – 16 % (n = 8)), avoid overeating (group 3 – 15 % (n = 64), group 4 – 16 % (n = 35)).

Study participants represented five regions of Latvia – 32 % (n = 65) from Riga region, 20 % (n = 41) from Zemgale region, 19 % (n = 38) from Kurzeme region, 16 % (n = 32) from Vidzeme region, 13 % (n = 25) from Latgale region. The most popular lifestyle recommendation were – stop smoking (Latgale 14 % (n = 19), Riga 16 % (n = 59), Zemgale 15 % (n = 36), Kurzeme 15 % (n = 33), Vidzeme 13 % (n = 22)), reduce weight (Latgale 16 % (n = 21), Riga 14 % (n = 52), Zemgale 13 % (n = 30), Kurzeme 14 % (n = 31), Vidzeme 13 % (n = 22)), avoid eating before lying down (Latgale 14 % (n = 19), Riga 15 % (n = 56), Zemgale 14 % (n = 33), Kurzeme 13 % (n = 29), Vidzeme 15 % (n = 26)), avoid overeating (Latgale 16 % (n = 21), Riga 14 % (n = 53), Zemgale 15 % (n = 35), Kurzeme 14 % (n = 32), Vidzeme 17 % (n = 29)).

Conclusion. Our data showed differences in GP recommended lifestyle modifications for GERD patients with different work experiences and in different regions of Latvia. The most popular lifestyle recommendations were to avoid smoking and reduce weight (group 1, group 2, group 4 (p = 0.0000)), avoid eating before lying down (group 1 (p = 0.0000), group 5 (p = 0.0478)), avoid overeating (group 3 and group 4 (p = 0.0000)) and the most popular lifestyle recommendations in all areas were to avoid smoking and overeating, eating before sleep and to reduce weight (p = 0.0000).

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SIGNIFICANT GENDER-RELATED VARIABILITY OF MAIN LYMPHOCYTE SUBSETS IN PEDIATRIC PATIENTS

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Keywords. Lymphocyte subsets, children, flow cytometry.

Introduction. Main subsets of blood lymphocytes (Ly) include T-Ly (further subdivided into CD4+, CD8+ and CD4-CD8 – double-negative (DN) cells), B-Ly and NK cells; the test is routinely performed by multicolor flow cytometry. The subset counts are variable; their relation to many factors including age has been demonstrated. Surprisingly, there are no published studies on gender-related variability, though the data would be important for establishing normal ranges. This is particularly puzzling since different total Ly count in boys and girls is a well-known phenomenon.

Aim. The aim of the study was to analyse gender-related differences of the main Ly subsets in a representative cohort of pediatric patients.

Materials and methods. 4130 tests performed in Children's Clinical University Hospital in 2012–2016 were analysed; patients with proven immune disorders and hematological tumors were not included. The tests were carried out by routinely calibrated FacsCanto II flow cytometer (Becton-Dickinson), using IVD certified BD 6-TBNK kit. Relative counts (percent of T, CD4, CD8, DN, B and NK cells from Ly; CD4, CD8 and DN cells from T-Ly), CD4:CD8 ratio and absolute counts were studied. Statistics were calculated by MS Excel and IBM SPSS v.21.

Results. 53.5 % patients were boys, they were significantly older (median age 6 years *vs.* 5 years in girls, Mann-Whitney $p < 0.001$). Since subset counts are affected by age, further analysis was performed after age adjustment. Unexpectedly, significant gender-related differences of T cell subsets were found. Relative and absolute T-Ly count was significantly higher in girls (Wilcoxon SRT $p = 0.010$ and $p = 0.004$, correspondingly) as well as CD4 cell percent from Ly and from T-Ly, CD4 absolute count and CD4:CD8 ratio ($p < 0.001$ in all cases). Boys had higher CD8 cell percent from Ly and from T-Ly ($p = 0.010$ and $p < 0.001$) and higher DN cell percent from Ly, from T-Ly and absolute count ($p = 0.001$, $p < 0.001$ and $p = 0.008$, correspondingly).

Conclusion. The study demonstrated significant gender-related differences in main Ly subsets, particularly within T-cell compartment. The results are of direct practical value, redefining the subsets' normal ranges. Biological mechanism and clinical significance of the findings is unclear.

MELATONIN SECRETION IN TYPE 2 DIABETES MELLITUS

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Keywords. Type 2 diabetes mellitus, melatonin.

Introduction. Melatonin is a pineal hormone regulated by light exposure. Melatonin exhibits various effects on physiological functions such as energy metabolism and regulation of body weight. Studies suggest that melatonin may have a role in glucose metabolism. It is therefore proposed that melatonin could be used as an add-on approach in the chrono-biological treatment of type 2 diabetes mellitus (T2DM).

Aim. To evaluate salivary melatonin levels in T2DM patients and the control group and, additionally, whether any of the antidiabetic therapies had any effect on melatonin levels.

Materials and methods. 20 women and 18 men between the age of 26 and 86 participated in this study. 26 of them had T2DM, 12 patients without diabetes were in the control group.

The doctors of the involved patients were asked to complete a questionnaire about the medications the participants were taking for diabetes and concomitant diseases. Every participant was asked to complete two questionnaires: one about the patient's diabetes history and lifestyle factors and the second assessed the Pittsburgh Sleep Quality Index (PSQI), where score ≥ 5 represents poor sleep quality.

A standard venous blood sample was collected from each participant for biochemical analysis. Besides these tests, a sample of saliva was collected once right after waking up at 6:00–6:30 AM to determine the concentration of melatonin. The test was done with The Salimetrics Melatonin Enzyme Immunoassay Kit in accordance with the instructions provided by the manufacturer.

Data analysis was performed using Microsoft Excel and IBM SPSS 20.

Results. Salivary melatonin levels had a significant correlation with the participants' age: $\rho = -0.36$, $p = 0.025$. Participants with BMI < 30 kg/m^2 had melatonin levels of 13.2 (6.4; 23.50) pg/mL, but obese participants had significantly lower melatonin levels – 5.9 (0.78; 13.1) pg/mL, $p = 0.035$. The diabetic patient group also had significantly lower melatonin levels than the control group: 6.1 (0.78; 12.2) pg/mL and 17.8 (8.2; 25.5) pg/mL, respectively ($p = 0.003$).

The study did not show a statistically significant correlation between HbA1c and salivary melatonin levels: $\rho = 0.115$, $p = 0.577$.

Participants with a higher PSQI score had lower melatonin levels, but this correlation wasn't statistically significant: $\rho = -0.219$, $p = 0.187$.

Conclusion. Obesity and type 2 diabetes are associated with a significantly lower salivary melatonin level, but glycemic control and therapy strategy did not affect melatonin levels. These patients could benefit from chrono-biological treatment of T2DM.

EVALUATION OF DIGESTIVE DISORDERS AND CONTRIBUTING FACTORS FOR RIGA STRADIŅŠ UNIVERSITY STUDENTS FROM THE FACULTY OF MEDICINE AND OTHER FACULTIES

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Keywords. Digestive disorders, risk factors.

Introduction. Studying medicine has a reputation for being exposed to a lot of hard and intense work. Students often have a relentless exam timetable as well as they have to survive the emotional strain high standards (Billingsley, Student, 2015). Medical students daily encounter contributing factors for digestive disorders – increased stress, irregular meals, lack of sleep and physical activities. Studies prove that medical students are more prone to irritable bowel syndrome, burn-out syndrome, unhealthy eating habits, migraine, addictions and mental health disorders. (Hilger et al., 2016; Heinen et al., 2017; Perveen et al., 2016)

Aim. To evaluate and to compare results of digestive disorders and factors that may contribute to that among RSU students from the Faculty of Medicine and other faculties.

Materials and methods. The retrospective study was carried out by questionnaire enrolling 2 groups of RSU students from the Faculty of Medicine and other faculties. Survey included 9 sections: respondent's information; sleeping habits; stress (Perceived Stress Scale (PSS)); physical activities (Physical activity rating (PAR)); eating habits; smoking; alcohol consumption; medical history; gastrointestinal tract (GIT) symptoms. Data were analysed by using MS Excel, SPSS software.

Results. From 140 students 88 were female (62.86 %), 52 – male (37.14 %); mean age was 22; of those 83 were medical students (59.29 %), 57 were from other faculties (40.71 %). BMI mean value mean value was 23 (overweight – 33 (23.57 %)). 69 students evaluated their health status as good (39 medical students (47.0 %), 30 others (52.63 %)), but 6 students as unsatisfactory (4 medical students (4.82 %), 2 others (3.51 %)). Sleep was evaluated in a scale from 1 (lack of sleep) to 3 (enough sleep). 26 (31.33 %) medical students ranked their sleep as 1, others – 12 (21.05 %). Together 42 (30 %) respondents sleep < 6h per day, 90 (64.3 %) students 6–8 h, only 8 (5.7 %) > 8 hours. Stress level was assessed with scale 1 (no stress) to 5 (increased stress) and PSS, results were similar in both groups. Most of students evaluated their stress level in range 3–4 (77.14 %); mean value of PSS – 19 points. PAR results represented that 31 (37.35 %) medical students, 23 (40.35 %) other have sufficient physical exercise. 66 (47.14 %) respondents do not eat regularly. Only 22 (15.71 %) students consider their eating habits healthy. Smoking results between groups were similar – 20 (24.10 %) medical students, 13 (22.81 %) others smoke. Together 111 respondents (79.29 %) from which 70 (84.34 %) are medical students, 41 (71.93 %) are others use alcohol, 68 people do it regularly (2–3 times/month and more). In both groups the most common symptoms associated with upper GIT in last 3 months were meteorism 78.57 %, loss of appetite 62.86 %, nausea 55.71 %, epigastric pain 46.43 %; lower GIT symptoms were abdominal pain 78.57 %, diarrhea 52.86 %, irregular stools 44.29 %.

Conclusion. Contributing risk factors evaluated in our study promotes digestive complaints among RSU students as meteorism, loss of appetite, nausea, epigastric pain, abdominal pain, diarrhea, irregular stools. Difference of GIT symptoms and risk factors for digestive disorders between medical students and others do not vary significantly.

ARTERIOVENOUS FISTULA THROMBOSIS IN PATIENTS ON REGULAR HEMODIALYSIS

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Keywords. Hemodialysis, arteriovenous fistula, thrombosis.

Introduction. It is essential for patients on regular hemodialysis (HD) to establish a good vascular access. Arteriovenous fistula (AVF) is preferred vascular access form for long-term HD. AVF is associated with the lowest incidence of morbidity and mortality. Several AVF complications can lead to vascular access failure. One of the most important complication of AVF is thrombosis. Knowledge about the potential risk factors of AVF thrombosis should contribute to their timely detection and prevention of poor outcomes that range from loss of vascular access to serious morbidity.

Aim. The aim of the study was to evaluate significance of potential risk factors for AVF thrombosis in patients on regular HD.

Materials and methods. In this research we retrospectively reviewed medical records of 50 patients with AVF on regular HD in Pauls Stradins Clinical University Hospital. Obtained data was statistically analysed in Microsoft Excel 2013 and IBM SPSS 22 programs.

Results. The most common underlying cause of chronic kidney disease among 50 patients were chronic glomerulonephritis (n = 21; 42 %), hypertensive nephropathy (n = 8; 16 %), diabetic nephropathy (n = 5; 10 %) and polycystic kidney disease (n = 5; 10 %). Total HD duration range was 1.3–228.5 months (mean 50 ± 8 months). 17 out of 50 patients had AVF thrombosis in anamnesis. We found difference in mean age between patients with and without AVF thrombosis (mean = 48.47 *vs.* mean = 58.30 years; p = 0.034). In the group of patients with AVF thrombosis mean time of HD session was longer (mean = 3.91 *vs.* mean = 3.38 hours; p < 0.0005). Higher mean ultrafiltration volume also was observed as a risk factor for AVF thrombosis (mean = 2.99 *vs.* mean = 2.24 L; p = 0.012). Lower postdialysis systolic blood pressure was more common in patient group with AVF thrombosis (mean = 107 *vs.* mean = 134 mmHg; p = 0.006). In the research was found that higher total cholesterol (mean = 5.61 *vs.* mean = 4.46 mmol/L; p = 0.025) and calcium levels (mean = 2.32 *vs.* mean = 2.05; p = 0.009 mmol/L) are significant risk factors for AVF thrombosis. Eosinophil leucocyte absolute count was lower in patients with AVF thrombosis (mean = 0.145 *vs.* mean = 0.266 10^3/L; p = 0.03).

Conclusion. To avoid vascular access failure and other essential morbidities, we should timely detect and prevent possible risk factors for AVF thrombosis. The research reveals that such risk factors as age, long-lasting HD session, high ultrafiltrate volume, low postdialysis systolic blood pressure, high total cholesterol and calcium level in blood are associated with higher risk of AVF thrombosis.

AN ASSESSMENT OF CARDIOVASCULAR RISK FACTOR PREVALENCE IN INDIVIDUALS WITH AND WITHOUT TYPE 2 DIABETES

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Keywords. Type 2 diabetes, cardiovascular risk factors, body mass index, blood pressure, blood glucose levels.

Introduction. People with type 2 diabetes are statistically more likely to be overweight, have higher blood pressure and elevated blood glucose levels, all of which are proven cardiovascular risk factors. It should put them in a higher risk group than individuals without type 2 diabetes for all-cause and cardiovascular mortality. This presents an interesting avenue for research of how additional non health related factors influence the likelihood of such events.

Aim. To measure the body mass index, blood pressure and blood glucose levels in individuals with and without type 2 diabetes, then compare the findings with published research and analyse the results.

Materials and methods. A cross-sectional study of adult participants of World Diabetes Day 2016 in Riga that measured blood glucose levels in 248 people, body mass index in 106 people and blood pressure in 210 people. Individuals were further divided in 2 groups – with and without existing diagnosis of type 2 diabetes. Findings in each of the stations were analysed as a separate cardiovascular risk factor and compared to expected findings based on scientific literature.

Results. Both groups of participants with and without diabetes had increased average systolic BP (SYS above 140 mmHg) and normal diastolic BP (DIA below 90 mmHg). However there was no significant average BP difference between the group of participants with and without diabetes – 146/84 and 144/84 respectively. With the prevalence of having hypertension being 52.7 % and 51.2 % (chi2 = 0.068, p = 0.7949).

Both groups also had an elevated body mass index (BMI > 25). Body mass index of group with diabetes – 28.29, without – 26.98. The prevalence of being overweight in the former group was 73.3 %, 57.14 % in the latter group and 59.43 % overall (chi2 = 1.382, p = 0.2398).

When measuring blood glucose levels, 44.5 % of the diabetes group and 37.39 % of the non-diabetes group had elevated blood glucose (chi2 = 1.607, p = 0.2049). Out of all the respondents 28 had blood glucose levels over 11.1 mmol/l, 25 of them being diabetics.

Conclusion. Individuals with and without type 2 diabetes produced similar results in all 3 measurement categories. As a result their chance of cardiovascular mortality is similar, despite existing studies suggesting that people with type 2 diabetes should be at a higher risk than those without. However, it should be noted that the target group of the event consists of people aware of existing or potential issues with their health, possibly skewing the data.

INCIDENCE OF UNSPECIFIED BILE DUCT STRICTURES IN ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY

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Keywords. ERCP, bile duct strictures.

Introduction. A biliary stricture is narrowing of any cause of the bile duct. Strictures may be either benign or malignant and can be found at any location along the bile duct. Common causes are single acute injury, pancreatitis, choledocholithiasis, primary sclerosing cholangitis or pancreatic tumors. An essential tool in diagnostics and therapy of bile duct strictures is endoscopic retrograde cholangiopancreatography (ERCP). However, there is a sizeable proportion of patients with biliary strictures of unknown etiology which remains unspecified after performing ECPR. Bile duct strictures are considered indeterminate if the proper diagnosis is not made and the origin is not found after ERCP and abdominal imaging.

Aim. The aim is to evaluate incidence of unspecified bile duct strictures found in ERCP.

Materials and methods. Retrospectively, all consecutive patients with ERCP performed due to bile drainage disturbances in 2016 were identified by Endoscopy database search in a single university hospital in Latvia. Patients with indeterminate bile duct strictures were selected. The radiology findings of the latter were evaluated and patients with a pancreatic tumor, pancreatitis, cholecystitis, choledocholithiasis or strictures of iatrogenic origin confirmed by imaging studies were excluded. Information was summarized and incidence of unspecified bile duct strictures analysed.

Results. In 2016 387 ERCP procedures were performed, in 88 (22.7 %) patients – 55 females and 33 males – biliary strictures without a known origin at the moment of ERCP were found. Out of them 36 (9.3 %) patients – 23 females, mean age 73.9 ± standard deviation (SD) of 14.3 years and 13 male, mean age 64.3 ± SD of 16.7 years – were without a radiological proved cause.

Conclusion. Out of 387 ERCP procedures performed in a single university hospital in Latvia in 2016, indeterminate biliary strictures were found in 88 (22.7 %) patients. Undetermined biliary strictures with no cause determined either in ERCP or radiological imaging were found in 36 out of 387 patients which make the incidence of unspecified bile duct strictures to be 9.3 % among the patients undergoing ERCP in 2016.

MORPHOLOGICAL DIAGNOSTIC OF
BARRETT'S ESOPHAGUS

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Keywords. Barrett's esophagus, metaplasia, morphological examination.

Introduction. Barrett's esophagus (BE) is a condition in which the stratified squamous epithelium lining the esophagus is replaced by specialized intestinal-type columnar epithelium. Barrett's esophagus is considered to follow a progression from intestinal metaplasia to low-grade dysplasia, high-grade dysplasia and finally to esophageal adenocarcinoma. The main method of diagnostic of BE is an endoscopy, but BE is both an endoscopic and pathologic diagnosis. The diagnosis of BE must be confirmed by morphological examination.

Aim. To analyse the effectiveness of diagnostic of BE by morphological study.

Materials and methods. This is a retrospective study of screening gastroscopies that were performed in 3026 patients in the Central Hospital Security Service of Ukraine. The biopsy material was taken by Olympus EVIS EXERA II gastroscope according to the sampling protocol. Target biopsy was performed from all areas of suspected metaplasia, as well as from four quadrants of esophageal wall and every 2 cm along the metaplastic segment. Morphological examination was performed by experienced qualified gastropathologist.

Results. BE was diagnosed in 116 (3.8 %) out of all 3026 (100 %) screening endoscopies. Histologically, cardiac metaplasia was detected in 22(18.9 %) patient out of 116, fundic metaplasia – in 35(30.2 %) cases. Specialized intestinal metaplasia was found in 59 (50.9 %) patients. In 22 (19.0 %) cases low and high grade dysplasia were diagnosed. Adenocarcinoma of the esophagus was not observed. Our data (3.8 %) are consistent with population prevalence of BE – 2–7 %.

Conclusion. Morphological verification is the main objective criterion for BE diagnostic. Our findings (3.8 %) are consistent with the data of the prevalence of Barrett's esophagus in the population.

D VITAMIN ASSOCIATION WITH SOME CARDIOVASCULAR RISK FACTORS IN FAMILY PHYSICIAN PRACTICE

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Keywords. D vitamin, cardiovascular risk factors.

Introduction. Vitamin D deficiency is the most common nutritional deficiency worldwide. Because the vitamin D receptors are present in many body tissues, there has been a growing interest in evaluating other potential functions of vitamin D. Cardiovascular diseases are major cause of morbidity and mortality worldwide. There is strict evidence that show a association between vitamin D deficiency and hypertension, metabolic syndrome, diabetes mellitus and atherosclerosis.

Aim. The aim of this study was to determine possible D vitamin association with some cardiovascular risk factors in family physician practice and to take this report as a base of the next intervence study of D vitamin.

Materials and methods. The research was carried out as a retrospective pilot study. The study was based on analysis of patient's medical histories in family physician practice. A total of 255 patients aged 19–85 data were analysed. The researched files included clinical data – patient's gender, age, body mass index, D vitamin level, HDLP, creatinine, GFR, ALT. Statistical analysis was performed with IBM SPSS Statistics 22.0.

Results. 201 patients entered the study. 170 patients were females, 31 – males. The average age was 44.57 ± 15.67 SD. Mean vitamin D level among patient was 29.84 ng/mL $\pm$ 12 SD. The lowest D vitamin level was 6.00 ng/mL, the highest – 83.32 ng/mL. Female average D vitamin level was 30.95 ng/mL, male – 23.73 ng/mL. D vitamin deficiency or insufficiency had 57.71 % of all patients (n = 116) with average D vitamin level 21.83 ng/mL. Normal D vitamin had 42.29 % of all patients (n = 85) with average D vitamin level 40.78 ng/mL.

45.27 % of all patients (n = 91) had normal BMI, 2.48 % (n = 8) had low BMI, 22.39 % (n = 45) was overweight and 14.93 % (n = 25) was obese. D vitamin negative correlation with body mass index was statistically significant in males ($r = -0.551$; $p = 0.001$), in females there was no statistically significant correlation. There was statistically significant positive correlation between D vitamin level and high density lipoproteins ($r = 0.507$; $p \leq 0.001$).

Conclusion. The majority of patient in research group had D vitamin deficiency or insufficiency. Males was less often screened for D vitamin level than females. Males had lower D vitamin level comparing with females. Males had stastically significant negative correlation between D vitamin and body mass index. Therefore we need to pay more attention to male gender in vitamin D screening in future because male gender is one of non-modifiable risk factors of cardiovascular disease. Possibly if males will have normal D vitamin level it can protect them from cardiovascular event.

III. SURGERY, ONCOLOGY

AN EXPERIENCE WITH THE BETHESDA SYSTEM FOR REPORTING THYROID CYTOPATHOLOGY IN A SINGLE SURGICAL UNIT

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Keywords. Thyroid, nodules, Bethesda, fine-needle aspiration.

Introduction. The Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) is a fairly new classification method of thyroid nodules, that has been proven useful in facilitating communication among specialists. However, the obtained malignancy rates often vary between facilities and TBSRTC.

Aim. Assessing the malignancy rates of TBSRTC classes in a single surgical unit.

Materials and methods. Retrospective analysis was done on 249 thyroid operation cases over a period of 13 months. Distributions of cytological and histological main diagnoses were quantified, correspondingly the malignancy rates of each category were assessed. Statistical analyses were performed using IBM SPSS 22.0 software.

Results. Out of the 249 cases, 221 were female and 28 male. Age range was 21–81 years (mean ± std. dev., 52 ± 14 years). FNA (fine-needle aspiration) cytology analysis was performed on 170 cases. At the time, main histological diagnosis was available for 149 cases, out of which 50 (33.6 %) were primarily malignant and 99 (66.4 %) were benign. Further analysis was done on cases with both FNA and histological diagnosis. 19 (12.8 %) of the FNA samples were nondiagnostic (Bethesda I – BI), 60 (40.3 %) – benign (BII), 26 (17.4 %) – atypia of undetermined significance (BIII), 14 (9.4 %) – suspicious for a follicular neoplasm (BIV), 18 (12.1 %) – suspicious of malignancy (BV) and 12 (8.1 %) – malignant (BVI). The malignancy rates after excluding microcarcinomas in the benign category (BII) were as follows: BI – 3/19 (15.8 %), BII – 1/55 (1.8 %), BIII – 8/26 (30.8 %), BIV – 5/14 (35.7 %), BV – 16/18 (88.9 %), BVI – 12/12 (100 %). The frequency of "excluding malignancy" as a main surgical indication for benign histological diagnoses within the 149 FNA cases was 35 (23.5 %), out of which 14 (40 %) were in the benign class (BII).

Conclusion. The malignancy rates of FNA categories (BI, III, IV, V) were not concurrent with those implied by TBSRTC. As for BII, after excluding 5 microcarcinomas, the malignancy rate was 1.8 %, which is compatible with the 0–3 % malignancy rate implied by TBSRTC.

ASSESSMENT OF PARATHYROID MALIGNANCY RISK USING MARKER DEVELOPED FROM PREOPERATIVE SERUM CALCIUM AND PARATHORMONE LEVELS IN PRIMARY HYPERPARATHYROIDISM

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Keywords. Primary hyperparathyroidism, parathyroid carcinoma, serum calcium, parathyroid hormone, hypercalcemia.

Introduction. Primary hyperparathyroidism (PHPT) is a disease characterized by excessive secretion of parathormone (PTH). Parathyroid adenoma and parathyroid carcinoma are manifestations of PHPT. While either presents with symptoms related to elevated serum calcium (Ca) levels, there are no definitive preoperative markers that could predict probability of malignancy.

Aim. The purpose of this study was to develop a simple equation to assess preoperative probability of parathyroid malignancy.

Materials and methods. We performed retrospective case-control study of 288 patients with PHPT operated since 2012. Patients were divided into two groups: benign parathyroid tumor (BPT) group of 275 (95.5 %) and malignant parathyroid tumor (MPT) group of 13 (4.5 %) cases. Mean serum PTH and Ca levels were compared between groups. Preoperative parathyroid malignancy predictive marker (PPMPM) was developed based on serum levels of preoperative PTH and serum Ca. IBM SPSS Statistics 23 software was used to accomplish all the calculations.

Results. Mean value of preoperative serum PTH levels proved to be lower in BPT group 320.70 *vs.* MPT – 1294.73 pg/ml, p = 0.002. Mean value of preoperative serum Ca did not differ statistically (2.87 *vs.* 3.16 mmol/l, p = 0.077). Based on these results equation for PPMPM was created as log × PTH ÷ Ca. Mean value of PPMPM was lower in BPT group (1.86 *vs.* 2.48, p = 0.001). Cutoff point for PPMPM was chosen to be 2.2 as an average between mean values of PPMPM in both groups. There was found statistically significant association between elevated PPMPM and parathyroid malignancy (p = 0.001). Created PPMPM has sensitivity of 76.9 % and specificity of 84.7 %.

Conclusion. Hypothetic PPMPM can be used preoperatively to assess the possibility of parathyroid malignancy although more studies should be carried out to prove its efficacy.

ASYMPTOMATIC PRIMARY STAGE IV COLORECTAL CANCER: THE IMPACT ON THE OVERALL SURVIVAL BASED ON THE PRIMARY TREATMENT STRATEGY – TUMOR RESECTION OR CHEMOTHERAPY

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Keywords. Primary tumour, metastatic colorectal cancer (mCRC), resection, chemotherapy, survival.

Introduction. In 2013 colon and rectum cancer ranked third globally for cancer incidence and fourth for cancer death. Approximately 25 % of patients present with metastases at initial diagnosis. According to the National Comprehensive Cancer Network, systemic chemotherapy is the preferable initial step of treatment for patients with unresectable metastases and an intact primary tumour that is not obstructing the bowel; resection of a primary tumour is required only to palliate symptoms. However, the impact on the survival based on the primary treatment strategy remains unclear due to very different results received by international studies.

Aim. Discover whether the initial choice of treatment tactics of asymptomatic mCRC affects longer overall survival.

Materials and methods. Patients treated in the National Cancer Institute (NCI) in the period 2008–2012, were selected retrospectively. The main inclusion criteria were mCRC, endoscopically and histologically confirmed adenocarcinoma, without any symptoms for urgent operation, and at least one cycle of palliative chemotherapy administered. Information on patients' age, gender, tumour histology, localization of the tumour, regional lymph node involvement, the number of metastatic sites, surgery and systemic treatment was collected. Eligible patients for the study were divided into two groups according to the initial treatment – surgery and chemotherapy. The impact of the initial treatment strategy was estimated using the Kaplan-Meier method. The log-rank test was used to compare the survival between groups. Cox regression analysis was employed to assess the effects of variables on patient survival.

Results. The study group consisted of 183 patients: 103 men and 80 women. The median age was 66 years (range: 37–91). There were no notable imbalances in regard to age, gender, the number of metastatic sites, metastases, the number of received cycles of chemotherapy, first line chemotherapy type. Better survival rates were in the palliative surgery group ($p < 0.001$). For surgically treated patients 1-year survival was 71.2 % (95 % CI: 62.1–78.5) and 5-year survival was 4.0 % (95 % CI: 1.0–10.5). In the chemotherapy group, survival rates were lower – 43.9 % (95 % CI: 31.4–55.7) and 1.7 % (95 % CI: 0.1–8.1), respectively.

Conclusion. The overall survival for the mCRC is increased by administering palliative resectional surgery rather than choosing chemotherapy as a primary treatment. Prospective randomized trials are further needed to delineate precisely the role of palliative surgery of the mCRC.

CLINICAL FINDINGS IN PATIENTS UNDERGOING
POPLITEAL ARTERY STENTING

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Keywords. Popliteal stenting, endovascular, PAD.

Introduction. Estimate 200 millions of people in the world have peripheral arterial disease (PAD). Patient with PAD usually present with a calf pain on exertion – intermittent claudication, but with progression of disease ulcers and gangrene may develop. Popliteal artery is frequently affected in PAD and the most recent guidelines – TASC II (2007) suggest endovascular revascularization as a first line therapy for femoropopliteal lesions.

Aim. The aim of this research was to evaluate clinical and angiographic findings in patients who underwent popliteal artery revascularization with new generation self-expanding nitinol stent *"Supera"*.

Materials and methods. Clinical and radiological data of 37 patients that underwent popliteal artery stenting in Riga Eastern Clinical University Hospitals' department of interventional radiology in a period 2015–2016 was obtained from *"Ārsta Birojs"* software. Further angiographic data was revised and all the material summarized. SPSS 22.0 software was used for statistical analysis.

Results. Study enrolled 37 patients of whom 15 (40.5 %) were males. Median age was 73 ± 8.3, with 8 patients being ≥ 80 years old. There was no statistically significant difference between age distribution in female and male patients ($p > 0.05$). In 79 % of cases, patients presented with critical limb ischemia major symptom – rest pain. 49 % of patients had major or minor tissue loss in affected extremity. Claudication was a main complain in 21 %. It was found that older patients tended to have tissue loss more often ($p < 0.05$). Co-morbidities included: coronary heart disease (47 %); hypertension (46 %); diabetes (20 %); anaemia (33 %), yet, no association has been found with type of presenting symptoms or age/gender ($p > 0.05$). Stent placement was performed in right popliteal artery in 60 % of cases. In 6 limbs stent proximal part covered distal end of superficial femoral artery (SFA). Also, 46 % of patients received additional stenting of distal SFA segment due to significant stenosis. Post-stent implantation angiography revealed poor outflow status in crural vessels. Three arteries were patent in only 11 % and in 40 % outflow was significantly impaired, because only one artery was not occluded, more frequently it was *a.interossea* (57 %) and *a.tibialis anterior* (43 %), no case with one patent *a.tibialis posterior* was documented.

Conclusion.
1. Patient group was homogenous, with similar age, clinical symptoms and comorbidities among male and female patients.
2. Older patients tended to have more frequent occurrence of major or minor tissue loss.
3. Post-procedural outflow status in 40 % of patients was severely compromised, which might affect long term outcomes even with good peri-procedural results.

CLINICOPATHOLOGICAL CHARACTERISTICS OF PATIENTS WITH METASTATIC COLORECTAL CANCER AND ASSOCIATION WITH *KRAS* STATUS

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Keywords. *KRAS*, metastatic colorectal cancer, oncology.

Introduction. Colorectal cancer (CRC) is the second most frequent cancer in Western countries. The overall survival for metastatic CRC (mCRC) has improved to more than 30 months due to surgical methods, predictive and prognostic molecular markers (genes). Mostly the *KRAS* gene is mutated and its mutation (mt) is predictive marker of inefficiency of *EGFR* inhibitors, and in general with worse prognosis than *KRAS* wild type (wt) patients. [Van Cutsem et al., 2014, 2016]

Aim. To investigate the clinicopathological characteristics, frequency of *KRAS* mt and the association between them in mCRC patients of Oncology Centre of Latvia.

Materials and methods. Retrospectively the clinical records of patients with identified *KRAS* status were reviewed, including patients with mCRC started in 05.2009 for first and in 12.2016 for last case. Data were registered and descriptively analysed by *MS Excel* and *IBM SPSS 22.0*. To compare data Pearson chi-square, Fisher's exact test were used ($p < 0.05$ as statistically significant difference).

Results. The study included 52 patients age of 59.60 ± 8.99 (mean ± SD) years (51.9 % male, 48.1 % female). Primary tumor was located in colon (44.2 %), rectosigmoid junction (26.9 %), rectum (26.9 %), multiple sites (1.9 %). Sites of metastases included liver (30.8 %), lung (1.9 %), multi-organ (59.6 %), other sites (7.7 %). 59.6 % of patients had *KRAS* mt tumors. 34.6 % of patients received neoadjuvant therapy. Metastases were resected in 59.6 % of patients. All patients received 1st line, 63.5 % 2nd and 40.4 % ≥ 3 lines of chemotherapy. In 1st line FOLFOX, FOLFIRI, bevacizumab and cetuximab received 82.7 %, 11.5 %, 26.9 % and 13.5 % of patients, respectively. There was statistically insignificant (SI) association between *KRAS* mt and neoadjuvant therapy (mt *vs.* wt: 41.9 % *vs.* 23.8 %; p = 0.178). Also rectal (R) and rectosigmoidal (RS) tumors were SI associated with *KRAS* mt (mt *vs.* wt: 64.5 % *vs.* 38.1 %; p = 0.061). Although *KRAS* mt and wt patients received bevacizumab similarly in 1st and 3rd line, there was statistically significant association between *KRAS* mt and bevacizumab in 2nd line (mt *vs.* wt: 29.0 % *vs.* 0 %; p = 0.007). 88.9 % of patients harbouring multiple mutations in *KRAS* had R and RS tumors, but SI (p = 0.065).

Conclusion. This study group characterizes with high frequency of multi-organ metastases and *KRAS* mt. Although SI, there is a trend, that *KRAS* mt patients show higher necessity for neoadjuvant therapy than *KRAS* wt. *KRAS* mt and multiple mutations in *KRAS* are more common for R and RS tumors, although SI. Bevacizumab significantly is stopped earlier and started later in *KRAS* wt patients.

COMBINATION THERAPY OF DRUG-ELUTING BEAD, IRINOTECAN (DEBIRI) AND SYSTEMIC CHEMOTHERAPY FOR HEPATIC METASTASES FROM COLORECTAL CANCER: TREATMENT EFFICACY AND MEDIAN OVERALL SURVIVAL

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Keywords. Colorectal cancer, liver metastasis, drug-eluting bead.

Introduction. Colorectal cancer is the second leading cause of death from cancer and it is the third most common malignancy in both men and woman. At the time of initial diagnosis in 20 % to 50 % of colorectal cancer cases already have liver metastases. Resection offers the best chance of long-term survival but only 20 % of patients with liver metastases will be candidates for resection. The standard first-line treatment of metastatic colorectal cancer is systemic chemotherapy. In cases of inoperability of liver metastases and in absence of response to systemic chemotherapy, one of the options is interventional radiology procedure, Drug-eluting bead transarterial chemoembolization (DEB-TACE).

Aim. To retrospectively evaluate therapeutic efficacy of DEB-TACE with concurrent systemic chemotherapy in the treatment of liver metastases from colorectal cancer.

Materials and methods. The retrospective single-center study includes 8 patients (3 men and 5 women, range 61–77 years) with liver metastases from colorectal cancer who underwent repeated DEB-TACE and systemic palliative chemotherapy in Pauls Stradins Clinical University hospital between June 2011 and December 2016. In all patients, the primary tumor had been resected and before DEB-TACE procedure patients had been received at least two lines palliative systemic chemotherapy. DEB-TACE was performed using LC Bead, loaded with Irinotecan (DEBIRI) and in combination with FOLFOX or FOLFIRI systemic chemotherapy. Treatment response was evaluated by CT and survival rate was analysed from the start of DEB-TACE treatment.

Results. In total, 23 DEB-TACE procedures were performed (mean 3 procedures per patients, range 1–8). In all patients, TACE was performed successfully with low morbidity rate and no mortality. In 5 cases patients had bilobar metastasis and 3 cases lesions were only in right lobar. Evaluation of metastasis showed partial response in 2 (25 %), stable disease in 3 (37.5 %) and progressive disease in 3 (37.5 %) of patients. The mean and median overall survival from the first DEB-TACE procedure were 16.4 and 13 months.

Conclusion. Combination therapy of DEB-TACE with systemic chemotherapy is an interdisciplinary treatment approach for liver metastases from colorectal cancer. DEB-TACE is an effective palliative treatment, furthermore, it may provide a survival benefit for patients with progressive disease.

COMPARISON OF EARLY RESULTS OF SURGICALLY TREATED PATIENTS WITH ACUTE AND CHRONIC *STANFORD* TYPE A AORTIC DISSECTION

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Keywords. Acute *Stanford* type A aortic dissection, chronic *Stanford* type A aortic dissection.

Introduction. In contrast to patients with acute *Stanford* type A aortic dissection who are generally managed surgically due to rapid mortality increase in first 24–48 hours after onset of symptoms, patients with chronic *Stanford* type A aortic dissection are operated only if symptoms of congestive heart failure or left ventricular dysfunction occur or if progressive enlargement of aorta is evident. Patients with chronic *Stanford* type A aortic dissection commonly undergo elective surgery and intrahospital mortality is approximately one third that of acute patients. In Latvia there has been no studies reporting results of surgically treated patients with *Stanford* type A aortic dissection.

Aim. To compare acute and chronic *Stanford* type A aortic dissection patient populations and surgical treatment results.

Materials and methods. A retrospective study was conducted by analyzing medical documentation of 48 patients with acute *Stanford* type A aortic dissection (I group) and 11 patients with chronic *Stanford* type A aortic dissection (II group) surgically treated in Pauls Stradins Clinical University hospital from January 2006 to December 2016. Acute patients were defined as having time from symptom onset to operation < 14 days.

Results. Mean age of I group was 55.0 ± 13.9 and II group 60.2 ± 17.4 years. 14.6 % in I and 36.4 % in II group were > 70 years old. Majority of patients in both groups were males (72.9 % in I and 72.7 % in II group). A history of previous cardiac surgery was present more common in II group (27.3 % *vs.* 12.5 %). At admission 89.6 % in I group and only 18.2 % in II group complained about pain. Severe (grade III–IV) aortic valve insufficiency was more common in II group (36.7 % *vs.* 16.7 %), however only one patient from II group was hemodynamically unstable (9.1 % *vs.* 45.8 %). Most common surgery extent was supracoronary replacement of ascending aorta in both groups (I group – 70.8 %; II group – 81.8 %) and there was no statistically significant difference in cardiopulmonary bypass or aortic cross-clamp time. Intraoperative mortality was 12.5 % in I group and 0.0 % in II group and intrahospital mortality was 18.8 % and 9.1 % respectively. Postoperative complications occurred similarly in both groups (I group – 47.9 %; II group – 45.5 %) and most common complication was postoperative bleeding (20.8 % in I *vs.* 27.3 in II group).

Conclusion. Patients with chronic *Stanford* type A aortic dissection have better early survival mainly due to stable preoperative condition, however there is no significant difference in postoperative complications between groups.

COULD FOLLICULAR VARIANT OF PAPILLARY THYROID CARCINOMA BE DIAGNOSED BEFORE OPERATION?

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Keywords. Follicular variant of papillary thyroid carcinoma, Fine-needle aspiration.

Introduction. Papillary thyroid carcinoma (PTC) is the most common type of thyroid cancer. However, in the beginning of millennium was found so-called follicular variant of papillary thyroid carcinoma (FVPTC). It has clinical features that are between PTC and follicular thyroid carcinoma.

Aim. Aim of the study was to investigate the role of fine needle aspiration (FNA) biopsy in FVPTC diagnosis.

Materials and methods. In retrospective study were analysed FNA findings (Bethesda categories), histological diagnosis and size in 166 operated PTC patients. After proved PTC diagnosis patients were stratified into 2 groups – FVPTC and classical PTC (CPTC). Fisher's exact test was performed by online software (GraphPad, San Diego, USA) in descriptive statistics. Differences were considered statistically significant if $p < 0.05$.

Results. From the total of 166 PTC patients FVPTC found in 39 (23.5 %) and CPTC in 127 (76.5 %) patients. FNA biopsy was performed in 34 (87.2 %) patients with FVPTC and in 98 (77.2 %) patients with CPTC. Frequency of Bethesda category I in FVPTC and CPTC was 2 (5.9 %) and 3 (3.1 %) accordingly ($p = 0.60$). Bethesda category II: 3 (8.8 %) in FVPTC and 8 (8.2 %) in CPTC ($p = 1.00$). Bethesda category III: 5 (14.7 %) in FVPTC and 9 (9.2 %) in CPTC ($p = 0.35$). Bethesda categories IV and V: 24 (70.6 %) in FVPTC and 78 (79.6 %) in CPTC ($p = 0.34$).

Large (≥ 1 cm) cancers were in the majority in IV and V categories in both groups: 17 cases in FVPTC and 55 in CPTC ($p = 0.80$).

Conclusion. The frequency of cases in all Bethesda categories in both FVPTC and CPTC groups did not had any statistically significant differences.

EFFECT OF THERAPY ON MEDIAN SURVIVAL IN PATIENTS WITH HIGH-GRADE MALIGNANT GLIOMA DURING 2009–2015 IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Anaplastic astrocytoma, anaplastic oligodendroglioma, glioblastoma, surgery, radiotherapy, temozolomide.

Introduction. The incidence of primary brain tumors has been increasing over the last 30 years, especially in the elderly. Malignant glioma may develop at all ages, with peak incidence in fifth and sixth decades of life. Typically treatment involves surgery after which chemotherapy and radiation therapy are used. Temozolomide is frequently used as a part of chemotherapy. Median survival for anaplastic astrocytoma is 3.5 years, for anaplastic oligodendroglioma > 10 years and for glioblastoma – 15 months.

Aim. To evaluate the median survival and to analyse treatment impact on median survival in patients with high-grade malignant glioma.

Materials and methods. A retrospective study was performed. The data of histologically confirmed grade III and grade IV malignant gliomas were obtained from Pauls Stradins Clinical University Hospital from 2009 until 2015. We evaluated the median survival and analysed treatment impact on median survival.

Results. In total we identified 176 confirmed cases of high-grade malignant gliomas. 5 % (n = 8) of patients had anaplastic oligodendroglioma, 13 % (n = 23) – anaplastic astrocytoma and 82 % (n = 145) – glioblastoma. 52 % (n = 92) were men and 48 % (n = 84) – women. Mean age was 56.5 years ± 12.5. 86 % (n = 152) of patients died at the moment of the study.

The median survival in patients with anaplastic astrocytoma was 2.9 ± 0.9 years. The median survival was 9.2 months for those who received only radiotherapy, 12.1 months – only surgery, 4.2 years – surgery and consequent radiotherapy and 2.9 years after combination of surgery, radiotherapy and temozolomide (p = 0.046).

75 % (n = 6) patients with anaplastic oligodendroglioma were alive at the moment of the study.

The median survival of patients with glioblastoma was 11.7 ± 0.9 months. For those patients who received only radiotherapy the median survival was 4.3 months, 9.2 months for those who underwent surgery and consequent radiotherapy, 9.4 months after radiotherapy in combination with temozolomide and 15.3 months after combination of surgery, radiotherapy and temozolomide (p < 0.00).

Conclusion.
1. The median survival for patients with anaplastic astrocytoma was 2.9 years. Median survival was greater in patients who underwent surgery with consequent radiotherapy.

2. Evaluation of the median survival in patients with anaplastic oligodendroglioma is not possible because most of the patients are still alive.
3. The median survival of patients with glioblastoma was 11.7 months. Median survival was greater in surgery + radiotherapy + temozolamide group.

EFFICIENT PRODUCTION OF ONCOLYTIC SEMLIKI FOREST VIRUS VECTORS FOR CANCER THERAPY

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Keywords. Alphavirus, Semiliki Forest virus.

Introduction. Semiliki Forest virus (SFV) is enveloped RNA virus which belongs to Alphavirus genus. Alphaviruses are potential vectors for cancer gene therapy, because of significant advantages, including high recombinant protein expression, cancer cell tropism, induction of p53 independent apoptosis in cancer cells, absence of vector pre-imunity. All these qualities make Alphavirus vectors attractive for delivery and intratumoral expression of therapeutic cytokines. Nevertheless, the production and purification of viral vector preparations with high virus titers for preclinical and clinical applications remain a problem.

Aim. The aim of present study was to elaborate optimal conditions for production of Semliki Forest virus (SFV) vectors, ensuring high level of recombinant protein expression in cancer cells. As a model, the SFV-driven expression of Chitinase like protein (CLP) and Red fluorescent protein (DsRed) was used.

Materials and methods. SFV viruses were produced in Baby hamster kidney cells (BHK-21). The optimal virus production conditions, including incubation temperature, cultivation time, concentration of Helper RNA, were examined. Production of CLP was controlled by anti-CLP western blot and immunostaining analysis. The synthesis of Ds-Red was detected by fluorescence microscopy, respectively.

Results. The optimal conditions for SFV vector production were developed. The highest level of SFV synthesis in both cases (SFV/DsRed and SFV/CLP) was obtained by BHK cell incubation for 2 days at 33 °C. Moreover, the increased amount of SFV/Helper RNA can enhance virus production under developed conditions.

Conclusion. The proposed protocol of SFV vector production can be used as a platform for optimal synthesis of recombinant alphaviruses and their further application in animal cancer models.

EVALUATION OF BREAST CANCER PATIENT SATISFACTION AFTER MASTECTOMY AND IMMEDIATE RECONSTRUCTION

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Keywords. Mastectomy, breast reconstruction, patient satisfaction.

Introduction. Breast cancer is most common cancer in woman worldwide. Breast reconstruction is significant part of breast cancer treatment plan and is performed to improve quality of live and body image after mastectomy. Some of the key factors evaluating breast reconstruction success are patient satisfaction, self-confidence, absence of limitations or discomfort.

Aim. To evaluate patient satisfaction with the results of the immediate breast reconstruction.

Materials and methods. Retrospectively all patients who underwent mastectomy with immediate implant breast reconstruction due to breast cancer in a single university hospital (2009–2014) were identified. In total 35 patients was phoned and invited to the hospital to fill in questionnaire about quality of live and satisfaction with the surgery results. All collected data was summarized and analysed using MS Excel 2013.

Results. The study included 33 female patients with the mean age of 47.9 ± standard deviation of 8.4 years. Very satisfied with overall surgery result was 27.3 % (n = 9) of respondents, 30.3 % (n = 10) was satisfied, 3 % was unsatisfied and 6.1 % was very unsatisfied. 91 % (n = 30) did not regret decision about breast reconstruction and would recommend it to her friend. There was no limitations in daily activity in 54.5 % (n = 18) of patients, but 69.7 % (n = 23) noted a discomfort in reconstructed breast during intensive exercise. Out of all patients 27.3 % had moderate sensation loss in reconstructed area, 24.2 % (n = 8) had full loss of sensation and only in 6.1 % it remained as before surgery. The breast symmetry as very good or good evaluates 30.3 % of respondents. 66.7 % (n = 22) was satisfied with scars. With the appearance in clothes very satisfied or satisfied was 69.7 %, with appearance in bra 51.5 % (n = 17), but only 12.1 % (n = 4) was satisfied with nude appearance. With implant volume was satisfied 48.5 % (n = 16) of respondents, whereas 87.9 % (n = 29) considered that reconstructed breast does not looks naturally and 69.7 % was not felt reconstructed breast as natural part of the body. No changes in sexual relationship with spouse after the surgery considered 66.7 % of patients.

Conclusion. Most of the patients did not regret reconstruction surgery and would recommend it to a friend. More than a half of patients were overall satisfied with reconstruction surgery and had no limitations in everyday activity. Almost all patients had decreased sensation after surgery. Overall patients was satisfied with appearance in clothes whereas was not satisfied with nude appearance, breast symmetry as well as considers that reconstructed breast did not looks naturally and did not felt as natural part of the body.

EVALUATION OF CANCER SYMPTOM ALERTNESS CARD

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Keywords. Questionnaire, oncology, risk factors.

Introduction. Cancer is a major burden of disease worldwide. The incidence of cancer in Latvia has increased by 2.51 % during the last fifteen years (2000–2015). It has been estimated that one third of cancers may be preventable and another third – treatable for early diagnosis and sufficient resources. In Latvia more than one third of cases are detected at an advanced stages.

Aim. To evaluate the usefulness of Cancer Symptom Alertness Card (CSAC) in the day-to-day practice of physicians of various specialties. Oncologic risk factors assessment using CSAC.

Materials and methods. This was a cross-sectional study that encompassed all together 87 patients, 50–80 years old without known present oncological illness. Patients were interviewed according to CSAC (19 questions) at Riga Eastern University Hospital and Pauls Stradins University Hospital from October 2016 to February 2017. The data were collected by questioning the patients and filling CSAC. Thereafter data were analysed by Microsoft Office Excel and SPSS programs. Qualitative assessment was performed by Pearson's chi-squared test ($\alpha < 0.05$).

Results. The study involved 87 patients, 41.4 % (n = 36) male, 58.8 % (n = 51) female with the average age of 67.5 SD 9.8 years were questioned. 36 out of 87 patients did have positive family history (41.4 %) – 72.2 % (n = 26) among first line relatives and 27.8 % (n = 10) – among second line relatives. The most common cancer diagnoses among relatives were gastrointestinal tumors 43.3 % (n = 23), respiratory tumors 13.2 % (n = 7), gynecological tumors 11.3 % (n = 6) and unknown tumors 13.2 % (n = 7). Altogether 38 patients out of 87 (44.0 %) were subjects to harmful environment factors including chemical 20.7 % (n = 18), physical 11.5 % (n = 10), biological 8 % (n = 7) and psychosocial 3.4 % (n = 3). Non-smokers were 57 out of 87 patients (65.5 %), active smokers – 14.9 % (n = 13) and previous smokers – 19.5 % (n = 17). There was no statistical correlation between smoking and cough (p = 0.847) or hoarseness (p = 0.345) and sunbathing habits and skin changes (p = 0.428). 53 (61.1 %) out of 87 patients corresponded to cancer screening population and only 21 (39.6 %) of them did received invitation letter to provide certain screening test. Out of those patients (n = 21) who have received invitation letter 19 (90.5 %) performed the screening test.

Conclusion. CSAC is an easy-performed instrument to get information about various risk factors. Our study showed that patients have a high risk of inheritance (44 %) and environmental risk factors (44 %). It shows also that about 40 % of screening target population did not receive invitation letters, but those who receive had a high response rate (90.5 %).

FOLLICULAR VARIANT OF PAPILLARY THYROID CARCINOMA: ENCAPSULATED AND NON-ENCAPSULATED SUBTYPES

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Keywords. Encapsulated follicular variant of papillary thyroid carcinoma (EFVPTC), Non-encapsulated follicular variant of papillary thyroid carcinoma (NFVPTC).

Introduction. The most common histologic type of thyroid gland cancer is papillary thyroid carcinoma (PTC). One of the most common subtype is classical PTC (CPTC) and the second – follicular variant of PTC (FVPTC). In addition, FVPTC has been divided into encapsulated (EFVPTC) and non-encapsulated subtype of FVPTC (NFVPTC). Differentiation in FVPTC subtypes is crucial in carrying out an appropriate treatment strategies. There is a perspective, the histopathologic nomenclature for EFVPTC without capsular or vascular invasion may be re-classified as a noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP) with very good prognosis.

Aim. The aim of this study was to investigate the encapsulated and non-encapsulated subtypes of FVPTC, as well as surgical treatment tactic of EFVPTC.

Materials and methods. Histological diagnosis and state of tumor capsules of 166 operated thyroid patients was analysed retrospectively. Out of these patients, 40 with FVPTC were identified. These 40 patients were divided into two study groups: EFVPTC and NFVPTC.

Results. The FVPTC cases were identified in 40 patients in the study. Only 4 patients (10 %) were histologically diagnosed with EFVPTC, and the rest of the patients – 36 (90 %) – were diagnosed with NFVPTC. For the patients diagnosed with EFVPTC, two had total thyroidectomy and the other two underwent hemithyroidectomy.

Conclusion. The FVPTC is a unique PTC type with different subtypes. Division of these subtypes needs to be looked at very closely when it comes to the management of patients with one of these lesion subtypes. In EFVPTC more limited surgery may be performed.

LARYNGEAL TUMORS IN LATVIA

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Keywords. Laryngeal tumors, cancer, epidemiology.

Introduction. There are about 9000 patients diagnosed with malignant disease every year in Latvia, from which about 130–150 are malignant laryngeal tumors. World statistics say that laryngeal cancer makes up for 2.4 % of all cancers worldwide, and among the male population it is responsible for 2.1 % of deaths.

Aim. To collect and analyse data of laryngeal tumors in Latvia during a ten year period from January 2005 till December 2015.

Materials and methods. A retrospective study where data from patients medical documentation with diagnoses D14.1, C32.0, C32.1, C32.2, C32.3, C32.8, C32.9 in Riga Eastern University Hospital Oncology Centre of Latvia during the above mentioned period was evaluated. Data collected from the medical documentation was the following: patient's age, gender, type of tumor (benign or malignant), TNM classification, stage, tumor differentiation degree, applied treatment, operation type, hospitalization period after operation, the risk factors of disease, oncological diseases in relatives, postoperative complications, recurrence. Statistical analysis was done using Microsoft Excel 2013 and SPSS 24 software programs.

Results. Medical data of 1206 patients (226 women and 980 men) was collected for this study. Out of these, 754 (43 or 6 % woman and 709 or 94 % men) were total malignant laryngeal cancer patients. Total benign tumors made up for 94 % (159 women (35.6 %) and 288 men (64.4 %)). Women more common have benign laryngeal tumors (p > 0.005). Men – malignant tumors (p > 0.005). The average age of women who have been diagnosed with laryngeal malignancy is 64.96 ± 9.33, for men this is 62.43 ± 9.64. The incidence of benign laryngeal tumors in women mean age was 55 ± 13, but for men 52 ± 13. Evaluating patient's risk factors statistically, more probable is that smoking is associated with laryngeal cancer diagnosis (p > 0.005). Most common cancer type is squamous cell carcinoma, rarer verrucous carcinoma. Benign tumor histological common types are papillomas and fibropapillomas. The most frequently performed operation on benign laryngeal tumors was endolaryngeal tumor ablation (363 cases), and laryngectomy in malignant tumors of the larynx (268 cases). Longer hospitalization was required after laryngectomy (15 ± 7 days), the shortest after tumor biopsy (6.5 ± 7 days). Of all cases 46 patients had declined to have an operation.

Conclusion. Tumor differentiation degree is influenced by the stage of laryngeal malignant tumor. Malignant tumors in women population are diagnosed in earlier stages than in men. Smoking has an effect on cancer disease, while cancer in relatives does not.

LIVER SURGERY – A SINGLE CENTER FIVE YEAR EXPERIENCE

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Keywords. Hepatic surgery, liver lesions, tumours, complications.

Introduction. Different focal lesions including benign tumors, primary malignant tumors and metastasis from other organ malignancies frequently affect the liver. Aim of the study was to analyse the results of liver surgery in the last five years, focusing on long term follow-up.

Aim. The aim was to collect, analyse and explore the results of peri-operative and post-operative outcomes.

Materials and methods. We conducted a prospective study of patients with liver lesions operated on in the time period from 2011 until 2016. Clinicopathological charecteristics and survival outcomes were analysed as well as preoperative and surgical variables. Statistical analysis was performed using IBM SPSS.

Results. A total of 91 patients with liver lesions underwent surgery during the period of study. Mean patient age was 56.49 ± 13.75 years. The female-to-male ratio was 53:38. Operation time was 212 ± 77 min. Mean hospital stay was 9 ± 3.84 days. Mean follow-up was 36 ± 8 months. During follow-up 12 had reccurence, 7 of them were reoperated. Two patients underwent transcatheter arterial chemoembolization. 19 died, 8 lost of follow-up. 60 patients (65.9 %) underwent one segment resection, 21 patients (23.1 %) underwent hemihepatectomy and 7 patients (7.7 %) had multiple segment resections. Morphological findings revealed that the most freaquently-operated pathology was liver metastasis (n = 40), followed by primary malignant liver tumours in 26 cases. Benign lesions were operated in 25 cases.

Conclusion. Liver surgery is complex surgical field with comparatively higher morbidity and mortality. Carefull patient preperation and consideration for operation as well as postoperative supervision is essential to obtain adequate results.

LONG TERM DONOR SITE EVALUATION OF MICROVASCULAR FASCIOCUTANEOUS FLAP TRANSFER

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Keywords. Microsurgery, free flap, fasciocutaneous, scar, donor site.

Introduction. Since soft tissue defect reconstruction with free flaps has become widely used technique with high rates of tissue survival, many fasciocutaneous microvascular flaps has been developed. There are many options to choose from, but every has some limitations and morbidity of donor-sites must be diminished.

Aim. To evaluate appearance of flaps donor site scar at least 6 months after operation and to compare patients' satisfaction within different kind of flaps.

Materials and methods. Database of Microsurgery Centre of Latvia from 2010 to 2016 was reviewed. Inclusion criteria were all patients who underwent free fasciocutaneous flap transfer. We analysed 95 cases of which 37 of the patients responded for evaluation of the donor site. We examined demographics, comorbidities, length of surgery, donor and recipient site, free flap type, method of closing and complications of the donor site, and free flap complications. During the patients visit we evaluated the scar using Modified Vancouver Scar Scale (mVSS includes – Pigmentation, Palpability, Height, Vascularity, Pain, Pruritus), VAS (Visual Analog Scale) for cosmetic effect, and VAS (Visual Analog Scale) for satisfaction of the surgery (all of the examination was done by the same examiner).

Results. 29 were males and 8 females with a mean age of 42 (6–74). Most common flaps used: Radial forearm flap-ARL (10); Lateral arm flap-LAF (3); Anterolateral tight flap-ALT (8); Scapular flap (6); Parascapular flap (3); Inguinal (7). The lowest mean mVSS result was 2.00 in case of LAF (p = 0.024), the highest was 5.75 in case of ALT flap. The lowest mean VAS for the cosmetic effect of the scar was 0.71 in case of Inguinal flaps, and the highest result was 2.87 in case of ALT. The lowest mean VAS result for satisfaction of the surgery was 0.67 in case of LAF, and the highest result was 2.37 in case of ALT.

Conclusion. ALT flap showed the worst results in all 3 categories. Nevertheless, this flap was used in cases of very large tissue defects, when primary closure of donor site was impossible and skin grafts were used. The best scar outcome was with LAF, Inguinal and ARL flap donor sites. Better results were found to be in cases of primary donor site closure rather than using skin grafts or local flaps.

NATIONAL RETROSPECTIVE ANALYSIS OF PAEDIATRIC SCOLIOSIS SURGERY AT THE UNIVERSITY CHILDREN'S HOSPITAL RIGA FROM 2012 TO 2016

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Keywords. Pediatric, scoliosis, surgery, characterization, epidemiology.

Introduction. Scoliosis is the most common spinal deformity. Surgical treatment can arrest progression and even correct pathologic spinal curvature. Since January 2012, these operations are exclusively performed at the Children's Clinical University Hospital in Riga.

Aim. To retrospectively analyse data characterizing patient population and treatment specific properties for pediatric scoliosis surgeries from 2012 – 2016 in Latvia.

Materials and methods. Data of scoliosis patients who received any form of spinal surgery, was retrieved from the medical record system of the hospital. From 82 identified cases, 9 received surgical treatment other than primary scoliosis correction and 2 were older than 25 years. Thus 11 patients were excluded. Data was analysed using SPSS.

Results. A total of 71 patients; mean age at operation (AAO) 14.5 ± 3 years, 73 % ♀ (n = 52) and 27 % ♂ (n = 19), were enrolled. 62 % suffering from idiopathic (IDI) (16 % ♀; 84 % ♂), 24 % (n = 17) from neuromuscular, 9 % (n = 6) from syndromic and 5.6 % (n = 4) from congenital scoliosis. Average hospital stay (HS) was 12.5 ± 4.7 days, total operation time (TOT) $5{:}18 \pm 1{:}30$ (hh:mm), Cobb angle before surgery (CAB) 63.6 ± 21, with 57.4 ± 17 % correction afterwards, achieved by a sum of 10 ± 2.7 fused vertebrae (FV). Split into IDI (n = 44) *vs.* non-IDI (n = 27) differences were significant for AAO 15.4 ± 2.1 *vs.* 13.2 ± 3.8 p = 0.004, HS in days $11 (9.25_1; 13_3)$ *vs.* $13 (11_1; 16_3)$ p = 0.003, CAB $54.5 (43.5_1; 65_3)$ *vs.* $83 (52_1; 90_3)$ p = 0.001, correction (in %) $62.7 (53.8_1; 73.9_3)$ *vs.* $51.2 (31.7_1; 62.5_3)$ p = 0.008, SOIV $10 (8_1; 11_3)$ *vs.* $13 (8_1; 13_3)$ p = 0.037, of which $11 (10_1; 22_3)$ *vs.* $31 (18_1; 36_3)$ % p < 0.001 were lumbar, TOT (hh:mm) $4{:}48 \pm 1{:}05$ *vs.* $6{:}09 \pm 1{:}44$ p = 0.001. Overall, early post-operative complication occurred in 15.5 % of patients and was associated with significantly increased HS $11 (10_1; 13_3)$ *vs.* $15 (13_1; 17_3)$ p = 0.004, CAB $56 (46_1; 67_3)$ *vs.* $74 (65_1; 100_3)$ p = 0.008, absolute cobb angle decrease (ACAD) $33 (24_1; 46_3)$ *vs.* $45 (40_1; 56_3)$ p = 0.034 and SOIV $10 (8_1; 11_3)$ *vs.* $13 (10_1; 13_3)$ p = 0.023. Combination of anterior with posterior spinal fusion was associated with significantly increased CAB, TOT and ACAD. Significant correlations were notably for HS with SOIV $r_s = 0.510$ p < 0.001 and TOT $r_s = 0.653$ p < 0.001; for CAB with HS $r_s = 0.532$ p < 0.001, TOT $r_s = 0.503$ p < 0.001 and SOIV $r_s = 0.448$ p < 0.001. Correlation tendency was observed for AAO with CAB $r_s = -0.216$ p = 0.071. 10 % of all patients (n = 7) required revision surgery at some point.

Conclusion. This study provides for the first time comprehensive insight into scoliosis surgery in Latvia and will in the future serve as a cornerstone for further investigation in this field.

NEOADJUVANT TRASTUZMAB IN COMBINATION WITH CHEMOTHERAPY INCREASES BREAST SAVING SURGERY RATES IN HER2 POSITIVE EARLY AND LOCALLY ADVANCED PRIMARY BREAST CANCER

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Introduction. Trastuzumab, a humanized antibody against the human epidermal growth factor receptor type 2 (HER2), has shown high efficacy in breast cancer. Combining chemotherapy with trastuzumab is considered when neoadjuvant treatment is given to patients with HER2-positive breast cancer.

Aim. Importance of this study in Latvian women population lies in the directly proportional association between neoadjuvant chemotherapy with trastuzumab and breast saving surgery rates and in good histological outcomes.

Materials and methods. Database of Oncology Center of Latvia was retrospectively reviewed to determine the pathologic response to neoadjuvant chemotherapy with trastuzumab and frequency of breast saving surgery in HER2-positive early and locally advanced breast cancer. Data was processed with Microsoft Office Excel 2007 and IBM SPSS Statistics 22nd edition.

Results. 61 patient fulfilled the inclusion criteria. Of them 30 (49 %) patients received neoadjuvant chemotherapy with trastuzumab and 31 (51 %) received chemotherapy only. Mean age of patients at diagnosis was 56.3 (32–76) years, median 57 years. In total 59 (96.7 %) patients presented with ductal and 2 (3.3 %) patients with lobular carcinoma. Mean number of neoadjuvant treatment cycles was 7 in patients who received neoadjuvant trastuzumab and 5 in patients who received chemotherapy only. Core biopsy data and clinical stage of tumor did not show statistically significant correlation with neoadjuvant treatment outcomes (p > 0.05). In a group of neoadjuvant chemotherapy with trastuzumab breast saving surgery was applied in 11 (36 %) patients, where in a group of neoadjuvant chemotherapy only in 3 (10 %) patients respectively (p < 0.05). Histological data was analysed in both groups of patients. In a group with neoadjuvant trastuzumab metastases in lymph nodes were found in 11 (37 %) patients compared with 21 (68 %) patient in a group with chemotherapy only (p < 0.05).

Conclusion. Neoadjuvant chemotherapy with trastuzumab in early and locally advanced primary breast cancer improves histological outcome and is connected with higher breast saving surgery rates.

PRIMARY REVIEW OF PATIENTS WITH NEUROENDOCRINE TUMORS DIAGNOSED AND TREATED IN A SINGLE UNIVERSITY HOSPITAL

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Keywords. Neuroendocrine tumor, statistics.

Introduction. Neuroendocrine tumors (NETs) are neoplasms that arise from hormone-producing cells of the neuroendocrine system. The incidence has been estimated as 2.5–5/100,000 with a tendency to increase annually.

Aim. To gather and analyse patients with any type of NET, except NETs of the thorax, in a University Hospital during a specific time period (2010–2016). To update statistics and continue researching NETs.

Materials and methods. Twenty-seven cases of NETs gathered by retrospective/prospective analysis of patient files. Demographic, preoperative, operation, postoperative and follow-up data was systemized and included in the study. Clinicopathological characteristics, surgical variables and immunohistochemistry was analysed and calculated in Microsoft Excel and a 95 % confidence interval was calculated.

Results. Male to female ratio was 1:2 with the average age of 59.6 (41–76). Division of primary site: 29.6 % pancreas, 18.5 % duodenum, 18.5 % ileum, 11.1 % stomach, 7.5 % rectum, 3.7 % ascending colon, 3.7 % sigmoid colon, 3.7 % ovary and 3.7 % carcinomas of unknown primary site. Advanced NETs were diagnosed in 51.9 % of cases. The most common site of distant metastases was the liver (90.9 %). Of all cases of advanced NETs single site metastases were detected in 78.6 % and two or more organs were affected in 21.4 %. In 51.9 % stage IV tumors were diagnosed. 63 % of NETs were high grade (G1). In most cases Chromogranin A and Synaptophysin were positive. Ki67 was < 2 % in 29.6 % and in 14.8 % it was more than 15 %. Patient status during the research was as following: 33.3 % alive without disease, 44.5 % alive with disease, 3.7 % dead, 18.5 % lost to follow-up.

Conclusion. According to our results NETs are most commonly diagnosed in the pancreas and potentially have poor prognosis and low possibility of radical treatment. Although most of the diagnosed NETs were high grade and Ki67 showed low proliferation activity, more than half of the patients were diagnosed and/or treated in the late stages of the disease. Chromogranin A and Synaptophysin should be used as gold standard tumor markers in NET diagnosis.

REVISION SURGERY AFTER GASTRIC BYPASS

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Keywords. Obesity, revision bariatric surgery, laparoscopic pouch resizing (LPS).

Introduction. In the European Union around 60 % of grown-ups are overweight or obese. Bariatric surgery continues to gain popularity. Longer follow-up data become available and reveal the patients who fail to lose a sufficient amount or regain weight following primary procedure. Revision bariatric surgery is concerned with prevention of obesity reoccurrence. Failure of restrictive mechanism of Roux-en-Y gastric bypass (RYGB) is seen in 20–35 % of patients. LPR is an option to restore RYGB efficacy.

Aim. To evaluate the feasibility and safety of LPR for dilated gastric pouch (DGP) after RYGB.

Materials and methods. Our retrospective study included 9 (8 females, 1 male) LPR patients with DGP after RYGB. Preoperative and one year follow-up data were reviewed for weight, BMI, excessive weight (EW) and obesity related comorbidities (ORC). Operation time (OT), hospital stay (HS) and complications were also considered.

Results. Pouch dilation was diagnosed by imaging studies. Median (ME) patient age was 45 years (min 25; max 55); ME preoperative BMI and excessive weight were 35.1 kg/m^2 (min 33; max 52) and 38.1 kg (min 35.7; max 97.4) respectively. Hypertension (n = 3), hiatal hernia (n = 3), gastroesophageal reflux disease (n = 3), dislipidemia (n = 2), gallstone disease (n = 2), type two diabetes (n = 1) and various combinations of these ORC were identified. ME HS was 3 days (min 3; max 6). One patient developed postoperative leakage from gastrojejunal anastomosis (GJA) and required re – laparoscopy. ME OT time was 130 minutes (min 85; max 153). Follow-up data were available for 7 patients. ME postoperative BMI and EW were 31.8 kg/m^2 (min 25.5; max 39.9) and 29.2 kg (min 9.1; max 58.4) respectively. ME excessive weight loss (% EWL) was 40 % (min 13.8; max 76.1). One patient reported type 2 diabetes improvement.

Conclusion. LPR with redo of the GJA is a valuable option in the short term for weight loss failure or regain in patients who have undergone RYGB and have DGP. In analysed patients pouch resizing operation resulted in effective % EWL. Long-term efficacy of this procedure in studies with larger patient groups still needs to be determined.

SELENIUM AND COPPER LEVEL IN WOMEN WITH AN INCREASED RISK OF BREAST AND OVARIAN CANCER IN LATVIA

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Keywords. Selenium, copper, breast and ovarian cancer.

Introduction. Selenium (Se) and copper (Cu) are an essential trace elements in human organism. There are several studies about serum Se and Cu status correlation with various tumors. Se protects against oxidation and improves nucleotide excision repair. Reduced Se level has been related to increased risk of breast and ovarian cancer and other tumors. Laboratory reference range for Se: 75–85 µg/l. High Cu level has been found in many types of cancers, because it is an important cofactor for angiogenesis that is a vital process in normal physiology as well as in cancerous tumor formation and growth. Laboratory reference range for Cu: 850–1100 µg/l.

Aim. The objective was to analyse the obtained serum Se and Cu results and to assess the risk of developing cancer in the future.

Materials and methods. 28 analytical results were obtained from clinically healthy women with negative BRCA1 founder mutations and positive family cancer history. Blood samples were obtained in the Pauls Stradins Clinical University Hospital Outpatient clinic of Hereditary Cancer and sent to International Hereditary cancer center in Poland where it was tested. The data were statistically processed and analysed with SPSS S 22.0 and MS Excel.

Results. The mean age of women was 45 (range 24–73 years). The mean level of serum for Se and Cu was 71.5 ± 12 µg/l/1118.14 ± 206.9 µg/l. 64.3 % (n = 18) of the patients, with a mean age of 45, serum Se level was less than 75.0 µg/l. 7.14 % (n = 2) of patients, with unknown age, serum Se level was more than 85.0 µg/l. 3.6 % (n = 1) of patients, with the age of 45, serum Cu level was less than 850 µg/l. 53.6 % (n = 15) of the patients, with a mean age of 49.2, serum Cu level was more than 1100 µg/l (one patient with an unknown age). There were 37.5 % (n = 10) female with decreased Se and increased Cu level. Pearson's correlation ratio between age and level of trace elements: r = −0.065, (p = 0.753) for Se, r = 0.131, (p = 0.523) for Cu.

Results were not statistically significant (p > 0.05).

Conclusion.
1. More than one third of high risk women have both decreased levels of selenium and increased levels of cooper.
2. There was no statistically significant correlation between the levels of trace elements and the women's age.
3. Our study results confirm the necessity for Selenium supplementation studies in high risk individuals with decreased selenium levels.

SPECTRUM OF SURGICALLY TREATED PANCREATIC DISEASES IN LATVIA

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Keywords. Pancreas; pancreatic neoplasms; surgical treatment.

Introduction. Reasons for pancreatic surgery include a number of different diseases, either benign or malignant. Pancreatic ductal adenocarcinoma (PDAC) and its variants are the most common neoplasms in the pancreas, representing 85–90 % of all pancreatic neoplasms (WHO, 2010). Even though, compared to other cancers, pancreas cancer is relatively rare, it is one of the top 5 causes of death from cancer (Yadav et al., 2013). Pancreatic resection can lead to a prolonged survival in pancreatic cancer, although pancreatic surgery is still associated with a relatively high postoperative morbidity and mortality compared with other specialties (Ho et al., 2005).

Aim. The aim of this study was to provide an overview of the spectrum of surgically treated pancreatic diseases.

Materials and methods. The retrospective study included all consecutive patients, who underwent pancreatic surgery between January 2014 and December 2016 in Pauls Stradins Clinical University Hospital. All cases were identified by archive search and characterized by patient's age, gender, anatomical localization of lesion, and histological diagnosis. Descriptive statistical analysis was performed including calculation of 95 % confidence interval (CI), using CIA software (Altman et al., 2000).

Results. The study included 67 patients – 38.8 % [95 % CI = 29.8–48.6] males and 61.2 % [51.4–70.2] females. Mean age was 59 years [55.5–62.5] with range 23–81 years. Average male age was 60.4 years [54.9–65.9], average female age – 58.1 years [53.5–62.7]. 55.2 % [45.4–64.6] of lesions were located in the head of the pancreas, 23.9 % [16.6–33.1] – in the tail, 9 % [4.8–16.2] – in the body, 1.5 % [0.3–6.2] – in the body and tail; in 10.4 % [5.8–17.9] of cases the localization was not specified. Histological findings included tumours (74.7 % [65.4–82.2]), chronic pancreatitis (11.9 % [6.9–19.7]), pseudocysts (10.4 % [5.8–17.9]), necrosis (1.5 % [0.4–6.2]), and splenic heterotopia (1.5 % [0.4–6.2]). The following histological types of tumours (according to the WHO Classification of Tumours of the Digestive System, 2010) were present: 34.3 % [25.7–44] PDAC and its variants, 10.5 % [5.9–18] neuroendocrine tumours, 20.9 % [14.1–29.9] serous cystadenoma, 1.5 % [0.4–6.2] mucinous cystadenoma, intraductal tubular adenoma, intraductal papillary-mucinous neoplasm, solid-pseudopapillary neoplasm, follicular lymphoma, and lymphangioma.

Conclusion. Pancreatic lesions were found more often among females than males, with the highest incidence in 6th decade. Majority of lesions were localized in the head of the pancreas. The most common surgically treated pancreatic disease was PDAC.

SURVIVAL PREDICTORS IN PATIENTS WITH HEPATOCELLULAR CARCINOMA UNDERGOING TRANSARTERIAL CHEMOEMBOLISATION

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Keywords. Hepatocellular carcinoma, survival, transarterial chemoembolization, sodium, stage.

Introduction. Hepatocellular carcinoma (HCC) is the third leading cause of cancer deaths worldwide with 500,000 people affected each year. When surgical resection is not possible or there is a recurrence after surgery, transarterial chemoembolization (TACE) is a possible treatment but there is still no consensus on factors affecting survival after TACE.

Aim. The aim of this study was to assess overall survival (OS) rates and identify independent survival risk factors in patients with HCC before undergoing treatment of TACE.

Materials and methods. Over a five-year period (2011–2015), 34 unique patients undergoing TACE in Clinical University Hospital were retrospectively assessed before their first TACE session by using their medical history. Data included patients sex, age, number of TACE sessions, previous therapy, presence of liver cirrhosis, hepatitis, oesophageal varices, ascites, diabetes, number of nodules, diameter of largest nodule, presence of distant metastases, Barcelona Clinic Liver Cancer (BCLC) stage, MELD score and laboratory values before treatment (ALAT, ASAT, total bilirubin, alkaline phosphatase, albumin, prothrombin, INR, fibrinogen, alpha fetoprotein). Data was entered into SPSS v.20.0. Survival was analysed using Kaplan-Meier method and independent risk factors were assessed using Cox regression univariate analysis.

Results. Out of 34 patients, 64.7 % (22) were male and 35.3 % (12) – female. Median age was 65.5 ± 14.5. 28 patients had unresectable tumours and 6 had a recurrence after previous surgery. Median OS was 15.00 ± 6.47 months. The 6-, 9- and 12-month survival rates were 67 %, 61 % and 53 %, respectively. Independent risk factors associated with survival after TACE were hepatitis B infection ($p = 0.044$, HR = 5.722), diameter of the largest nodule ($p = 0.005$, HR = 1.408), especially diameter ≥ 5 cm ($p = 0.015$, HR = 7.214), serum sodium level ($p = 0.11$, HR = 0.715), especially serum sodium level of ≥ 140 mEq/L ($p = 0.12$, HR = 0.175). ASAT and alkaline phosphatase had no effect on survival ($p < 0.05$; HR = 1.00). Kaplan-Meier analysis showed that absence of distant metastases, stage B tumour (BCLC) and patients with previous liver surgery had higher OS but it was not statistically significant ($p > 0.05$).

Conclusion. A factor associated with higher OS was serum sodium level of ≥ 140 mEq/L and with lower OS – presence of hepatitis B infection, diameter of largest nodule ≥ 5 cm. ASAT, alkaline phosphatase, previous liver surgery, presence of distant metastases and BCLC stage (B or C) had no significant effect on OS when performing TACE.

THE IMPACT OF COLD ISCHEMIA TIME AND DONOR'S AGE ON THE RESULTS OF KIDNEY TRANSPLANTATION

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Keywords. Kidney transplantation, cold ischemia time, donor's age, graft survival.

Introduction. Prolonged cold ischemia time (CIT) and older donor's age have been associated with higher rate of delayed graft function and reduced graft survival. However, more data are necessary to evaluate their combined effect in long term kidney transplantation results.

Aim. The goal was to evaluate the combined effect of cold ischemia time and donor's age in long term kidney transplantation results.

Materials and methods. Included in the study were all consecutive deceased donor kidney transplantations performed in one transplantation center during the period between 2004 and 2007. Exclusion criteria were donor's age under 18 and also 51–59 years and CIT 13–17 hours in order to ensure more precise results. After the selection procedure 10 year results of 115 kidney transplantation cases (62 males, 53 females, mean age 46.8 ± 13.2 years SD) from 85 deceased donors were studied. Recipients were divided into 4 groups based on donor's age and cold ischemia time (group 1 – CIT 4–12 h, donor's age 18–50 years, group 2 – CIT over 18 h, donor's age 18–50 years, group 3 – CIT 4–12 h, donor's age over 60 years, group 4 – CIT over 18 h, donor's age over 60 years). The rate of delayed graft function (DGF), graft loss, recipient survival and creatinine levels (on discharge, after 5 and 10 years) were analysed.

Results. Survival after 10 years was 75.9 % (22/29) in group 1, 70.8 % (19/65) in group 2, 60 % (2/5) in group 3 and 22 % (7/9) in group 4. Graft loss at 10 years was 27.6 % (8/29) in group 1, 35.7 % (25/70) in group 2, 0 % (0/5) in group 3 and 27.3 % (3/11) in group 4. Serum creatinine levels at 10 years were lower in group 1 (0.15 ± 0.06 mmol/L; p = 0.178) and group 2 (0.16 ± 0.08 mmol/L; p = 0.2) compared with group 3 (0.25 ± 0.17 mmol/L). DGF was more frequent in group 4 (54.5 %) compared with group 1 (17.2 %; p = 0.027) and group 2 (20 %; p = 0.023). When comparing younger (age 18–50) and older (age over 60) donor recipients independently of CIT, recipients from younger donors had lower serum creatinine levels on discharge (0.122 ± 0.042 *vs.* 0.149 ± 0.058; p = 0.039) and after 10 years (0.15 ± 0.07 *vs.* 0.21 ± 0.17; p = 0.25), less frequent delayed graft function (19 % *vs.* 50 %; p = 0.012) and better survival after 10 years (71.7 % *vs.* 62.5 %; p = 0.009). When comparing shorter (4–12 hours) and longer (over 18 hours) CIT, analysed outcomes showed no significant differences.

Conclusion. Older donor age and especially its combination with longer CIT may negatively impact initial and long term graft function and reduce survival. In cases of elderly donors CIT should be kept as short as possible.

THE KHORANA RISK ASSESSMENT SCORE FOR PREDICTING PULMONARY EMBOLISM AMONG ADVANCED LUNG CANCER INPATIENTS TREATED WITH CHEMOTHERAPY

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Keywords. The Khorana score, pulmonary embolism, lung cancer, chemotherapy.

Introduction. Pulmonary embolism (PE) is a common complication among advanced lung cancer patients receiving chemotherapy and causes considerable morbidity and mortality. The Khorana score may help physicians to identify patients at high risk of PE and decide who is eligible for thromboprophylaxis. This score has been validated in various populations with cancer, but its role in lung cancer patients remains unclear.

Aim. The aim of this study was to evaluate the Khorana risk assessment score for predicting PE among advanced lung cancer inpatients treated with chemotherapy.

Materials and methods. A retrospective survey was conducted in the Pulmonology and Allergology Center of Vilnius University Hospital Santariskiu klinikos. The survey included 2008–2016 year data of 217 lung cancer inpatients with IIIB and IV stages receiving chemotherapy. PE was diagnosed based on chest computed tomography (CT) scan. CT scan was performed every two chemotherapy cycles and every three months in observation period. Any extra CT scan was performed only if patient developed PE symptoms. The Khorana score was evaluated as follows: 1 point was administered for having lung cancer, 1 point for BMI (*body mass index*) $\geq$ 35, 1 point for hemoglobin value < 100 g/l, 1 point for leukocyte count > 11 × 10^9/l, 1 point for platelet count $\geq$ 350 × 10^9/l. Overall the lowest possible score was 1, the highest 5. Patients were divided in two groups: a group of patients with at least 1 point and a group of patients with 2 or more points of the Khorana score. The relative risk of PE was calculated using binary logistic regression analysis.

Results. The study population included 46 (21.2 %) female and 171 (78.8 %) male patients whose median age was 62. There were 74 (34.1 %) lung cancer patients of stage IIIB and 143 (65.9 %) of stage IV. During median observation period of 308.5 days 26 (11.9 %) patients developed PE. Study included 137 patients with 1 point and 80 patients with 2 or more points of the Khorana score. The frequency of PE was 17 (12.4 %) among patients with 1 point and 9 (11.3 %) among patients with 2 points Khorana score. The relative risk of PE for patients with 2 or more points was 0.895 (95 % CI = 0.379–2.114), p = 0.800.

Conclusion. The present study demonstrates high incidence of PE in advanced lung cancer patients treated with chemotherapy. However, the Khorana score was not able to discriminate between patients with advanced lung cancer at intermediate risk and high risk of PE in our study. Therefore, search of new markers predicting PE among advanced lung cancer patients is needed.

THE PENN CLASSIFICATION: MORTALITY RISK STRATIFICATION ACCORDING TO ISCHEMIC PRESENTATION IN PATIENTS WITH ACUTE *STANFORD* TYPE A AORTIC DISSECTION

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Keywords. Acute *Stanford* type A aortic dissection, organ malperfusion, *Penn* classification.

Introduction. Acute *Stanford* type A aortic dissection is a life-threatening emergency in cardiac surgery. Intrahospital mortality of surgically treated patients in last decades has decreased, but it still remains high. The surgical outcome is significantly influenced by patient's preoperative condition. Organ ischemia is known predictors of early mortality. Recently the *Penn* classification for patients with acute *Stanford* type A aortic dissection, which is based on patient's preoperative ischemic profile, has been introduced.

Aim. To investigate whether *Penn* classification can be applied as mortality risk assessment system for surgically treated patients with acute *Stanford* type A aortic dissection.

Materials and methods. All consecutive patients with acute *Stanford* type A aortic dissection from January 2006 to December 2016 who underwent surgery in Pauls Stradins Clinical University hospital were included in this retrospective study. Patients were divided according to the University of Pennsylvania thoracic aortic research groups proposed classification (*Penn* classification): Aa class (absence of ischemia), Ab class (branch vessel malperfusion with ischemia), Ac class (circulatory collapse with or without cardiac involvement) and Abc class (circulatory collapse and branch vessel malperfusion). Early mortality was compared between groups.

Results. Study population comprised of 48 patients. The mean age was 55.0 ± 13.9 years and 72.8 % were males. Most common symptom at the presentation was pain found in 89.6 % patients. 18.8 % patients presented with syncope. Hemodynamically unstable at the presentation were 45.8 %. At the admission twenty patients (41.7 %) had no ischemia (*Penn* Aa), seventeen (35.4 %) presented with branch vessel malperfusion (*Penn Ab),* eight (16.7 %) presented with circulatory collapse (*Penn* Ac) and three (6.3 %) had branch vessel malperfusion and circulatory collapse (*Penn* Abc). Intrahospital mortality was 15.0 % (3 from 20) in *Penn* Aa, 5.9 % (1 from 17) in *Penn* Ab, 37.5 % (3 from 8) in *Penn* Ac and 66.7 % (2 from 3) in *Penn* Abc class with statistically significant difference (p = 0.04) between groups.

Conclusion. Intrahospital mortality is high in patients with circulatory collapse which results in generalized ischemia. In our patient population branch vessel malperfusion alone did not appear to significantly increase intrahospital mortality. The *Penn* classification is useful for preoperative assessment of patients with acute *Stanford* type A aortic dissection and its usage in future is encouraged.

TUMOR INFILTRATING-LYMPHOCYTES IMPACT ON MEDIAN SURVIVAL IN PATIENTS WITH UNRESECTABLE NON-SMALL-CELL LUNG CANCER

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Keywords. Tumor lymphocytic infiltration, non-small-cell lung cancer, chemotherapy, median survival.

Introduction. Lung cancer is still the leading cause of death worldwide despite recent improvements in early diagnosis and treatment. Malignant tumors constitute a microenvironment themselves, containing tumor, endothelial, stromal and immune cells. The study of tumor-infiltrating lymphocytes (TILs) has advanced during recent years, as it has been shown that immune cells have impact on the clinical course of several solid tumors. The presence of high TILs suggests that the immune system plays a key role in the tumor evolution and the patient's outcome.

Aim. To analyse TILs impact on median survival in patients with unresectable non-small-cell lung cancer (NSCLC).

Materials and methods. A retrospective study was performed. The data of histologically confirmed non-small-cell lung cancer were obtained from one clinical university hospital from year 2015. Patients with unresectable NSCLC who received chemotherapy were included in the study. TILs were evaluated using biopsies or surgical specimens. TLI was defined as intense ($< 50\%$) versus nonintense ($\geq 50\%$). Data about oncological patients were obtained from the Centre for Disease Prevention and Control. Data was analysed by SPPS v.18.

Results. In total we identified 21 cases of unresectable NSCLC. 67 % (n = 14) were males and 33 % (n = 7) – females. Mean age was 63.2 years ± 9.8. Stage II was diagnosed in 9 % (n = 2) of cases, stage III – 67 % (n = 14), stage IV – 24 % (n = 5). Histologically adenocarcinoma was confirmed in 24 % (n = 5) of cases, squamous cell carcinoma – 38 % (n = 8) and non-small-cell carcinoma not otherwise specified – 38 % (n = 8). All patients received chemotherapy. Sequential radiotherapy received 38 % (n = 8).

The median survival in patients with nonintense TILs was 12 ± 3 months versus 14.6 ± 2.8 months with intense TILs (p = 0.836).

Conclusion. Patients with unresectable non-small-cell lung cancer with intense TILs showed a tendency to have a greater median survival compared to patients nonintense TILs.

VALUE OF NEUTROPHIL/LYMPHOCYTE RATIO IN THE DIFFERENTIAL DIAGNOSIS OF HEPATOCELLULAR CARCINOMA AND FOCAL NODULAR HYPERPLASIA: A PILOT STUDY

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Keywords. Hepatocellular carcinoma, focal nodular hyperplasia, neutrophil to lymphocyte ratio.

Introduction. Hepatocellular carcinoma (HCC) is the sixth most common malignancy and the third most common cause of cancer death worldwide (Jain et al., 2017). Distinguishing a well-differentiated hepatocellular carcinoma (HCC) from normal, cirrhotic liver tissue and benign liver nodules, such as focal nodular hyperplasia (FNH), may be very difficult in some cases, particularly in small needle core biopsies (Coston et al., 2008), thus additional diagnostic markers are essential. It's known that routinely available marker of the systemic inflammatory response such as neutrophil-lymphocyte ratio (NLR) has recently been reported as a predictor of hepatocellular carcinoma (HCC), elevated level indicating a poor prognosis for patient (Xiao et al., 2014*)*.

Aim. To examine whether NLR could be used as an additional marker distinguishing between HCC and FNH.

Materials and methods. In a retrospective study, 14 patients with morphologically confirmed HCC and 6 patients with FNH were included. NLR was defined as the absolute neutrophil count divided by the absolute lymphocyte count. Serum complete blood count levels were used to calculate NLR. Data were evaluated using *IBM SPSSv23*. To assess data distribution *Independent-Samples Kolmogorov-Smirnov Test* was performed. Descriptive statistic evaluation was performed, including detection of median values and interquartile range (IQR = Q_3-Q_1). To compare groups *Independent Samples Median Test* and *Fisher Exact Significance Test* were used (The significance level 0.05).

Results. The median value of NLR in FNH group was 1.67 (N = 6; Q_1 = 1.20; Q_3 = 2.57; IQR = 1.37). The median NLR of the patients with HCC was 2.49 (N = 14; Q_1 = 1.97; Q_3 = 4.55; IQR = 2.58), which is higher comparing with FNH group, but the difference was statistically insignificant (p = 0.141).

Conclusion. NLR is widely available blood test, which has a potential to be a useful additional marker distinguishing between HCC and benign liver nodules, such as FNH. The median NLR in HCC patient group was higher than in FNH group (1.67 and 2.49 respectively), which corresponds to the scientific data available, but the difference was found to be statistically insignificant, however, further research is clearly required. The difficulty in this study was found during patients' history examination due to frequent absence of the full blood count analysis and therefore inability to calculate NLR.

VIMENTIN EXPRESSION IN COLORECTAL CANCER STROMA AND ITS RELATION TO INVASION DEPTH

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Keywords. Colorectal cancer, vimentin, tumour stroma.

Introduction. Colorectal cancer (CRC) is one of the most common forms of cancer, and its progression is associated with different factors. Recent studies show that there is association between vimentin expression intensity and tumour malignancy potential (Marlena Brzozowa et al., 2015; Ngan et al., 2007).

Aim. The aim of this study was to investigate vimentin expression differences in CRC stroma in a different tumour regions, in relation to the manifestations of invasive tumour growth.

Materials and methods. In a retrospective study, data from morphological examination protocols from 30 CRC patients were collected. By immunohistochemistry (IHC), expression of vimentin in tumour stroma in two levels (main tumour mass and invasion front) was detected and expression intensity was measured in a scale from 0 to 3, where 0 – no expression, 1 – weak, 2 – moderate and 3 – strong. The final IHC score was expressed as a relative extent in a percentage (%). Descriptive statistics (95 % confidence interval (CI) and Mann-Whitney test) was done. $p < 0.05$ was considered significant.

Results. The study included 30 patients with CRC. 82.8 % [95 % CI: 65.5–92.4] of cases was moderately differentiated (G2), but 17.2 % [7.6–34.6] poorly differentiated (G3). According pT stage – 63.3 % [45.5–78.1] of cases was pT3 and 36.7 % [21.9–54.5] pT4 cases. Overall invasion in lymphatic vessels was identified in 70 % [52.1–83.3] of cases, but perineural invasion in 66.7 % [48.8–80.8] of cases. The total amount of vimentin relative expression (VRE) intensity in main tumour mass (MTM) was 1.79 % [1.73–1.85]. There was statistically higher vimentin expression at the invasive front (IF) of tumour – 2.07 % [2.01–2.13]. Regarding vimentin expression and tumour grade, no statististically significant difference was found. VRE in G2 cancer was 1.77 % [1.71–1.83] in MTM, and 2.06 % [2.0–2.12] in IF, but in G3 cancer the total amount of VRE was 1.91 % [1.63–2.19] and 2.12 % [1.75–2.49], respectively. There also was no statistically significant difference between total amount of VRE and pT, for pT3 cancer VRE in MTM was 1.79 % [1.71–1.87] and 2.05 % [1.99–2.11] in IF, but in pT4: 1.80 % [1.70–1.90] and 2.11 % [1.95–2.27] respectively. Mann-Whitney test showed statistically significant difference in VRE in MTM between cancer with lymphatic invasion *vs.* without ($p = 0.01$), VRE 1.84 [1.77–1.91] and 1.68 [1.58–1.78], but there was no difference between groups in IF ($p = 0.62$; 2.09 [2.01–2.17]; 2.03 [1.93–2.13]). Comparing VRE with perineural growth no statistically significant difference was found in MTM ($p = 0.12$) or IF ($p = 0.68$).

Conclusion. VRE was statistically significantly higher at the CRC invasive front and it could be one of criteria for aggressive tumour nature.

Higher stromal VRE in main tumour mass shows statistically significant increase in lymphatic invasion, but no difference between other morphological signs of malignancy.

VISUALIZATION OF PARATHYROID GLANDS DURING THYROID SURGERY CORRELATION WITH POSTOPERATIVE CALCIUM LEVEL

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Keywords. Thyroid surgery, parathyroid glands, postoperative calcium level.

Introduction. Parathyroid glands (PT) strictly regulate calcium level through negative feedback. During thyroid surgery, thyroid gland is partially or fully removed. Number of PT is evaluated during thyroid surgery but low next postoperative day calcium serum level (< 2.1 mmol/L) – hypocalcemia (hCa) is one of the transient or permanent outcome after operation.

Aim. Evaluate and establish correlation between number of parathyroid glands observed during thyroid operation and postoperative calcium level.

Materials and methods. Retrospective study was carried out analyzing Eurocrine data since October 2015. A total of 156 patients, 145 (92.9 %) woman and 11 (7.1 %) men, had thyroid operation on both lobes. MS Excel and IBM SPSS 22 software was used for descriptive statistics and Spearman's correlation test. CaDelta (CaDelta = calcium serum level after operation – calcium serum level before operation) was used to evaluate effect of PT number on next day postoperative calcium serum level (CaPost).

Results. In 153 (98.07 %) cases CaDelta was negative. Ca delta has high correlation with CaPost (p = 0.000). hCa was observed in 88 (56.4 %) cases. In case of hCa mean CaDelta for 1, 2, 3 and 4 PT seen during operation was −0.500, −0.386, −0.346 and −0.343 mmol/L respectively. In cases of normal CaPost mean CaDelta for 1, 2, 3 and 4 PTG seen during operation was −0.170, −0.182, −0.201 and −0.174 mmol/L respectively. Mean CaDelta and PT amount for hCa is −0.355 mmol/L and 3.09 (3 PTG in 46.6 %). Mean CaDelta and PTG amount for normal CaPost is −0.187 and 2.66 (2 PTG in 39.7 %). Spearman's correlation test for hCa and normal CaPost showed no significant correlation between PT number and CaDelta.

Conclusion. After thyroid operation CaPost is lower than calcium serum level before the operation. More than the half of thyroid operations have hCa. Although the connection between the PT number seen during operation and CaPost was observed, no correlation was established.

SURVIVAL PREDICTORS IN PATIENTS WITH UNRESECTABLE PERIHILAR CHOLANGIOCARCINOMA UNDERGOING PALLIATIVE BILIARY STENTING

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Keywords. Perihilar cholangiocarcinoma, survival, predictors, palliative, stenting.

Introduction. Perihilar cholangiocarcinoma (PCCA), also called Klatskin's tumor is a rare malignancy (2–4:100,000) that originates from the epithelial cells of the bile duct. Only 30 % of them are resectable. The rest are managed palliatively. Biliary stenting is an option but there is still no consensus on factors before this procedure that affect survival.

Aim. To find out prognostic survival factors in patients with unresectable PCCA before undergoing palliative biliary stenting.

Materials and methods. This retrospective study included 36 patients from 2011–2015 with unresectable PCCA who, for the first time, underwent palliative biliary stenting in Clinical University Hospital. Data included patients sex, age, presence of liver cirrhosis, esophageal varices, ascites, hepatitis B virus infection, method of stenting (Endoscopic retrograde cholangiopancreatography (ERCP) or Percutaneous Transhepatic Cholangiography (PTCA)), stent material (plastic or metal), laboratory values before the procedure (ALAT, ASAT, alkaline phosphatise, GGT, total bilirubin, albumin, creatinine, sodium, INR), tumor markers CEA, CA19-9, MELD criteria, size of the tumor, presence of intrahepatic, extrahepatic and lymph node metastases. Data were analysed by SPSS v.20.0. Survival was analysed using Kaplan-Meier method and independent risk factors were assessed using Cox regression univariate analysis.

Results. Of 36 patients 47.2 % (17) were female and 52.8 % (19) – male. Mean age was 67.33 ± 18.25 ranging from 45 till 89. Mean overall survival (OS) from the date of procedure was 6.43 months (95 % CI: 3.701–9.15). 3-, 6- and 12-month survival rates were 47.7 %, 30.6 % and 16.7 %, respectively. ERCP was done in 22.2 % and PTCA in 77.8 % of all cases. In 54.8 % of all cases plastic stent was used and in 45.2 % – metal stent. Metal stent group was associated with higher OS compared with plastic stent group (p=0.041). Patients with MELD score of ≥ 23 had statistically higher OS (p = 0.033). Cox regression univariate analysis revealed independent risk factors: presence of oesophageal varices (p = 0.043; HR = 2.973), extrahepatic metastases (p = 0.039; HR = 4.112), albumin (p = 0.035; HR = 0.887), INR ≥ 1.4 (p = 0.025; HR = 3.069), CA19-9 ≥ 200 (p = 0.049; HR = 3.261), CEA ≥ 14 ng/ml (p = 0.005; HR = 5.014).

Conclusion. Patients in metal stent group had better OS than those in plastic stent group. Most important prognostic factors before stenting were presence of oesophageal varices, albumin level, INR, CA19-9, CEA, MELD score and presence of extrahepatic metastases.

COMPARISON BETWEEN RADICAL NEPHRECTOMY AND NEPHRON SPARING SURGERY OVER ALL STAGES: ONCOLOGICAL, FUNCTIONAL AND SURGICAL OUTCOME ANALYSIS

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Keywords. Renal cell cancer carcinoma, radical nephrectomy, nephron sparing surgery, oncological outcome, functional outcome, co-morbidity.

Introduction. Currently it is recommended by the 2015 EAU guidelines on renal cell carcinoma (RCC), that nephron sparing surgery (NSS) should be performed for T1a and T1b tumours. However, the premise of this study at the Hospital of Bolzano, was to perform NSS whenever technically possible.

Aim. This study compared the long-term oncological and functional outcome as well as the surgical complications of NSS versus radical nephrectomy (RN) for any RCC over all stages (T1–T4).

Materials and methods. Between April 2000 and June 2016, 329 patients underwent renal surgery for RCC. 129 women and 263 men with a median age 65 (range 23–88) were operated. 162/392 (41.3 %) experienced a RN, 239/392 (58.7 %) a NSS. We compared overall survival (OS), cancer specific survival (CSS), disease free survival (DFS), functional parameters and surgical complications in both groups. Median follow-up time for these patients was 48.08 months (range 0.26–194.43).

Results. Compared to RN, patients with NSS showed a significantly higher DFS (78.4 % *vs.* 97.8 %, p < 0.001) and CSS at 10 years (78.4% *vs.* 97.8 %, p < 0.001), whereas the 10 years OS in both groups did not differ significantly (RN 65.3 % *vs.* NSS 91.9 %, p = n.s.). 4 % of NSS had a positive resection margin (PRM) but only 0.4 % developed a recurrence within 23 months. 7 % of the NSS group developed metastases but 28.1 % of the RN group within the follow-up period. Renal function preservation was better in the NSS group with a median glomerular filtration rate 65 ml/min/1.72 m² (6–113) for NSS *vs.* 54 ml/min/1.72 m² (1.73–144) for RN at the last follow-up (p < 0.001). The new onset of chronic kidney diseases was significantly less in the NSS group. Total complication rate was significantly less in the RN group (5.6 % *vs.* 8.9 %) but became comparable in the last years of observation.

Conclusion. NSS was performed whenever technically possible but was obtained with a higher but acceptable surgical complication rate. It could be shown that also for higher stages of RCC, NSS can be safely performed. Renal function preservation, CSS and DFS were better in the NSS group but surprisingly NSS did not lead to a better OS. This stands in contrast to the most published studies of the last decades.

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5 April 2017

IV. MORPHOLOGY, GENETICS

ANALYSIS OF HEREDITARY PANCREATITIS CAUSING MUTATIONS IN LATVIAN PEDIATRIC PATIENTS WITH PANCREATIC DISORDERS

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Keywords. Hereditary pancreatitis, *PRSS1, SPINK1, CFTR.*

Introduction. Hereditary pancreatitis (HP) is rare diverse group of genetic disorders with different types of inheritance and incomplete penetrance. Most common genetic causes of HP are associated with genetic variants in genes *PRSS1, SPINK1* or *CFTR* in total being responsible for approximately 95 % of all HP cases in patients of European ancestry. HP has variable clinical manifestations e.g. idiopathic acute pancreatitis, recurrent acute pancreatitis, idiopathic chronic pancreatitis etc.

Aim. The aim of the study was to analyse the occurrence of the HP causing genetic variants in Latvian pediatric patients with pancreatic disorders.

Materials and methods. Patients were enrolled in Children's University Hospital (Riga, Latvia). Eleven patients were included into the study – seven patients with diagnose of recurrent acute pancreatitis and four patients with idiopathic pancreatic insufficiency. Direct automated sequencing was used for *PRSS1* gene pathogenic allelic variants (R122H, N29I, A16V) and *SPINK1* gene pathogenic allelic variant (N34S) detection. CFTR gene 50 most common mutations were analysed using Elucigene CFEU2v1 kit.

Results. One patient with recurrent pancreatitis has N34S (*SPINK1* gene) variant in heterozygous state, but we were unable to find second pathogenic variant in the genes *SPINK* or *CFTR* to confirm the diagnosis of HP. The patient's mother's DNA was available for the analysis. The patient's mother also is a carrier of N34S variant but is asymptomic. In other patients no pathogenic variant were found. One patient with recurrent pancreatitis has very rare *PRSS1* gene variation A131T (Minor allele frequency in the World = 0.00005). According to nowadays available evidence that variant could be classified as a variant of unknown clinical significance. The patient's parent's DNA was not available for the A131T variation segregation analysis.

Conclusion.
1. Hereditary pancreatitis causing mutations are uncommon among Latvian pediatric patients with pancreatic disorders.
2. Further studies are necessary to reveal the A131T variation influence on *PRSS1* protein function and its role in the HP.
3. *PRSS1, SPINK1, CFTR* and other gene's coding regions must be analysed to find rare causes of hereditary pancreatitis.

ANALYSIS OF OPPORTUNISTIC DISEASES IN FATAL HIV/AIDS CASES IN LATVIA

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Keywords. HIV, opportunistic infections (OI).

Introduction. Every year 300–400 new cases of HIV/AIDS are diagnosed in Latvia and a mean (ME) of 60 HIV patient autopsies are performed at the RECUH Pathology center (PC). Contrary to the situation in other European Union (EU) countries, AIDS is increasing in Latvia and the rate of AIDS cases per population is 6.6 per 100,000 compared to 0.9 per 100,000 in the EU as a whole. HIV-Tuberculosis (TB) co-infections have also increased in recent years. An increasing trend of HIV- related deaths has been observed in Latvia. Clinical examinations of HIV patients are advanced but as they are often admitted terminally ill and die within hours investigation is limited both by patient condition and time. (Vīksna, 2016; Stūre u. c., 2017) Autopsy confirms or elaborates the clinical diagnosis.

Aim. To determine the contribution of opportunistic diseases in HIV cases to the lethal outcomes of patients in Latvia.

Materials and methods. Our study is retrospective. HIV patient autopsy protocols for the time period 2010–2016 were reviewed for gender, age and stage at time of death, social status, hospital stay (HS), clinical diagnosis on last admission, pathological diagnosis. Data was analysed in IBM SPSS Statistics.

Results. 17 % (n = 455; 141 females; 314 males) of all medical autopsies performed in PC in the time period 2010–2016 were of HIV/AIDS patients. Age range at the time of death was from 22 to 68 years (ME = 40), HS range from several hours to 280 days (Median = 10). 72 % were unemployed, 9 % disabled, 8 % were prisoners. 82 % of patients had C3 stage at the time of death. HIV/Hepatitis C virus (HCV) and HIV/TB co-infections were indentified in 42 % and 25 % of cases respectively. 73 % of all TB cases were disseminated, rest were TB pneumonia. 6 % and 52 % of patients with decompensated liver cirrhosis (n = 80) died from esophageal bleeding and intoxication respectively. Malignancies which were proved in analysed HIV cases were: 28 lymphomas, 20 carcinomas and 4 Kaposi sarcomas. 5 Aspergillosis, 10 atypical mycobacteriosis, 114 Candidosis (19 invasive), 47 Cryptococcosis (25 extrapulmonary), 71 Pneumocystis jiroveci and 40 Cytomegalovirus pneumonias, 27 cerebral toxoplasmosis cases and various combinations of OI were found.

Conclusion. Dissemination and a combination of several OI at the time of death are characteristic for HIV/AIDS related deaths in Latvia. Most common HIV co-infections are TB and HCV. Lungs (74 %), liver (58 %) and brain (34 %) are the most frequently affected organs. Direct causes of death are various pneumonia (32 %), intoxication (45 %) due to liver failure, malignancies, disseminated OI and sepsis as well as different CNS lesions (23 %).

ANGIOGENESIS EFFECT ON TUMOUR GROWTH IN PANCREATIC DUCTAL ADENOCARCINOMA

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Keywords. Pancreatic ductal adenocarcinoma, tumour angiogenesis, microvessel density.

Introduction. Pancreatic ductal adenocarcinoma (PDAC) is the most common pancreatic malignancy with a very poor prognosis. Tumour growth is highly dependent on angiogenesis, and tumour will not exceed the size of 1–2 mm^3 without induction of angiogenesis (Carmeliet et al., 2000). Therefore, it is essential to understand mechanisms of tumour angiogenesis (TA), in order to find new anti-angiogenic therapies, and develop prognostic factors for treatment and patient outcome.

Aim. The aim of this study was to evaluate relationship between TA and tumour size in PDAC.

Materials and methods. The retrospective study included 24 cases of PDAC operated in a single university hospital from 2011 till 2013. Cases were characterized by patient's age, tumour localization and size. *Tumour volume (TV)* was *calculated* using the *ellipsoid formula.* Microvessel density (MVD) in histological tumour sections was used as a marker of TA. Microvessels (MV) were identified by immunohistochemical staining for CD34. In each case, three most vascularized areas (*hotspots*) were selected at low power magnification (X40). Then MV were counted in each *hotspot* at high power magnification (X200) using the manual object count feature of NIS-Elements software. For each case, an average of three MV counts was used to calculate MVD (MV per mm^2). Statistical analysis was performed by IBM SPSS software. Spearman's rank correlation coefficient (r_s) was used to analyse the relationship between MVD and both tumour size and TV. Significance was considered with $p < 0.05$.

Results. The study included 24 patients with a mean age of 64 years [95 % confidence interval (CI) = 59.7–68.3], with range 35–77 years. Most of the tumours were found in the head of the gland (75 % [65.7–82.5]), the remainder occurred in the head and body, in the body and/or tail. Mean size of tumour was 3.1 cm [2.6–3.5] with range 0.1–4.8 cm. Mean TV was 10.58 cm^3 [6.62–14.54], median TV – 7.48 cm^3, with 75 % of tumours smaller than 12.38 cm^3, maximum TV – 36.36 cm^3. Mean MVD was 206.3 MV/mm^2 [178.4–234.3] with range 121.9–326 MV/mm^2. A weak positive correlation was found between MVD and tumour size, but was not statistically significant (r_s = 0.244; p = 0.250). Similarly, a weak positive correlation was found between MVD and TV, but was not statistically significant (r_s = 0.288; p = 0.173).

Conclusion. This study demonstrated positive correlations between MVD and tumour size and between MVD and TV, implying that a relationship may exist between tumour growth and TA, even though the correlations were weak and not statistically significant. Thus, further studies are needed.

ANTROPOMETRIC CHARACTERISTICS OF MIDDLE AGE WOMEN WITH AND WITHOUT HYPERTENSION

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Keywords. Body mass index, hypertension, menopause, obesity.

Introduction. As aging is a natural process it is important to maintain a healthy blood pressure (BP 120/80 mmHg or less) and body mass index (BMI 19–24,9) especially after age of 40 when metabolism slows down due to fluctuations of hormone level. According to Eurostat, in 2015 67 % of United Kingdom, 64 % of Estonia and 50 % of Germany female residents (aged 45–64) are obese (BMI > 30) or overweight (BMI > 25). Obesity is a public health concern associated with increased morbidity and mortality and predisposes to many diseases even more if hypertension is present. Obese women frequently suffer from hypertension in midlife in comparison with those with normal BMI (Lima et al., 2012).

Aim. To analyse and to compare body composition of middle age women with and without hypertension in the selected study group.

Materials and methods. The prospective cohort study included 30 women aged 40 to 65 years. Main research method was a survey including anthropometric measurements (weight, height, waist and hip circumferences, skinfold thickness) and vital signs (pulse, BP).

BMI, waist to hip ratio (WHR), total subcutaneous fat and Deurenberg's equation were used as main indications.

Results. Respondents were divided in two subgroups: 1st (N = 15) included women with normal BP (123/81 mmHg in average, max 138/92 mmHg, min 104/70 mmHg). 2nd subgroup (N = 15) included women with hypertension (average BP 139/92 mmHg, max 167/128 mmHg, min 105/65 mmHg. Hypertension medication users were also included in the 2nd group (N = 8).

Average anthropometric parameters for the 1st group: age – 48.5 years, weight – 68.4 kg, height – 163.8 cm, BMI – 25, WHR – 0.80, total subcutaneous fat – 70.7 mm, body fat – 37 %. In average, women of the 1st subgroup show adequate results for healthy body composition according to World Health Organization criteria. A slight tendency of overweight is observed.

Anthropometric parameters for 2nd group show strong predisposition to obesity with average BMI – 30, WHR – 0.86, total subcutaneous fat – 77.6 mm, body fat – 42 %. Average age – 53.3 years, weight – 80.5 kg, height – 164.7 cm. Better body composition was detected for hypertension medication users.

In comparison with the 1st group the 2nd present 20 % higher BMI, 7.5 % – WHR, 8.9 % – subcutaneous fat and 13.5 % more body fat.

Conclusion. Eurostat data shows that 70 % of Latvia middle age female residents are obese or overweight which is one of the highest indications in the European Union. Two thirds of respondents match these criteria.

In the study group obesity correlates with high BP. Tendency increases with age since the average is 48.5 years of the 1st group and 53.3 for the 2nd.

BP awareness should be encouraged to maintain a healthy lifestyle in women as they transition from pre-menopause to post-menopause to prevent cardiovascular disease outcomes.

CHROMOSOMAL ABERRATION IN COLORECTAL CANCER FAMILY

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Keywords. Lynch syndrome, chromosomal aberration, *BRE*.

Introduction. In this study we karyotyped colorectal cancer (CRC) patients corresponding to either Amsterdam I/II criteria or Bethesda guidelines, which had been tested negative for mutations in Lynch genes, to determine if they had potentially heritable chromosomal aberrations which could be responsible for increased risk of malignancy.

Aim. To identify chromosomal aberrations which may lead to colorectal cancer.

Materials and methods. The study group consisted of 35 Lynch syndrome patients matching Amsterdam I/II criteria or Bethesda guidelines. All patients had been hospitalised during 2002 and 2012 in PSKUS, Oncology Centre of Latvia or Oncology Centre of Daugavpils. DNA samples were retrieved from the RSU Institute of Oncology biobank. The presence of point mutations in the *MLH1, MSH2* and *MSH6* genes were excluded by Sanger sequencing. Chromosomal aberrations were searched for with microarray technology using HumanExome-12 v.1.1 and HumanOmniExpress-24 v.1. BeadChip Kits. Data analysis was performed by GenomeStudio v1.8. B allele frequency and Log R ratio were used to visualize chromosomal aberrations.

Results. Only one of the analysed patients was found to have a potentially clinically significant loss of heterozygosity. This patient was diagnosed with CRC at age 67; his mother and aunt were also diagnosed with CRC at 64 and 62 years respectively. His family did not meet Amsterdam I/II, due to relatively high age of members at cancer diagnosis, but did meet Bethesda guidelines. Both relatives had died at the age of 65. In our first run with the lower SNP density chip (> 240,000 SNP markers), we found an alteration consistent with a large duplication in chromosome 2. The aberration spans bands 2p21–2p23.2, with a total length of approximately 15.7 Mbp. Using a higher SNP density chip (> 713 014 SNP markers), we determined that the anomaly is in fact a duplication framed by two smaller deletions. The duplication contains coding regions of 76 genes, per RefSeq; including *PRKD3, MTA3* and *SOS1*, whose overexpression has been shown to be associated with malignancy. More interestingly, the framing deletions contain coding regions of six genes; the larger, preceding deletion, contains *BRE. BRE* codes for a component of the BRCA1-A complex, the best understood of the BRCA1 complexes, which has a significant role in DNA repair. With one incapacitated copy of *BRE* at birth, our patient would have had his first hit to a significant DNA repair gene; a scenario, we propose, not dissimilar to inheriting a mutated MMR gene. It is tempting to infer that the patient and his relatives acquired CRC due to this deletion.

Conclusion. Chromosomal aberrations are an uncommon cause of Lynch syndrome. Inactivation of *BRE* may lead to oncotransformation.

CYCLIN D1, KI67 AND P53 EXPRESSION IN PULMONARY SMALL CELL CARCINOMA, ADENOCARCINOMA AND SQUAMOUS CARCINOMA

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Keywords. Small cell cancer, adenocarcinoma, squamous carcinoma, lung cancer, Ki67, cyclin D1, p53.

Introduction. Lung cancer is the leading cause of the global oncological mortality (Alberg et al., 2013). Assessment of the histologic tumour type and molecular profile is important for selection of treatment (Travis et al., 2013). Immunohistochemistry (IHC) provides valuable data regarding the protein spectrum and histologic type of lung cancer. Specific markers can provide information about molecular pathways of carcinogenesis in particular cancer types.

Aim. The aim of the study was to evaluate the expression of cyclin D1, Ki67 and p53 in the three major histologic types of lung cancer.

Materials and methods. A retrospective study design was selected, enrolling 68 lung cancer cases (2014), diagnosed in a single university hospital. All cases had a verified diagnosis of lung cancer in tissue material and available IHC stained histologic slides. To ensure diagnostic consistency, the researchers re-evaluated haematoxylin and eosin-stained slides of all cases. IHC expression of cyclin D1, Ki67 and p53 was scored by a semi-quantitative approach. Statistical analysis was performed by IBM SPSS software. Differences were considered significant if $p < 0.05$.

Results. The IHC profile of squamous cell carcinoma was characterised by the following mean levels of expression: cyclin D1 – 24.3 % [95 % CI = 14.8–33.7], Ki67 – 51.1 % [45.8–56.4], p53 – 42.3 % [29.9–54.8]. In adenocarcinoma, the mean expression of cyclin D1 was 29.6 % [21.2–38.0], of Ki67 – 34.1 % [27.7–40.6], and of p53 – 34.5 % [23.7–45.2]. Small cell carcinoma presented the following mean expression levels: cyclin D1 – 5.4 % [2.0–8.8], Ki67 – 57.5 % [43.7–71.2], p53 – 63.4 % [31.7–95.2]. Regarding cyclin D1, there was a significant difference between adenocarcinoma and small cell carcinoma ($p = 0.001$). For Ki67, significant differences were observed between squamous cell carcinoma and adenocarcinoma ($p = 0.0003$) as well as between adenocarcinoma and small cell carcinoma ($p = 0.0001$). The differences for p53 expression had no statistical significance ($p > 0.05$).

Conclusion.
1. Small cell carcinoma is characterised by the highest proliferation fraction by Ki67 expression. The mean expression of Ki67 is significantly higher in squamous carcinoma than in adenocarcinoma.
2. The mean expression of p53 showed no significant differences between different lung cancer types.
3. Expression of cyclin D1 is lowest in small cell carcinoma which can be implied as diagnostically important. The mean expression of cyclin D1 is significantly higher in adenocarcinoma than in small cell carcinoma hypothetically presenting a treatment target.

DETECTION OF ALLELIC VARIANTS OF THE *POLE* AND *POLD1* GENES IN COLORECTAL CANCER PATIENTS

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Keywords. Colorectal cancer, *POLD1*, *POLE*, DHPLC.

Introduction. Colorectal cancer is caused by an accumulation of environmental and genetic factors. The incidence of new colorectal cancer cases were 342.1 per 100,000 and – 150 death per 100,000 individuals of both sexes in 2012 in Europe. Alterations in the *MLH1*, *MSH2* or *MSH6* genes can lead to hereditary non-polyposis colorectal cancer. Allelic variants of these genes cover only part of hereditary colorectal cancer cases. Also there is a newly discovered correlation between allelic variants of the *POLE* and *POLD1* genes and colorectal cancer.

Aim. The aim of the present study was to develop a new method of chromatography for identifying polymorphisms and to use it for a replicative study to estimate prevalence and confirm pathogenicity of allelic variants in *POLE* rs483352909 and *POLD1* rs397514632 and colorectal cancer.

Materials and methods. 1749 colorectal cancer patient and 384 control DNA samples were taken from the biobank of Rīga Stradiņš University Institute of Oncology. The DNA samples were screened for allelic variants of *POLE* rs483352909 and *POLD1* rs397514632. PCR was done using a proofreading polymerase. The PCR product was then analysed by denaturating high performance liquid chromatography (DHPLC). This new method was developed and then validated by using wildtype DNA and positive controls. Deviations from wildtype chromatograms were then analysed by Sanger sequencing using capillary electrophoresis. The NCBI and SNP database were used to identify found polymorphisms.

Results. The newly developed method showed great reliance in detecting polymorphisms. This was tested thoroughly by using negative and positive controls. All screened patients were negative for the allelic variant rs483352909 of the *POLE* gene. Only one sample showed a disturbed chromatographic peak profile. Upon sequencing, it was identified as the allelic variant rs373243003 (c.1227-49C > T), which is probably benign as the base substitution is in the intron and may not affect the protein synthesis. Neither the allelic variant rs397514632 of the *POLD1* gene was found in any patient. Nevertheless, a duplication of 4 nucleotides at the excision site between intron and exon (c.1384-5dupCCTA) was found, which may alter the splicing site. The patient carrying this allelic variant was diagnosed with colorectal cancer at the age of 73. He reported no family history of colorectal cancer but the full pedigree for this family is not available.

Conclusion. A new DHPLC method for detection of allelic variants of the *POLD1* and *POLE* was developed. A new allelic variant (c.1384-5dupCCTA) in *POLD1* with possible effect on splicing and clinical significance was identified. Prevalence of allelic variants with putative clinical significance of the *POLD1* and *POLE* genes in Latvian colorectal cancer patients is very low and these allelic variants could be excluded from genetic screening in Latvia.

DSG2 GENE VARIATIONS AND THEIR POSSIBLE CAUSATION OF ARRHYTHMOGENIC RIGHT VENTRICULAR DYSPLASIA IN LATVIAN ARVD REGISTRY PATIENTS

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Keywords. Arrhytmogenic right ventricular dysplasia, *DSG2.*

Introduction. Arrhytmogenic right ventricular dysplasia (ARVD) is a rare (1:2,000–1:5,000) disease that is characterized by progressive myocardial cell replacement by fibrous tissue that can lead to arrhythmias. It is caused by different genetic variations, many of them still with unknown clinical significance.

Aim. To determine if *DSG2* gene variations: c.379-15A > G; c.404G > A; c.430G > A; c.828+13C > A; c.1107G > A are possible causes of ARVD.

Materials and methods. 20 ARVD patients were enrolled in the study. Direct sequencing in the *DSG2* gene was performed. In order to evaluate pathogenicity of novel variants found in the *DSG2* gene, all variants were detected in the control group that consisted of 50 self-reported healthy individuals. Determined minor allele frequencies (MAF) were compared for evaluating variation's ability to cause ARVD. Genetic variations that cause amino acid change were analysed by SIFT and PolyPhen2 for their possible pathogenicity.

Results. In the *DSG2* gene exon 9 genetic variation c.1107G > A does not cause amino acid change. It was found in 1 patient allele, but none in control group, MAF 0.04 and 0, respectively (p = 0.96).

In exon 8 genetic variation c.828+13C > A does not cause amino acid change. It was found in 1 patient allele and in 30 control alleles, MAF 0.04 and 0.29, respectively (p = 0.001).

In exon 5 there were 3 genetic variations analysed:

1. c.379-15A > G does not cause amino acid change. It was found in 1 patient allele and 21 control allele (MAF 0.04 and 0.3, respectively; p < 0.001);
2. c.404G > A causes amino acid change Arg135Lys. It was found in 1 patient allele and 5 control alleles (MAF 0.04 and 0.05 respectively; p = 0.52). Analysis by SIFT showed 82 % chance of neutral variation, PolyPhen-2 – 87 % chance;
3. c.430G > A causes amino acid change Glu144Lys. It was found in 1 patient allele and 2 control alleles (MAF 0.04 and 0.02, respectively; p = 0.83). Analysis by SIFT showed 66 % chance of neutral variation, PolyPhen-2 – 71 % chance.

Conclusion. Out of five novel *DSG2* genetic variations in ARVD patients, one might be pathogenic: c.1107G > A, based on frequency differences between patient and control group. Genetic variations c.828+13C > A and c.379-15A > G probably are protecting, based on frequency differences between patient and control group. More research is needed to confirm or deny variation's pathogenicity.

INFLAMMATORY CELLS IN LUNG CANCER TISSUES BY HISTOLOGICAL TYPE AND COMPARTMENT

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Keywords. Neutrophils, lung cancer, adenocarcinoma, squamous cell carcinoma.

Introduction. Intratumoural inflammatory infiltration, in particular neutrophils, represents a desirable target in nowadays research. However, the present published data are rather contradictory. With the development of innovative cell-specific therapies, in-depth studies of the immune and inflammatory cell component in tumours gain importance. Lung cancer, known for its dismal prognosis and high incidence, represents a reasonable research target.

Aim. The goal of the study was to assess the density of inflammatory cells by tumour compartments in correlation with tumour size and nodal status in pulmonary adenocarcinoma (AC) and squamous cell carcinoma (SCC).

Materials and methods. The study was carried out by retrospective design. It comprised 73 non-small cell lung cancers (NSCLC), including 40 AC and 33 SCC. To ensure diagnostic consistency, the slides were re-evaluated, and the tumours – reclassified by the current WHO and TNM classifications (Travis et al., 2015). The tumour tissues, stained by haematoxylin and eosin, were subjected to microscopic analysis in order to detect the density of intratumoural and stromal inflammatory cells (neutrophils, eosinophils, monocytes). In each compartment, inflammatory cells were counted in 3 high-power fields. The statistical analyses, including Mann Whitney U test and Spearman's correlation were performed using IBM SPSS 22.0 software. Differences were considered significant if $p < 0.05$.

Results. No statistically significant difference ($p > 0.05$) was found between AC and SCC regarding intratumoural inflammatory cells, and stromal neutrophils and monocytes. However, AC exhibited higher numbers of stromal eosinophils ($p < 0.05$). In AC, correlation was found between the intratumoural neutrophils and T parameter ($p < 0.05$, correlation coefficient + 0.316), whereas in SCC no correlation was found. In both types of tumours, no correlation was found between intratumoural and stromal eosinophils and monocytes and T parameter, as well as between intratumoural and stromal neutrophils and eosinophils and the N parameter. In AC, stromal monocytes correlated negatively with N parameter ($p < 0.05$, correlation coefficient – 0.424).

Conclusion. AC and SCC, representing the main types of NSCLCs, are characterised by different local inflammatory responses. AC holds significantly higher count of stromal eosinophils in comparison with SCC. The intratumoural infiltrate shows no differences by tumour type.

In AC, intratumoural neutrophils correlate positively with T parameter and stromal monocytes correlate negatively with N parameter. Hypothetically, neutrophil-specific therapy could be beneficial in AC.

LOCOMOTOR ACTIVITY OF *DROSOPHILA MELANOGASTER* LARVAE WITH ALTERED FUNCTION OF GENE *SWISS CHEESE*

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Keywords. *Swiss cheese* (*sws), Drosophila melanogaster,* motor activity, neuro-degeneration.

Introduction. Gene *swiss cheese* (*sws*) in *Drosophila melanogaster* is ortholog of human gene Neuropathy Target Esterase (*NTE*), known as well as *PNPLA6* (patatin-like phospholipase domain-containing protein 6). The Swiss cheese protein (SWS) shares 39 % sequence identity with NTE. The SWS/NTE is characterized by presence of four basic domains: three nucleotidbinding domains, those provide binding of catalytic subunit of protein kinase of PKA – C3, so regulating its protein kinas activity; and one esterase domain, that slits organophosphates, which cause delay neuropathy in vertebrates. Point mutation in these gene lead to many neurodegenerative disorders, such as Spastic Paraplegia. It is a disease whose main feature is progressive stiffness as a result of damage to or dysfunction of the nerves. Pathology has an impact on motor functions, so our objective was to estimate locomotor activity of *sws* mutants.

Aim. Our work was dedicated to research of *D. melanogaster* larvae activity in mutant lines *sws* and individuals with overexpression of separate domains and complete SWS protein in motoneurons.

Materials and methods. We have used transgenic lines of *D. melanogaster*: *UAS-sws-RNAi, UAS-sws, No. 5* (three nucleotidbinding domains SWS), *No. 1* (esterase domen SWS). We have used *D-42 – GAL4* driver which expression in motoneurons. And for our research we used two mutant lines: *sws¹* (the *sws¹* kindly provided by Dr. Doris Kretzschmar), *sws⁷⁶⁻¹⁵* (was obtained at the Ivan Franko National University of L'viv). Locomotor assay was performed in third-instar larvae. Larvae were placed in Petri dish previously with 5 % agarose, and we measured distance which larva overcame for a minute. To calculate and compare our results we used two-sample t-test.

Results. We have found that larvae *sws⁷⁶⁻¹⁵* and *sws¹* showed significant decrease of motor behavior in comparison with wild type: *sws¹* has 49.4 %, and *sws⁷⁶⁻¹⁵* 39.4 % difference with *Oregon R*. Functional knockout of *sws* in motoneuron showed decrease of motor activity as well – 11.8 % less than control. Esterase domen overexpression in larvae motoneurons leads to reduce motor activity by 37 %. In larvae with activated double copy of three nucleotidbinding domains index of motor activity was 26 % less than control. Overexpression sequences of complete SWS protein in motoneurons causes significant increment in motor activity about 45.5 %.

Conclusion. Summarizing obtained data we can conclude that gene *sws* is critical for larvae motor activity in *D. melanogaster*. Flies with altered *sws* function are good model of spastic paraplegia study.

MORPHOLOGIC CHARACTERISTICS OF VARICOSE VEINS AFTER DIFFERENT ABLATION TECHNIQUES

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Keywords. Varicose veins, Laser ablation, Immunohistochemistry.

Introduction. Varicose vein disease is a disorder of the lower extremities deep veins showing decreased venous muscle tone, veins dilatation, insufficiency, valve incompetence and high venous pressure. Nowadays the etiology and pathophysiology behind formation of varicose veins remain still multifactorial and unclear. Despite findings like intimal hypertrophy, thinning of the muscle layer and deficiency in elastic fibers still there is a lack of issues in morphology of varicose veins after laser therapy.

Aim. Discover changes in walls of varicose veins after endovenous, 1940nm laser ablation with 3 different ablation techniques.

Materials and methods. During reconstructive therapy three varicose veins were taken from patients after different ablation techniques. First case was heated by pulling spiral laser wire. Second vein was heated by pulling radial laser wire. Third vein was heated by spiral laser wire without pulling. As a control was used wall of intact vein. Sections were stained routinely and by immunohistochemistry with: Vascular endothelial growth factor (VEGF), endothelin-1 (ET-1), Protein gene product 9.5 (PGP 9.5), interleukin-10 (IL-10), Beta-defensin 2 (BD-2), Intercellular Adhesion Molecule 1 (ICAM-1), Vascular cell adhesion molecule 1 (VCAM-1), tissue inhibitors of metalloproteinases 2 (TIMP-2), Matrix metalloproteinase2 (MMP-2), Collagen 4 (Col4), Laminin, Fibronectin (FN1). Slides were analysed in 100 ×, 200 × zoom and estimated using semi-quantitative determination.

Results. Control and experimental veins showed moderate number of VEGF positive cells except heated by pulling spiral laser wire vein – few VEGF-containing cells. ET-1 expression was in moderate cells both in control and in experimental group except heated by spiral laser wire vein- numerous ET-1 positive cells. PGP 9.5, IL-10 and Beta-defensin 2 were seen in moderate number of structures in control and research group. ICAM-1 and VCAM-1 marked numerous cells except heated by pulling radial laser wire vein – moderate number of positive cells. Moderate number of MMP-2 cells was seen. In heated by spiral and radial laser wire veins MMP-2 was absent in tunica intima. FN1 was richly expressed in all tissues. Few TIMP-2 cells were observed in control and heated by pulling spiral laser wire vein. Numerous Col4 and laminin marked basal membrane in control and heated by pulling spiral laser wire vein.

Conclusion. The radial laser wire and spiral laser wire without pulling rise the most destructive changes in vein morphology. Disruption of Col4 indicates the seriously damaged basal membranes and also the ground substance of connective tissue in internal layer of vein followed by depression of MMP inhibitors.

NEUTROPHIL-TO-LYMPHOCYTE AND PLATELET-TO-LYMPHOCYTE RATIOS AS BIOMARKERS OF COLORECTAL CANCER SPREAD AND INVASION

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Keywords. Neutrophil-to-lymphocyte ratio, platelet-to-lymphocyte ratio, colorectal cancer.

Introduction. Colorectal cancer (CRC) is the 3rd most common cancer in males and the 2nd in females (Torre et al., 2015). According to Centre for Disease Prevention and Control, CRC is also the 3rd most frequent cancer in Latvia by incidence. Cancer stage and extent of local invasion are important for treatment selection. Therefore, novel biomarkers are necessary to improve the preoperative evaluation of CRC patients. Systemic inflammatory reaction (SIR), characterised by ratios between blood cell counts, is a promising tool, based on correlation with TNM (Jia et al., 2014). However, the best marker still has to be specified.

Aim. The aim of this study was to assess relations between preoperative SIR markers and extent of CRC invasion in patients undergoing radical surgical treatment.

Materials and methods. Retrospective analysis comprised 238 consecutive patients who underwent radical surgery and were diagnosed with morphologically confirmed CRC (2013–2015) in a single university hospital (Riga, Latvia). The data were retrieved by archive search. Preoperative whole blood counts were used to calculate neutrophil-to-lymphocyte (NLR), platelet-to-lymphocyte (PLR) ratios. Tumour morphology including TNM stage and vascular, perineural and lymphatic invasion was systematically evaluated by protocol approach. Statistical analysis was performed using SPSS 23 and included descriptive statistics, Mann-Whitney and Chi square tests. Descriptive data were expressed as median values with interquartile range (IQR), frequency with 95 % confidence interval (CI) or means with standard deviation (SD). $p < 0.05$ was considered significant.

Results. The study group comprised 238 patients at the mean age of 64.5 (SD 12.5; CI = 62.9–66.1) years. The gender distribution was following: males, 50.8 % (CI = 44.5–57.1) and females, 49.2 % (CI = 42.9–55.5). The study group showed predominance of adenocarcinomas (87.4 %; CI = 82.5–91.1) *versus* mucinous cancers (12.6 %; CI = 8.9–17.5); high pT (T1–2: 30.7 %; CI = 25.2–36.8 *versus* T3–4: 69.3 %; CI = 63.2–74.8) and pN+ in 39.2 % (CI = 33.5–45.8) of cases. There was a statistically significant difference in PLR between pT1–2 (median, 124.7; IQR 93.7–206.8) and pT3–4 cases (median, 186.7; IQR 124.2–256.0; p = 0.03). 78.4 % (CI = 71.3–83.8) of pT3–4 patients had NLR ≥ 2.0 *vs.* 57.1 % (CI = 44.8–67.0) of pT1–2 patients (p = 0.08). None of the ratios was significantly different between cancers with or without perineural, lymphatic and vascular invasion.

Conclusion. In CRC patients, economically feasible ratios between blood cell counts imply significant information. High preoperative PLR is associated with more advanced local spread (pT3–4). High NLR shows a trend to such association, thus PLR is considered the most informative SIR biomarker.

RETROSPECTIVE EVALUATION OF THE FINDING OF 98 BENIGN THYROID DISEASES IN 144 PATIENTS UNDERGOING THYROID SURGERY FOR PRESUMED PAPILLARY THYROID MICROCARCINOMA

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Keywords. Papillary thyroid microcarcinoma, nodular goiter, chronic thyroiditis, proliferative lesion.

Introduction. Despite long term investigations, problems in diagnostics, prophylactic and rationale treatment for patients with papillary thyroid microcarcinoma (PTM) is still the matter of discussions. The analysis of connection between PTM and associated pathology of thyroid (APT) is important for development the new ways of clinical prophylactic of thyroid cancer.

Aim. Analysis of the morphological features and invasive characteristics of PTM and associated pathology of thyroid.

Materials and methods. The research based on retrospective study of 144 clinical observations of histology verified PTM in the SAA, Kyiv within 2012–2016 years was done. An average age of patients was 50.4 (from 18 to 77). Statistical analysis of clinical material was carried out using the "Microsoft Excel 2010" ("Microsoft Corp.", USA) packet analysis statistics.

Results. From 144 clinical cases the PTM without associated pathology of thyroid (PTM/nAPT) was diagnosed by 46 patients ($30.5 \pm 7.5\%$). By 98 patients were verified proliferative and nodular thyroid lesions (PTM/wAPT) ($69.5 \pm 7.5\%$). From the APT the following variants were studied: goiter (multinodular, diffuse, nontoxic, colloid) – $37.7 \pm 9.6\%$, Hürthle Cell adenoma– $3 \pm 3.4\%$, chronic thyroiditis (Hashimoto, Riedel's, De Quervain's) – $29.6 \pm 9.0\%$. Clinical observations of PTM associated with oxyphillic adenoma, nodular goiter and chronic thyroiditis was $29.7 \pm 9.0\%$.

An average size of PTM by PTM/nAPT was smaller than by PTM/wAPT: 3.3 ± 0.8mm and 6.2 ± 1.4 mm ($p < 0.05$). Adjacent tissue invasion by PTM/wAPT patients was diagnosed more often than by PTM/nAPT (35 ± 9.4 and $32 \pm 13.5\%$). However, significance of tumor capsular invasion (41 ± 14.2 and $20 \pm 7.9\%$); paratracheal lymph nodes (Group VI) invasion ($17 \pm 10.9\%$ and $13 \pm 6.7\%$); multifocal tumor growth ($46 \pm 14.4\%$ and $35 \pm 9.4\%$) exceeded by PTM/nAPT patients. In accord to descriptive statistics, odds ratio (OR) for PTM/nAPT was: tumor capsular invasion – 2.75 ($\chi^2 = 6.9$; $p < 0.05$); tissue invasion – 2.8 ($\chi^2 = 9.47$; $p < 0.05$), multifocal tumor growth – 1.7 ($\chi^2 = 1.21$; $p < 0.05$). Given results were considered OR to be a predictor.

Conclusion. The research of the PTM clinical cases points to more aggressive characteristics of PTM/nAPT. Proliferative and nodular lesions of thyroid is considered to be prognostic features. Nevertheless, associated pathology of thyroid is an important reason, which complicates a verification hides the signs of cancer.

SCREENING FOR MITOCHONDRIAL DNA MUTATIONS C1494T AND A1555G IN TUBERCULOSIS PATIENTS IN LATVIA

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Keywords. Ototoxicity, aminoglycosides, mitochondrial DNA, SNP, Latvia.

Introduction. Ototoxicity (refers to drug or chemical-related damage to the inner ear) is an irreversible adverse effect of aminoglycosides. C1494T and A1555G mutations in the mitochondrial 12S rRNA are some of the most often observed mutations associated with aminoglycoside ototoxicity. A1555G mutation causes increased aminoglycoside attraction to 12S rRNA ribosomal subunit causing disrupted protein synthesis and death of the cell. Genetic screening before administering prolonged aminoglycoside therapy might reduce risks of aminoglycoside-induced deafness in patients. The prevalence of both mutations mostly has been determined in Chinese, Brazilian or South African populations with significantly different results (0.6–4 %).

Aim. The aim of this study was to determine the prevalence of C1494T and A1555G mitochondrial DNA mutation in tuberculosis patients in a Latvian population.

Materials and methods. DNA samples of 95 tuberculosis patients and 10 healthy subjects ($\sum$ = 105) were used for this study (the samples and information were obtained from the Genome Database of the Latvian Population (VIGDB). The study protocol was approved by the Central Medical Committee of Ethics in Latvia.). PCR amplification followed by Sanger sequencing method was used to determine the mutations.

Results. PCR amplicons of desired length (1752 bp) were successfully obtained from all DNA samples, and sequence data for both mutations were available. Sequence data analysis revealed that C1494T and A1555G mutations were not present in any of 105 samples used in this study.

Conclusion. While the presence of two aminoglycoside ototoxicity-related mutations were not detected in our sample cohort, it is important to include additional ototoxicity-related mutation analysis in future studies in order to determine the feasibility of DNA screening for tuberculosis patients in Latvian population before administration of aminoglycoside therapy.

THE COMPARATIVE STUDY OF HISTOPATHOLOGICAL AND CLINICAL CHARACTERISTICS IN GLIAL TUMORS

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Keywords. Gliomas; tumor growth pattern; histopathological and clinical characteristics.

Introduction. Glial tumours are the most common primary intracranial neoplasms, which represented up to 50–60 % of all tumors. Gliomas are classified, according to their histologic features into three major types: astrocytomas, oligodendrogliomas, and mixed oligoastrocytomas based on similarities to mature glial cells. These tumors are usually notoriously refractory to conventional radiotherapy and chemotherapy, and the prognostic outlook for patients with high-grade gliomas is usually dismal. In addition, many patients present initially with a low-grade glioma that, in the majority of cases, progresses with time to high-grade.

Aim. The purpose of the study was to compare prognostic significance of different morphological and clinical characteristics of glial tumors.

Materials and methods. Altogether 93 patients who underwent surgical treatment at Riga Eastern University hospital during 2012–2014 were retrospectively enrolled in the study. The study was approved by a local ethical committee. The tissue samples were investigated by histological and immunohistochemical staining methods. The clinical and morphological data were evaluated. The statistical analysis (including correlative and survival analysis) was performed.

Results. 93 patients were enrolled in the study. 50 patients were females and 43 patients were males. The average age of patients was 47 ± 27 years. The most common tumour types were glioblastoma (WHO Grade IV), anaplastic astrocytoma (WHO Grade III) and anaplastic oligoastrocytoma (WHO Grade III).

Glioblastoma, anaplastic oligodendroglioma, anaplastic astrocytoma predominantly had multinodular growth pattern. At contrast, oligodendroglioma, oligoastrocytoma and glio-sarcoma had solitary growth pattern. The positive correlation between patient age and tumour multinodular growth pattern was demonstrated ($Rho = \pm 0.21$; $p = 0.04$).

High-grade tumours, increased mitotic index, increased cellularity and increased Ki-67 index had an unfavourable influence on overall, five years survival and disease free survival ($p < 0.01$). Other histological parameters such as nuclear atypia, necrosis and microvascular proliferation did not alter the overall, five years survival and disease free survival.

Conclusion. The selected morphological and immunohistochemical characteristics correlated with tumour clinical and imaging (MRI) characteristics and represented prognostic features of glial tumours.

THE COMPARATIVE STUDY OF RECURRENT AND NON-RECURRENT TYPES OF SKIN BASAL CELL CARCINOMA

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Keywords. Basal cell carcinoma, morphology, recurrence.

Introduction. Basal cell carcinoma (BCC) is the most common non-melanoma skin cancer and one of the most common malignancies in white-skinned population. Despite the exceptionally low mortality rates, BCC can cause severe morbidity, primarily associated with local aggressive behavior and significant recurrence rates (Lomas et al., 2012; Silverman et al., 1991–1992). Therefore, the identification of diagnostic parameters associated with higher risk of recurrence remains the scientific priority.

Aim. The objective of this study was to analyse and compare the histopathological and clinical criteria of non-recurrent and recurrent BCCs on surgical excision material.

Materials and methods. 18 cases of recurrent BCC and 30 cases of non-recurrent BCC with 5-year follow-up history were enrolled in this retrospective study. Recurrent BCC was defined as clinically observed and cytologically or histologically confirmed local recurrence after surgical excision of primary tumor with histologically clear margins. The histopathological slides from BCC cases were reviewed. The tumor type, lymphatic and blood vessel invasion, perineural invasion, lymphocytic infiltration and stromal desmoplasia were assessed. In addition, the clinical data, as well as TNM staging were analysed. The statistical analysis was performed with IBM SPSS 23.0.

Results. Obtained results showed that the 7 patients of recurrent BCC were males and 11 patients were females. The mean age of recurrent BCC group was 69.6 ± 11.9 years. In non-recurrent BCC group 16 patients were males and 14 patients were females. The mean age of patients in non-recurrent BCC group was 68.8 ± 12.1 years. Our results revealed that 55.6 % (n = 10) of recurrent BCC were nodular type, 33.3 % (n = 6) were superficial and 11.1 % were morpheic type. At contrast, the non-recurrent BCC group consisted of 60 % (n = 18) superficial and 40 % nodular types. The average disease free survival of recurrent BCC patients was 26.2 ± 11.3 months.

The correlative analysis demonstrated that grade of stromal desmoplasia significantly correlated with BCC recurrence (Rho = 0.343, $p < 0.03$), however the correlation between the invasion of lymphatic vessels, lymphocytic infiltration, T stage and BCC recurrence was not observed.

Conclusion. Obtained results showed that stromal desmoplasia significantly correlated with BCC recurrence, while the invasion of lymphatic vessels, lymphocytic infiltration and T stage did not appear significantly different in recurrent BCC group. The future studies are essential to determine the prognostic biomarkers of BCC recurrence.

THE EVALUATION OF PRO-INFLAMMATORY CYTOKINES IL-8 AND TNF-A IN RELATIVELY HEALTHY LUNG TISSUE

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Keywords. Cytokines, TNFα, IL-8, lung tissue, immunohistochemistry.

Introduction. Tumor necrosis factor alpha (TNF-α) is a pro-inflammatory cytokine produced by inflammatory cells, dendritic and endothelial cells. The role of TNF-α is described in apoptosis, inflammation and recruitment of immune cells. IL-8 is a pro-inflammatory and pro-angiogenic mediator produced by macrophages, epithelial cells and fibroblasts. IL-8 triggers inflammation, wound repair and angiogenesis. TNF-α interacts with endothelial cells and induces the expression of cytokines and chemokines, including IL-8.

Aim. To evaluate the appearance and distribution of IL-8 and TNF-α in relatively healthy lung tissue.

Materials and methods. Lung tissue material was obtained during the autopsy from 46 patients aged 9 to 95 years in relatively healthy study subjects. Tissue specimens were acquired from RSU AAI tissue material collection. Routine histological staining with hematoxylin and eosin was used. Tissue sections were preceded for detection of IL-8 and TNF-α by use of biotin-streptavidin immunohistochemistry method. The number of positive structures was evaluated by semi-quantitative method.

Results. TNF-α and IL-8 positive cells were found mostly among alveolar macrophages, chondrocytes of bronchial cartilage and fibroblasts in subepithelial connective tissue. IL-8 positive cells were observed also in endothelium of capillaries. The number of TNF-α and IL-8 positive cells varied from occasional (0/+) to moderate (++) in bronchial epithelium, endothelium and bronchial glands, as well as among fibroblasts, smooth muscle cells, chondroblasts, chondrocytes, alveolocytes. Numerous (+++) TNF-α and IL-8 positive macrophages, as well as IL-8 positive endothelial cells and chondrocytes were found.

We determined strong positive correlations between findings of IL-8 in endothelium and number of IL-8 positive glandulocytes, fibroblasts and alveolocytes, as well as between the number of TNF-α positive endothelial cells and TNF-α positive alveolocytes. Strong positive correlations between the findings of IL-8 in endothelium of arterioles and TNF-α-containing fibroblasts and endothelial cells of capillaries were calculated.

Conclusion. The main sources for TNF-α and IL-8 are connective tissue, supportive tissue and endothelium. TNF-α and IL-8 in connective tissue and blood vessels might indicate the involvement of connective tissue in local immune response. Correlation of TNF-α with IL-8 promotes the regulatory role and influence on various non-immune cells. Presence of TNF-α and IL-8 in cartilage seems to represent tissue phenomenon with still unclear significance.

THE STRUCTURE OF SYNOVIAL MEMBRANE AND ITS EVALUATION IN CASE OF SYNOVITIS

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Keywords. Synovial membrane; rheumatoid arthritis; light microscopy; Krenn histological scoring system.

Introduction. Rheumatoid arthritis (RA) is one of the most common forms of auto-immune diseases characterized by damage of joints, antibody production, and aseptic inflammation. Conventionally, it is diagnosed by clinical symptoms and use of instrumental methods. Morphological methods allow to ascertain the diagnosis and evaluate changes of synovial membrane. By using the light microscopy it is possible to evaluate the damage of synovial membrane and define synovitis grade. Krenn proposed grading system is one of the most used and applicable synovitis scoring systems.

Aim. The aim of this study was to analyse the morphology of inflammatory joint disease affected synovial membrane basing on Krenn grading system and distinguish the degree of synovitis.

Materials and methods. The joint surgeries materials were obtained from 32 patients' diagnosed with joint disease, fixed in formaline and embedded in paraffin. Synovial membrane sections were stained with H&E and analysed by light microscopy. Synovitis score was estimated semiquantitatively grading the following parameters: hyperplasia of the superficial lining of synovials membrane, hyperplasia of stroma, and inflammatory cells infiltration, and grading them as follows: 0 – absent, 1 – weak, 2 – moderate, 3 – strong. The parameters were summed up, receiving the result varying from 0 to 9, and interpreted as absence (0–1), low-grade (2–4), and high-grade synovitis (5–9), accordingly.

Results. Morphological analysis of synovial membrane revealed hyperplasia of synovial lining up to 6 cellular layers. In many cases the superficial layer was coated by fibrin deposits, furthermore, ulcerations of the lining layer were also noted. These findings accounted for 3 points by cumulative point evaluation reflecting high-grade synovitis. Besides, there were denoted patterns without lining layers hyperplasia (0 points). Additionally, almost every sample demonstrated stromal hipercellularity and multinucleated giant cells being evaluated as moderate grade synovitis distinguished by 2 points. Findings regarding inflammatory cells infiltrates was mostly graded as weak (1 point) rarely accompanied by perivascular follicle aggregates graded as ones achieving 2 points. It worth noting that marked synovial villus' hypervascularization was noticed as well. Collectively, we found that in 13 patients the grade of synovitis was equal to 0 or 1 reflecting the absence of synovitis; in 18 patients was equal to 2–4 reflecting the low-grade, whereas in 1 patient being equal to 5 – the high-grade synovitis.

Conclusion. The light microscopy could be of a great value in distinguishing joint inflammatory diseases, in general, and RA cases, in particular. The synovitis grading system proposed by Krenn may be recommended evaluating inflammation process of joints, specifying and grading the damage of synovial membrane.

TUMOUR BUDDING – A PROGNOSTIC FACTOR IN COLORECTAL CANCER

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Introduction. Colorectal cancer is in need for one more prognostic factor, what could be tumor budding. There are situations, when additional information is crucial to evaluate patients for adjuvant therapy. This decisive information can be provided by a presence of many, tiny clusters of malignant cells in tumor stroma- tumor buds (Rogers et al., 2014). This feature is observed in 20–40 % of colorectal cancer cases and is associated with lymph node and distal metastases, lymphovascular invasion, and poor prognosis. (Ueno et al., 2002). Presence of tumor budding could be a biomarker for selection of patients with aggressive disease that might benefit from adjuvant and targeted therapy (Koelzer et al., 2015).

Aim. Find out with which cancer describing prognostic factors tumor budding is associated.

Materials and methods. In a retrospective study, data of 50 patients with colorectal cancer from protocol of morphological examinations were collected. Slides with hematoxylin eosin stain and proliferation marker Ki67 were analysed with light microscope in 7 high power vision fields. Tumour buds (1 to 5 cells in tumour stroma near the invasion front) were counted in tumour central part and near the invasion front. Descriptive statistics using 95 % confidence interval and Chi-square test was done. $p < 0.05$ was considered statistically significant.

Results. The research included 50 cases of colorectal cancer. Overall tumour budding was found in 39 cases which makes in total 78.0 % [95 % CI: 64.7–87.2 %] of cases. The mean tumour bud count in tumour invasion front was 0.93 [0.7–1.2], in tumour central part 1.4 [0.9–2]. According tumour bud amount budding were distributed in two groups – 1 less than 0.93 buds; 2 ≥ 0.93 buds. The research included 42.0 % [29.4–55.8] pT3 cases, and 45.3 % [32.7–58.6] pT4 cases. Second tumour bud group (≥ 0.93 buds) showed statistically higher distribution in pT4 colorectal cancer cases ($p = 0.03$). The overall Ki67 expression in colorectal cancer cases were 29.1 % [27.2–30.0], and it showed no statistically significant difference according tumour budding ($p = 0.394$). Also there was no statistically significant difference between tumour budding groups and cancer perineural invasion ($p = 0.55$) and lymphatic invasion ($p = 0.29$).

Conclusion. It can be concluded that there is statistically significant association between the count of tumor buds and pT4. The count of tumor buds is not linked with other colorectal cancer prognostic criteria.

V. INFECTIOUS DISEASES, DERMATOVENEROLOGY, MICROBIOLOGY, IMMUNOLOGY, ALLERGOLOGY

ANALYSIS OF *M. TUBERCULOSIS* GENOTYPES CAUSING LOCAL OUTBREAK IN 6 EPIDEMIOLOGICALLY LINKED TUBERCULOSIS PATIENTS

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Keywords. Tuberculosis, local outbreak, genotyping.

Introduction. When a local outbreak is suspected, *Mycobacterium tuberculosis* (MT) DNA should be genotyped to provide necessary evidence in addition to the epidemiological data. Molecular analysis also helps to deduce the source of infection in the group of TB patients.

Aim. To analyse genotypes of MT isolates and to compare drug susceptibility tests' (DST) results in the group of 6 epidemiologically linked TB patients which were followed up to clarify epidemiological links during 2014–2016 period.

Materials and methods. The MT isolates obtained from sputum, induced sputum and bronchial lavage were tested for susceptibility to the first-line drugs isoniazid (INH), rifampicin (RIF), ethambutol (EMB) and pyrazinamide (PZA) and second-line drug ofloxacin (OFX) using the MGIT 960 liquid culture and drug susceptibility testing systems. The isolates were cultured on Löwenstein Jensen medium. MT DNA was isolated and spoligotyping (Mapmygenome) and *IS*6110 RFLP (restriction fragment length polymorphism) genotyping was performed. RFLP data analysis was done by using BioNumerics v5.3 software.

Results. When a fourteen years old teenager was diagnosed with TB in 2016, her relatives and neighbours were considered as a potential source of the TB infection based on the evaluation of possible contacts and social links. DST pattern for all analysed MT isolates was the same: resistance to INH and sensitivity to RIF, EMB and PZA and OFX. Molecular genotyping data showed that all obtained MT isolates had identical spoligotype (SIT1). *IS*6110 RFLP analysis further clarified the similarity between samples.

Conclusion.
1. Molecular genotyping is one of the most important tools to clarify epidemiologically linked patients and potential source of TB infection.
2. Transmission of TB infection may occur not only in a household, but also during close social contacts, i.e. neighbourhood, if living conditions, such as shared kitchen and bathroom, promote social gathering and long-time contacts.

ASCITIC FLUID ANALYSIS IN PATIENTS WITH LIVER CIRRHOSIS

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Keywords. Ascitic fluid, liver cirrhosis, spontaneous bacterial peritonitis (SBP).

Introduction. Ascites is the most common complication of cirrhosis, indicating decompensation of chronic liver disease. Paracentesis followed by ascitic fluid investigation is indispensable investigation technique to eliminate other causes of ascites, as well as to confirm or exclude SBP.

Aim. Research ascitic fluid characteristics and incidence of ascitic fluid infection in cirrhotic patients, as well as its association with outcome.

Materials and methods. A retrospective study of data collected from medical cards of patients hospitalized in Latvian Centre of Infectious Diseases. 141 cirrhotic patient with ascites and performed paracentesis were included in the study; in total 142 episodes of hospitalization in the period from year 2013 to 2016. In the study 50.4 % (n = 71) were women and 49.6 % (n = 70) men; median age 55 years (IQR 10). In this study, polymorphonuclear leucocyte (PMN) count ≥ 250 cells/mm^3 was selected as the diagnostic criterion of SBP or its variants. In the case of a positive ascitic fluid culture, it was defined as a classic SBP, in case of negative culture – culture-negative neutrocytic ascites (CNNA). The data was calculated and analysed by using Microsoft Excel 2010 and IBM SPSS Statistics 22.0.

Results. Ascitic fluid colour was yellow in 83.8 % (n = 119) of cases, 4.2 % (n = 6) light brown/brown, 3.5 % (n = 5) red; clarity 52.8 % (n = 75) lightly cloudy or cloudy, 37.3 % (n = 53), turbid, 9.9 % (n = 14) clear. SBP found in 21.8 % (n = 31) of cases, PMN count in ascites was not performed in 15 cases or 10.6 %. SBP did not develop in any of the cases with clear ascitic fluid (p < 0.001). Ascitic fluid culture was negative in 60.6 % (n = 86) out of all the episodes.

From the group where PMN count was ≥ 250 cells/mm^3, for 58.1 % (n = 18) culture was negative, which indicates CNNA, in 35.5 % (n = 11) of cases culture was not performed. Classic SBP was in 2 cases – S. aureus 0.7 % (n = 1), coagulase-negative staphylococcus (CoNS) 0.7 % (n = 1). Contamination with skin flora cannot be excluded in case of CoNS. Ascites total protein concentration of < 10 g/l was in 23.9 % (n = 34) of cases. Of all cases, the fatal outcome was for 13.4 % (n = 19). Lethality in SBP group was 25.8 % (n = 8), in group without SBP 10.4 % (n = 10) (p = 0.03).

Conclusion.
1. SBP is frequently found in hospitalized cirrhotic patients with ascites (21.8 %) and is associated with a higher mortality rate; therefore, diagnostic paracentesis should be carried out for all those patients.
2. The ascitic fluid culture is often not carried out, even in cases where there is suspicion of infection from the amount of PMN in ascites.
3 SBP can be excluded with high reliability for the patients who have a clear ascitic fluid appearance.

ASSESSING PREVALENCE OF ANTIBIOTIC TREATMENTS IN SLOVENIAN LONG-TERM CARE FACILITIES

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Keywords. Antibiotics, long-term care facility, multidrug resistance.

Introduction. Antibiotics are frequently prescribed to patients in long-term care facilities (LTCF). In light of the emerging problem with multidrug resistance, this may pose direct risk to residents in LTCF.

Aim. The aim of this paper is to investigate the prevalence and practice of antimicrobial prescribing in LTCF in Slovenia, and identify targets for quality improvement.

Materials and methods. The point prevalence study was conducted between April and June 2016. We invited 117 Slovenian LTCF, counting 20,224 residents, to take part in our study. Data were collected on one single day with two on-line questionnaires: one on LTCF characteristics and second on currently prescribed systemic antibiotic treatments.

Results. 80 out of 117 Slovenian LTCF (68.3 %) responded to our invitation. 317 residents out of 13022 (2.4 %, median: 1.9 %, min-max: 0–7.6 %) received antibiotics on the day the survey was conducted. Further analysis was performed on 255 patients who signed informed consent. The mean age of the residents with an antimicrobial treatment was 83.4 years (median: 85 years, min-max: 46–100 years) and 70 % were women. The most common were respiratory tract infections (RTI) (42.7 %), followed by urinary tract infections (UTI) (33.3 %). Seven residents (2.8 %) received two antibiotic agents simultaneously. Co-amoxiclav was the most often prescribed antibiotic followed by fluoroquinolones. The commonest diagnostic tests in RTI were c-reactive protein (36.6 %) and blood cell count (33.3 % of RTI), the urine dipstick test was performed in 48.5 % of UTI cases, whereas in cases of skin infections most frequently (42.4 %) there were no diagnostic tests done. Microbiological testing was performed in 5.2 % of the cases. We have shown a statistically significant correlation between the age of 80 and above and antibiotic treatment (p = 0.0425, χ^2 test, OR = 1.33) and between immobility and antibiotic treatment (p < 0.01, χ^2 test, OR = 1.62). Advanced dementia was not significantly correlated with antibiotic prescribing (p = 0.406, χ^2 test, OR = 1.12). The usage of wheelchair was also not significantly correlated with antibiotic prescribing (p = 0.286, χ^2 test, OR = 1.16).

Conclusion. This is the first nation-wide study to investigate antimicrobial prescribing in LTCF in Slovenia. The prevalence of antimicrobial treatment is low, however frequent prescription of co-amoxiclav and fluoroquinolones may lead to an increase of multidrug resistant organisms. Stewardship interventions to improve antibiotic prescribing in LTCF should be considered.

BABESIA CANIS MOLECULAR DETECTION AND DISTRIBUTION CHANGE ANALYSIS IN DERMACENTOR RETICULATUS AND IXODES SPP. TICKS COLLECTED FROM DOMESTIC DOGS IN LATVIA

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Keywords. *Babesia canis*, tick-borne diseases, canine babesiosis, Latvia.

Introduction. In recent years more *Babesia canis* pathogens have been found in ticks taken from dogs in Europe. This is alarming considering that these pathogens can cause canine babesiosis – an infectios disease that can range from mild (anemia) to severe (systemic inflammation response syndrome or multiple organ dysfunction) symptoms in dogs. Currently, *Dermacentor reticulatus* tick is the main *Babesia canis* vector in Europe, which is mainly found in wooded areas across Western Europe. However, during the past decade, a changing distribution of *D. reticulatus* in the Baltic countries was observed, and recently it has also been spotted in Latvia, which can be a threat in increased risk of babesiosis infections.

Aim. Our aim was to identify *B. canis* pathogens by molecular detection in *D. reticulatus* and *Ixodes* ticks acquired from domestic dogs in Latvia, and to analyse possible changes in Babesia distribution within 5 year period.

Materials and methods. In total, DNA was extracted from 620 ticks collected from Latvian domestic dogs in years 2011 and 2016. *Babesia* positive samples were detected by PCR amplification of 18S rRNS gene, and pathogen species were confirmed by sequencing analysis of positive samples. Lastly, *Babesia* spp. prevalence in different regions was analysed.

Results. Among year 2011 samples, only one *Ixodes* tick sample was positive for *B. canis* infection (total n = 249; all – *Ixodes*), which made 0.4 % prevalence. This positive sample was obtained from a dog in Kurzeme region. In contrast, nine positive samples were detected in 2016 (4 of 16 *D. reticulatus* and 5 of 355 *Ixodes*), which made a total prevalence of 2.45 %. *Babesia* positive samples were detected in Zemgale, Riga and Pieriga regions. Furthermore, all four positive samples from *D. reticulatus* ticks were obtained from dogs in Riga region, resulting in a 25 % prevalence for this tick species (p = 0.0003; α 0.05). The prevalence of *B. canis* pathogens in *Ixodes* ticks (n = 355) obtained from Riga and Zemgale regions in year 2016 was significantly lower (0.3 % and 1.1 %, respectively).

Conclusion. Our data show significant changes in the prevalence of *Babesia* pathogens in ticks in Latvia during the 5 year period – from 0.4 % in 2011 to 2.45 % in 2016. These results support the recent observation of increase in incidence of canine babesiosis in Latvia. Based on these findings, it can be affirmed that distribution area of babesiosis main vector *D.reticulatus* has extended further north of Europe, therefore increasing the risk of infection in these regions.

BACTERIAL ADHESION AND COLONISATION INTENSITY ON POROUS TIO2 CERAMIC BIOMATERIALS

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Keywords. Biomaterials, adhesion, colonisation, *S. epidermidis, P. aeruginosa,* TiO$_2$.

Introduction. Bone grafting is one of the most frequent transplantation worldwide and there is a notable increase in application of biomaterials for tissue grafting. Bone substitutes are widely used in traumatology, orthopaedic surgery as well as in maxillo-facial surgery and dentistry, however relatively few biomaterials have been designed to meet perfect combination of structural, mechanical as well as antimicrobial properties so that biomaterials-associated infection still remains one of the most common complications associated with implantation.

Aim. To determine and compare adhesion and colonisation intensity of *Staphylococcus epidermidis* and *Pseudomonas aeruginosa* on originally synthesised porous TiO$_2$ ceramics.

Materials and methods. To determine bacterial adhesion and colonisation on originally synthesised porous TiO$_2$ ceramics, samples were incubated 2 h and 24 h in bacterial suspension with different concentrations (10^2 and 10^3). After incubation samples were tested using sonication and culture methods. Adhesion and colonisations were tested using *S. epidermidis* ATCC 12228, *P. aeruginosa* ATCC 27853 bacterial reference cultures. Statistical analysis of data was performed using IBM SPSS software (descriptive, nonparametric statistics: Mann-Whitney test, Spearman rank correlation coefficient). $p < 0.05$ was considered statistically significant.

Results. A total of 40 porous TiO$_2$ ceramic disc samples were examined for the study. After 2 hour cultivation *P.aeruginosa* showed more intense adhesion (median: 48.0 (28.00–57.50) CFU/0.01 g) (colonies forming units) than *S.epidermidis* (median: 15.0 (5.70–20.00) CFU/0.01 g) on the surface of tested biomaterial which was contaminated at 10^3 CFU/ml concentration and was considered as statistically significant ($p = 0.015$). No statistical significant differences between *P. aeruginosa* and *S. epidermidis* colonisation intensity after 24 hour cultivation in both studied concentrations (10^2 CFU/ml, 10^3 CFU/ml) were found. We observed no correlation between the mass of TiO$_2$ samples and bacterial adhesion intensity ($r_s = 0.41$, $p = 0.86$), although statistically significant moderate negative correlation between the mass of biomaterial sample and bacterial colonisation intensity was found ($r_s = -0.75$, $p < 0.001$).

Conclusion. The study has shown significant adhesion and colonisation intensity of *S. epidermidis* and *P. aeruginosa* on the surface of tested porous TiO$_2$ ceramics. For further practical application it is necessary to improve antimicrobial properties of biomaterial, to reduce the potential risk of tested biomaterial-associated infection development.

BIOLOGICAL IMMUNE RESPONSE MODULATORS USERS VACCINATION HABIT AND HOSPITALIZATION DUE TO INFECTIONS ANALYSIS IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Vaccination, biological immune response modulators, hospitalization.

Introduction. Biological immune response modulators (BIRM) users are immuno-compromised and at higher risk for developing complications associated with infections. To lower risk of severe complications it is indicated that patients undergo mandatory and additionally vaccines.

Aim. To evaluate how many of BIRM users did mandatory and additional vaccines in Pauls Stradins Clinical University hospital, the Center of Rheumatology. To analyse frequencey of hospitalizations due to infections.

Materials and methods. The data of BIRM or biological therapy users with moderate or severe chronic immune inflammatory arthritis at Pauls Stradins Clinical University hospital were analysed prospectively. The patients age was 18 to 71 years. Attitude about vaccination and current vaccination experience, was carried out in a telephone interview. Data processed by IBM SPSS Statistics v.22.0.

Results. 225 patients with chronic immune inflammatory arthritis and BIRM users participated in the study: 93 men (41.3 %) and 132 women (58.7 %). The mean age of the patients was 46.2 (SD 13.2), the mean duration of BIRM use 2.8 SD 2.3 years. 72.0 % patients have vaccination passport. 6.7 % (n = 15) noted that they were hospitalized due to an infection disease since BIRM usage. 51.6 % patients have positive attitude to vaccination overall, 25.8 % have neutral attitude, 14.2 % negative, 3.6 % positive attitude only to mandatory vaccines, 1.8 % have positive attitude, except to influenza vaccine, 2.2 % have no opinion and 0.9 % consider positively vaccination only for children.

42.7 % patients used pneumococcal vaccine with 47.9 % had both types of vaccines, 25.0 % – conjugate vaccine, 4.2 % – polysaccharide, but 22.9 % can not name the type of the vaccine. 68.4 % of the patients used diphtheria/tetanus vaccine, 52.0 % tick-borne encephalitis, 38.7 % hepatitis A, 46.2 % hepatitis B vaccines. 30.7 % of the patients used influenza vaccine in this season. 1.5 % of women used human papillomavirus vaccine. There were no difference between duration of BIRM use and hospitalization (p = 0.47).

Conclusion. Use of diphteria/tetanus and tick-borne encephalitis vaccine was for more than a half of the study population patients. Use of hepatitis B, pneumococcal vaccine was for less than 50 % of the patients and use of hepatitis A and influenza vaccine in this season was for less than 40 % of the patients. There were no difference between duration of BIRM use and hospitalization in the study population.

C.DIFFICILE INFECTION CHARACTERISTICS IN RIGA EASTERN UNIVERSITY HOSPITAL CLINICAL CENTER "GAIĻEZERS"

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Keywords. *C. difficile*, prolonged hospitalization, antibiotics.

Introduction. The incidence and severity of *C. difficile* infection (CDI) around the world has increased over the past decades due to the emergence of hypervirulent strains, increased use and misuse of antibiotics, and the increase of susceptible at-risk populations. Highest rate of CDI is among patients older than 65 years and patients with longer hospitalization time.

Aim. Describe demographic and clinical variables of CDI patients in Riga Eastern Clinical University Hospital.

Materials and methods. Retrospective chart review for all patients who had tested positive for *C.difficile* toxin in feces in a period: 1 January 2010 – 31 October 2016. Variables included: age, gender, hospital service, mortality rate, length of hospitalization and time until laboratory diagnosis of CDI, severity of CDI and use of antibiotics. Data was pooled and analysed using IBM SPSS 22.0. The study was conducted in collaboration with Rīga Stradiņš University Infectology student interest group.

Results. Overall from 232 patients 33.2 % (N = 74) were men and 66.8 % (N = 149) were women. Median age was 74 years (range: 19–103) and 67.3 % (N = 150) CDI patients were > 65 years of age group. All-cause mortality rate during initial admissions was 22.4 % (N = 50). Proportion of CDI cases according to hospital service was 82.1 % (N = 183) internal, 17 % (N = 38) surgical and 0.9 % (N = 2) gynecologic. Median length of hospitalization was 16 days (range: 1–89) and median period of time until laboratory diagnosis of CDI were 8 days (range: 0–58). From study group 26.5 % (N = 59) of patients had laboratory confirmed CDI diagnosis within first 3 days of hospitalization, 32.7 % (N = 73) within 3–10 days and 40.8 % (N = 91) after 10 days. Mild to moderate CDI was 63.2 % (N = 141) of cases and severe CDI 36.8 % (N = 82). Patients with mild to moderate CDI/ severe CDI received following antimicrobial treatment: 92.9 % (N = 131)/ 87.8 % (N = 72) *metronidasolum* (p > 0.05), 1.4 % (N = 2)/14.6 % (N = 12) *vancomycinum* (p < 0.05).

Conclusion. As expected CDI was diagnosed more often to elderly patients. Over the study period the highest proportion of patients diagnosed with CDI were in internal diseases department. Although CDI is asociatied with prolonged hospitalization time, part of study patients developed CDI within first hospitalization days, that could suggest community acquired CDI. *Metronidasolum* was prescribed in most cases of severe CDI despite guideline recommended antimicrobial treatment with *vancomycinum*.

CHRONIC HCV CLINICAL COURSE AND OUTCOME

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Keywords. Chronic hepatitis, HCV, genotype, stage of fibrosis, complications.

Introduction. Each year the number of people infected with chronic hepatitis C (HCV) increases by 3–4 million, whereas in Latvia, epidemiological research data indicates this number increases by more than 1000 people. It is important to diagnose the infection as soon as possible to prevent complications such as portal hypertension, liver cell insufficiency and hepatocellular carcinoma from occurring. In order to provide the best treatment possible, it is necessary to diagnose HCV genotype and fibrosis stage.

Aim. To investigate HCV clinical course by analysing genotype, stage of fibrosis at the time of discovery and the most common complications documented in Riga Eastern Clinical University Hospital.

Materials and methods. 137 cases of chronic HCV were gathered in this retrospective research by analyzing medical records of patients who were admitted to "Gaiļezers" centre of Riga Eastern Clinical University Hospital from January 2014 to December 2016. The study was conducted in collaboration with Rīga Stradiņš University Infectology student interest group. Statistical data was processed by IBM SPSS and Microsoft Excel.

Results. From 137 total cases 35.77 % (N = 49) were women from whom 18.37 % (N = 9) *exitus letalis* and 64.23 % (N = 88) were men from whom 23.86 % (N = 21) *exitus letalis.*

HCV genotype data was availible for 69 cases, from which genotype 1b was determined in 55.07 % (N = 38), genotype 3 in 24.64 % (N = 17), genotype 1 (undifferentiated) in 17.39 % (N = 12), genotype 2 in 1.45 % (N = 1) cases and genotype 1a in 1.45 % (N = 1) cases.

Stage of fibrosis data was available for 102 cases, from which 5.88 % (N = 6) had stage 0, 34.31 % (N = 35) had stage 1, 9.80 % (N = 10) had stage 2, 5.88 % (N = 6) had stage 3 and 44.12 % (N = 45) had stage 4.

HCV complications were established in 78 cases, from which the most common were – portal hypertension 84.62 % (N = 66), liver cell insufficiency 76.92 % (N = 60) and hepatocellular carcinoma 14.10 % (N = 11).

Conclusion.
1. It was observed that male patients had higher mortality and were generally more represented in the research compared to female patients.
2. The most common HCV genotype that was encountered in the acquired data from "Gaiļezers" Centre was 1b. The least common were 2 and 1a.
3. Almost half of the patients were diagnosed with HCV at the fibrosis stage 4.
4. From all observed complications the most prevalent was portal hypertension.

CHRONIC HEPATITS C OUTCOMES IN LATVIA

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Keywords. Chronic hepatitis C, cirrhosis, hepatocellular carcinoma.

Introduction. Hepatitis C is an infection caused by the hepatitis C virus (HCV) that attacks the liver and leads to inflammation. There are more than 40 thousands chronic carriers in Latvia who are at risk of developing liver cirrhosis and/or hepatocellular carcinoma (HCC).

Aim. The aim of the study is the evaluation of the epidemiological prevalence of the chronic hepatitis C outcomes in the population of patients in Latvia from the Riga Eastern Clinical University Hospital in the Clinical Centre "Gailezers".

Materials and methods. The epidemiological situation of the chronic hepatitis C in Latvia is assessed by a retrospective study at the biggest stationary in Latvia – Stationary "Gailezers". The retrospective research evaluated 395 recorded cases of the chronic hepatitis C in Riga Eastern Clinical University Hospital in the Clinical Centre "Gailezers" in years 2010–2016. All statistical data has been processed in the program "Excel 2014".

Results. The study included 395 HCV cases, among them 235 (59.0 %) were male, and 160 (41.0 %) were female. Mean age was 47.4 ± 15.3 years. 117 (29.6 %, 95 % CI = 25.12–34.12 %) of patient had liver cirrhosis, 15 (3.8 %, 95 % CI = 1.91–5.68 %) of patients had HCC, and others 263 (66.6 %, 95 % CI = 61.93–71.23 %) had chronic hepatitis C. Among male, 58 (24.7 %) were diagnosed with cirrhosis, 12 (5.1 %) were diagnosed with HCC, and 165 (70.2 %) had chronic hepatitis C. Among female, 59 (36.9 %) had cirrhosis, 3 (1.9 %) had HCC, and 98 (61.3 %) had chronic hepatitis C. Furthermore, 35 (8.9 %) patients had exitus letalis.

Conclusion.
1. Chronic hepatitis C is the most common outcome among HCV infected people.
2. HCC is the rarest outcome among HCV infected people.
3. The diference between male and female HCV carriers is not statistically significant.

COMPARISON OF PATIENT REPORTED CARDIOVASCULAR RISK FACTORS AND COMORBIDITIES BETWEEN ROSACEA SUBTYPES

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Keywords. Rosacea, erythematotelangiectatic subtype, papulopustular subtype, cardiovascular risks.

Introduction. Rosacea is a characteristic cutaneous disorder with diverse clinical manifestations ranging from facial vascular hyperreactivity to sebaceous gland hyperplasia [Vemuri, 2015]. It affects up to 15 % of the general population with the highest prevalence among adults (> 30 years) of Northern European heritage with fair skin [Spoendlin, 2012]. Traditionally, rosacea is defined as a syndrome with four distinct clinical subtypes: erythematotelangiectatic (ET), papulopustular (PP) rosacea, phymatous rosacea, and ocular rosacea [Wilkin et al., 2002]. Several studies have observed higher risk of specific gastrointestinal symptoms and disorders, cardiovascular disease, depression and migraine in patients with rosacea, which is associated with chronic inflammation [Rainer, 2015]. There is a lack of studies comparing the risks between clinical subtypes of rosacea.

Aim. To compare self-reported cardiovascular risk factors, rosacea triggers and comorbidities in patients with ET and PP subtypes of rosacea.

Materials and methods. The study was approved by the RSU Ethics committee. Patients with diagnosed ET (N = 25) and PP (N = 19) rosacea subtypes were asked to answer 46 questions in a structured survey, concerning patient's physical activities, comorbidities, smoking status and alcohol consumption, as well as rosacea triggers. Data was compared using Chi-square test, p value < 0.05 was considered statistically significant.

Results. Tendency for alcohol abuse amongst PP rosacea subtype is observed in comparison to ET subtype, but not statistically significant (p = 0.065). Analysed physical activities, comorbidities, smoking and skin symptoms triggering factors in ET and PP rosacea subtypes were not found to be statistically significant.

Conclusion. According to received and analysed information there is no significant difference between physical activities, smoking, skin symptoms triggering factors and comorbidities between rosacea ET and PP subtypes, except possible higher tendency for alcohol abuse among PP rosacea subtype comparing to ET subtype.

DETECTION OF *STAPHYLOCOCCUS SPP.* CARRIERS AMONG MEDICAL STUDENTS

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Keywords. *Staphylococcus*, risk factors, health-care workers, medical students.

Introduction. *Staphylococcus spp.*, especially, *S. aureus* are most common causative agents of hospital-acquired infections. However, coagulase-negative staphylococci also are prominently featured in health-care associated infections. Clinical students group (3rd–6th year) compared to preclinical students group (1st–2nd year) spend more time in health-care facilities, as their studies mostly takes place in hospital and they often contact with patients.

Aim. Our objectives were: to detect amount of *Staphylococcus spp.* students carriers of Medical faculty of Rīga Stradiņš University, to determine antibacterial resistance of isolates and to evaluate student relation with risk factors to become a carrier.

Materials and methods. Risk factors of *Staphylococcus spp.* carriers were determined with a questionnaire. 91 nasal swabs were collected. Swabs were cultured on mannitol-salt agar at 37 °C 24 h. Yellow colonies were chosen for further identification and evaluation of antibacterial resistance by using VITEK. Microsoft Excel and SPSS v.21 were used for the statistical analysis.

Results. 91 medical students participated in our research – 52 (57.1 %) female and 39 (42.9 %) male students. Participants were divided in two groups – preclinical group – 23 (25.27 %) students and clinical group – 68 (74.73 %). 20 samples (21.98 %) were positive on mannitol-salt agar – 12 (60 %) women and 8 (40 %) men. 4 (18.18 %) cultures were identified as *S. aureus*, 2 (9.09 %) – *S. epidermidis*, 4 (18.18 %) as *S. homini hominis*, 4 (18.18 %) – *Aerococcus viridis*, 2 (9.09 %) – *S. warneri*, 1 (4.55 %) – *Leuconostoc mesenteroides subsp. cremoris* and 5 (22.73 %) cultures could not be identified. Antibacterial resistance results showed that 83.33 % staphylococci were resistant to benzylpenicillin, 16.67 % were sensitive to benzylpenicillin. All *S. epidermidis* strains demonstrated resistance to erythromycin. There was difference in carriage rate between clinical and preclinical groups (25 % *vs.* 13.04 %). Carriers more frequently: contact with patients with purulent skin infections (45 %), perform medical manipulations (60 %), participate in surgical operations (45 %).

Conclusion. Clinical students are more often *Staphylococcus spp.* carriers. Also, all resistant to benzylpenicilin staphylococcus isolates were from clinical student group. No MRSA (Meticilin resistant Staphylococcus aureus) strains were found among carriers. Risk to become *Staphylococcus spp.* carrier is higher for students, who participate in surgical operations, performs medical manipulations and have contact with patients with purulent skin infections.

EVALUATION OF ACNE TREATMENT RESULT SATISFACTION DEPENDENT ON THE SPECIALIST CONDUCTING THE TREATMENT AND TREATMENT METHOD

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Keywords. Acne, treatment, satisfaction.

Introduction. Acne is a common chronic skin disease that can adversely affect about 85 % adolescents and young adults aged 12–24 years. Treatment of acne is complicated, complex and long-term, consequently patients are not always satisfied with the treatment results.

Aim. To investigate patients' with acne treatment result satisfaction dependent on the specialist and treatment method.

Materials and methods. An anonymous survey conducted in 2015–2016 at the Vilnius University Hospital Santariskiu Clinics, Centre of Dermatovenereology, four private clinics in Vilnius city and two cosmetology cabinets. The original questionnaire had 15 composite questions. Data were processed using Microsoft Excel, data statistical analysis was conducted by using SPSS® software.

Results. 156 respondents with acne were involved in the study: 101 female (64.7 %) and 55 male (35.3 %). Age of the average survey participant – 20 years. The majority of study participants at first tried treating acne themselves (32.1 %). Participants approached a cosmetologist (23.1 %) and a dermatovenereologist (19.2 %) less frequently. The majority of patients (57.7 %) were not satisfied with the results of self-treatment. Satisfaction with the treatment results, dependent on the sex of participants, had a statistically significant difference ($p = 0.041$). Women were less satisfied with the effectiveness of the treatment than men. Satisfaction with cosmetologist treatment effectiveness depended mostly on the number of procedures ($p = 0.03$) and the length of treatment ($p = 0.002$). Persons who were in treatment for 12 months showed the highest satisfaction rates, those who were in treatment for 6 months were slightly less satisfied. Most patients were satisfied with the effectiveness of the treatment after two procedures, but the satisfaction rate decreased with more procedures. Satisfaction with the effectiveness of the dermatovenereologist treatment, dependent on the treatment used, had a statistically significant difference ($p = 0.05$). Patients who were prescribed both topical and oral medication showed the highest satisfaction rate (70.36 %), together with those who were prescribed only oral medication (70 %) or only topical medication (60 %).

Conclusion. The majority of the study participants first tried to treat acne themselves. However most of them were not satisfied with the results of self-treatment. Persons who were treated by dermatovenereologist or cosmetologists showed the highest satisfaction rates. Satisfaction with cosmetologist treatment effectiveness depended mostly on the number of procedures and the length of treatment. Satisfaction with the effectiveness of the dermatovenereologist treatment, dependent on the treatment which was prescribed.

FEVER OF UNKNOWN ORIGIN: TOPICALITY IN LATVIA, ANALYSIS OF FINAL DIAGNOSES

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Keywords. Fever of unknown origin (FUO).

Introduction. Definition of Fever of unknow origin(FUO) was made by Petersdorf and Beeson in 1961, yet it still presents a diagnostic challenge in clinical practice. FUO is defined as body temperature above 38.3 °C on several occasions with fever duration (FD) of at least 3 weeks, and no diagnosis made after 3 days of hospital admission or 3 outpatient visits. In 1991 Durack and Street, proposed a revised definition in which FUO is classified into four distinct classes: classical (CFUO), nosocomial, neutropenic, and HIV- related. There are four CFUO differential diagnosis groups: infections, malignancies, noninfectious inflammatory diseases (NIID) and miscellaneous. Initial approach to diagnosis consists of detailed and repeated history taking, physical examination and standard laboratory testing to identify potential diagnostic clues (PDC), which will further guide the diagnostic tactic.

Aim. To analyse initial diagnostic approach and final diagnosis among Latvian infectology center (LIC) CFUO patients.

Materials and methods. Case files of 389 adult HIV negative patients without any other immunocompromising conditions, who were admitted to LIC with the diagnosis FUO from January to December 2016 were retrospectively reviewed. Patients were categorized as fulfilling (A) or not (B) the CFUO criteria. Patients' anthropometric data, FD before hospitalization and diagnosis establishment, institution of referral, timing of diagnosis (TD), FD before diagnosis establishment, presence of PDC, diagnostic investigation amount (DIA) and outcomes were considered. TD was classified as early ($N \leq 3$), intermediate ($N = 4–7$), and late ($N \geq 8$) days. Data was analysed in IBM SPSS 21.0.

Results. Group A included 22.6 % (N = 88), and group B 77.4 % (N = 301) patients. Group B had FD less than 3 weeks (88 %; N = 265) and insufficient previous investigations (84 %; N = 253). B group patients were referred to LIC by ambulance in 35.5 %(N = 107) of cases. Group B was excluded from further evaluation. In group A, median FD before diagnosis was 42 (min 20; max 1504) days. The causes of CFUO were as follows: infections (49 %; N = 43), malignancy (4.5 %; N = 4), NIID (9 %; N = 8), miscellaneous (23.7 %; N = 20), unknown (12.5 %; N = 11) and a combination of several causes (2.3 %; N = 2). TD was early in 44.3 %, intermediate in 28.4 % and late in 27.3 % of cases. In 57 cases PDC were identified, but only 41 of them were helpful. There was no statistically significant difference in PDIA amount regarding PDC type ($p > 0.05$; $p = 0.426$).

Conclusion. Most of referred FUO patients don't meet the FUO criteria. FUO diagnosis often is established without appropriate criteria fulfilment. The most common cause of CFUO are infections.

INFLUENZA VACCINATION COVERAGE AND REASONS FOR VACCINATION/NON-VACCINATION AMONG ESTONIAN NURSING STUDENTS

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Keywords. Influenza, vaccination, nursing students, reasons for vaccination.

Introduction. World Health Organization recommends health-care workers to vaccinate against influenza. It is proven that influenza vaccination of health-care workers in long-term-care reduces the mortality of elderly people. Since nursing students have direct contact with patients or use remedies that can spread infections they should be vaccinated. There has not been any research that reflects influenza vaccination coverage and reasons for vaccination/non-vaccination among Estonian nursing students.

Aim. The aim of this empiric quantitative study was to describe the level of influenza vaccination and the reasons of vaccination/non-vaccination among Estonian nursing students. The differences between following subgroups were specified: gender, healthcare college, course and previous vaccination status.

Materials and methods. The research is quantitative empirical and the data was collected by questionnaires. The questionnaire was carried out on October 2015 in Tartu Health Care College and Tallinn Health Care College during lectures, seminars and practical lessons.

Results. In total of 516 (39.7 %) nursing students were enrolled in the study. The status of influenza-vaccination for overall and last season (1 October 2014 – 30 May 2015) was 28 % and 10 %, respectively. Higher overall vaccination coverage compared to previous season can be explicable with that there might were students who only did it during the pandemic in 2009. The most frequently reported reason for vaccination was receiving it for free. The vaccine inefficiency was the most popular reason for non-vaccination. The seasonal vaccination status was higher among those, who ever had been vaccinated against influenza in comparison with previously non-vaccinated students. Men had higher chance to be vaccinated in comparison with women. Last season juniors and seniors were statistically significantly more likely to be vaccinated than freshmen. Since men compared to women had 4.5 times (OR = 4.51; 95 % CI = 2.24–9.09) bigger chance to be vaccinated the reason might be because it is free in military service. During studies the awareness of efficiency factor of influenza vaccination raises and also sense of responsibility for others. Fourth year students have more knowledge about influenza vaccination but also more skepticism against the effectiveness of the vaccine compared to freshman students.

Conclusion. Influenza vaccination among Estonian nursing students is low. Proposals to raise the vaccination coverage among Estonian nursing students: to make influenza vaccination available easier and more comfortable and provide it for free might; to emphasize more on influenza vaccination as a nursing activity, longer and profound teaching about infectious diseases and microbiology in nursing programs.

IN VITRO STUDY OF ANTIBACTERIAL EFFICIENCY OF TIO2 CERAMICS WITH CHLORHEXIDINE AGAINST *S. EPIDERMIDIS* AND *P. AERUGINOSA*

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Keywords. Chlorhexidine, TiO_2, biomaterials, *S. epidermidis*, *P. aeruginosa*.

Introduction. Surgical site infection is a common form of nosocomial infection. *S.epidermidis* is the most common causative agent of devices-associated infections due to the ability to form biofilm. *P.aeruginosa* also is an opportunistic pathogen which demonstrates ability to cause hospital acquired infections. Therefore it is very important to develop and to evaluate new versions of biomaterials containing different antimicrobials.

Aim. The aim of the study was to determinate *S. epidermidis* and *P. aeruginosa* susceptibility to chlorhexidine in 1 %, 10 % and 50 % concentration applied to TiO_2 highly porous ceramics.

Materials and methods. To test bacteria susceptibility, we performed disc diffusion method. We placed highly porous TiO_2 ceramic discs with chlorhexidine in various concentrations (0 %, 1 %, 10 %, 50 %) on 8 plates with *S.epidermidis* and 8 plates with *P. aeruginosa*. Then incubation at 37 °C 24 h was done and diameter of sterile zone was measured. Biomaterial disk was removed and placed on new plate with bacterial culture. Procedure was repeated until no sterile zone was observed.

Results. Chlorhexidine had no effect on *P. aeruginosa*. With *S.epidermidis*, there were no inhibition zones detected in control group (0 % chlorhexidine) and 1 % chlorhexidine, but antibacterial effect of 10 % chlorhexidine lasted for 3 days and average inhibition zone reduction rate were 3.5 mm (25 %) per day and maximal inhibition zone diameter was found on 1st day – 14 mm. Antibacterial effect of 50 % chlorhexidine lasted for 5 days and average inhibition zone reduction rate were 2.7 mm (20 %) per day with maximal inhibition zone diameter on 1st day – 16 mm.

Conclusion. Chlorhexidine applied to TiO_2 ceramics had no effect on *P. aeruginosa* growth inhibition. On preventing *S. epidermidis* growth 50 % chlorhexidine applied to TiO_2 ceramics is more effective and it effect lasts longer than 10 % chlorhexidine.

MELANOMA AND BASAL CELL CARCINOMA IDENTIFICATION BY LATVIAN DERMATOVENEROLOGISTS

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Keywords. Melanoma, basal cell carcinoma, skin cancer.

Introduction. The skin cancer is the most common type of cancer in humans. The basal cell carcinoma (BCC) is the most common form of skin cancer. This type of skin cancer is the least dangerous, because of a low risk of metastasis, but it has to be treated because of local destructive behavior. Melanoma accounts for a less than 1 % of skin cancer cases, but the vast majority of deaths from skin cancer. According to World Health Organization the incidence of both non-melanoma and melanoma skin cancers has been increasing over the past decades. Currently, between two and three million non-melanoma skin cancers and 132,000 melanoma skin cancers occur globally each year.

Aim. The purpose of this study was to compare the ability of dermatovenerologists (DV) of Latvia to identify and differentiate BCC and melanoma.

Materials and methods. In this descriptive study DV were asked to analyse multiple dermatoscopic and clinical images of different skin lesions and to determine whether it is BCC or melanoma. The data was analysed using MS Excel 2007 and IBM SPSS 20.0. P value < 0.05 was considered statistically significant.

Results. Total of 26 DV completed the questionnaire, in which were 11.5 % (n = 3) men and 88.5 % (n = 23) women. The mean age of the respondents was 33.9 years with standard deviation – 8.5, range 25–56 years. In the study 15.4 % (n = 4) respondents were first year residents of dermatovenerology, 23.1 % (n = 6) – third year, and 61.5 % (n = 16) were certified DV. The majority of respondents 50 % (n = 13) were practicing dermatovenerology from 1 to 5 years. Study showed that 61.5 % (n = 16) of respondents regularly consulted from 10 to 20 patients per day. In this study 46.5 % (n = 12) of respondents see less than 5 patients with tumors per day. There was a significant correlation between the amount of correct answers and the status of respondents for BCC questionnaire (p = 0.029) and melanoma questionnaire (p = 0.041). The most common mistake in BCC questionnaire was differentiating BCC from Squamous Cell Skin Cancer (n = 11; 33.3 %), and in melanoma questionnaire – differentiating melanoma from Lentigo Maligna (n = 24; 28.9 %).

Conclusion. There was a significant correlation between the educational status of the respondents and the amount of correct answers in both, melanoma and BCC, questionnaires. The majority of the mistakes were made in differentiation of melanoma and BCC from other forms of skin cancers.

PRESENCE OF HUMAN BOCAVIRUSES IN HOSPITALIZED CHILDREN WITH ACUTE GASTROENTERITIS AND POSSIBLE ROLE IN DISEASE AETIOLOGY

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Keywords. Human bocavirus, acute gastroenteritis.

Introduction. Acute gastroenteritis is one of the major causes of morbidity and mortality in children under five years worldwide. However, etiologic agents are not identified frequently. Four types of human bocavirus (HBoV) have been described; types 2–4 are considered to be associated with acute gastroenteritis, although causative role of these HBoVs types remains uncertain.

Aim. To determine the presence of HBoVs types 1–4 in hospitalized children with acute gastroenteritis and to identify their possible role in disease aetiology.

Materials and methods. Children under five years, who were treated as inpatients for presumptive acute gastroenteritis, were included in the prospective study. On admission patients were examined, blood and stool samples were obtained. The presence of HBoVs genomic sequences was determined in DNA isolated from blood and stool samples using nPCR. Plasma samples were tested for HBoV1 – 4 specific IgG and IgM class antibodies by ELISA using recombinant virus-like particles as antigen.

Results. In total 30 children were enrolled in the study, 9 (30 %) female and 21 (70 %) male with the mean age 15 months and mean length of bed-days – 4 days.

Clinically all children presented with diarrhoea and febrile axillary temperature, 16 (53 %) patients also had vomiting, 24 (80 %) – abdominal pain. In examination simultaneously respiratory symptoms also were diagnosed in 20 patients. From them cough had 16 (80 %) patients, rhinitis – 16 (80 %), exudative tonsillitis – 2 (10 %), conjunctivitis – 3 (15 %), rales in the lungs – 6 (30 %). Complications of respiratory ilnesses had 8 of 20 patients: 2 (10 %) – otitis, 6 (30 %) – pneumonia.

Laboratory findings showed that 6 of 30 (20 %) patient's stool samples were HBoV DNA positive. Blood samples of all patients were HBoV DNA negative. HBoV2 specific IgG-class antibodies were found in 3 patients, HBoV1 – in 2 and HBoV1+HBoV2 – in one patient. None of patients had HBoV3-4 specific IgG-class antibodies. All patient's plasma samples were also negative for HBoV2-3 specific IgM-class antibodies.

Conclusion. HBoVs genomic DNA was found in stool samples taken from hospitalized children with acute gastroenteritis. However, in order to confirm this viral etiological role in the development of the disease, it is necessary to exclude all gastroenteritis-related co-infections and comorbidities.

PROPHYLACTIC VACCINATION IN PATIENTS POST HEMATOPOIETIC STEM CELL TRANSPLANTATION: ADHERENCE TO RECOMMENDATIONS

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Keywords. Hematopoietic stem cell transplantation, vaccination, recommendations, adherence.

Introduction. The hematopoietic stem cell transplantation (HSCT) is becoming more common in Lithuania. The survival rates after HSCT are improving progressively worldwide. Therefore, physicians are faced with new challenges caring for such patients. One of significant problems is patients susceptibility to vaccine-preventable diseases. Based on internationally approved recommendations, a set of local guidelines on vaccination of immunosuppressed adult patients were introduced at our institution.

Aim. Evaluate the adherence to the published local guidelines on vaccination of immunosuppressed adult patients.

Materials and methods. We conducted a retrospective review of recipients of autologous and allogeneic HSCT who were vaccinated at Vilnius University Hospital Centre for Infectious Diseases between 2013 and 2016. The data was collected from patients' medical records and analysed using descriptive statistics to highlight any deviation from the guidelines.

Results. A total of 39 patients were included into our study (16 females, 23 males), with the mean age of 46 (SD ± 15). The follow-up time at the point of data collection ranged from 8 to 66 months from the HSCT. 19 patients received their first vaccination within the recommended 6 months, 14 within 7–12 months and 6 were delayed for over 12 months since HSCT. Full course of vaccinations was administered in 10 cases with pneumococcal conjugate vaccine, 19 with tetanus-diphtheria, 15 with polio and 25 with hepatitis B vaccine. There were no patients vaccinated with the meningitis C vaccine, only 2 received the meningitis B vaccine and 2 were vaccinated with tick-borne encephalitis vaccine. The intervals between vaccine doses were in line with the local guidelines.

Conclusion. In over half of all cases the first vaccinations were administered later than 6 months after transplantation, which was not compliant with the local guidelines. There was no patient, who received the entire course of all recommended vaccinations. The situation highlighted appears to be unsatisfactory and should be improved. This can be achieved through educating both patients and medical professionals in the importance of specific infectious diseases prophylaxis of immunosuppressed patients. We note that the lack of certain vaccinations in this population could also be associated with financial difficulties: patients were more likely to receive the vaccinations which were funded by the national health insurance, whereas the ones to be funded personally were often omitted.

SEVERE AND NON-SEVERE *C.DIFFICILE* INFECTION FEATURES IN RIGA EASTERN UNIVERSITY HOSPITAL CLINICAL CENTER "GAIĻEZERS"

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Keywords. Clostridium difficile, infection, antibiotics, omeprazolum.

Introduction. *C. difficile* infection (CDI) is the most common cause of healthcare-associated diarrhoea. In Europe the incidence and severity of CDI has increased over the past decade. Several factors, such as patient's age, previous exposure to antibiotics, leucocytosis are likely to be predictors of severe CDI.

Aim. Compare severe versus non-severe *C. difficile* infection (CDI) features in Riga Eastern University Hospital clinical center "Gaiļezers".

Materials and methods. Retrospective chart review for all patients who had tested positive for *C.difficile* toxin in feces in a time period: 1 January 2010 – 31 October 2016. Variables included: age, gender, severity of CDI, use of antibiotics and *omeprazolum* before and during hospitalization. Laboratory data were collected for 4-day interval spanning 2 days before and 2 days after the day of first C.difficile positive fecal specimen: leukocyte count, C reactive – protein (CRP), serum creatinine (SCr), alanine aminotransferase (ALAT) levels. Data was pooled and analysed using IBM SPSS 22.0. The study was conducted in collaboration with Riga Stradiņš University Infectology student interest group.

Results. Overall from 232 patients 33.2 % (N = 74) were men and 66.8 % (N = 149) were women. Median age was 74 years (range: 19–103). Non-severe CDI was in 63.2 % (N = 141) of cases and severe CDI 36.8 % (N = 82). Exposure to antimicrobial drugs before hospitalization was recorded in 22.7 % (N = 32) non-severe CDI and 40.2 % (N = 65) severe CDI cases (OR 2.3; $p < 0.05$). Patients with mild to moderate CDI/ severe CDI received following antimicrobial treatment: 92.9 % (N = 131)/ 87.8 % (N = 72) *metronidasolum* ($p > 0.05$), 1.4 % (N = 2)/14.6 % (N = 12) *vancomycinum* ($p < 0.05$). *Omeprazolum* use during hospitalization: 60.3 % (N = 85) non-severe CDI and 61 % (N = 50) severe CDI cases ($p > 0.05$). There was a statistically significant difference between CDI severity and mean leucocyte count (F = 165.58; $p < 0.05$), mean CRP level (F = 8.16; $p < 0.05$) determined by one-way ANOVA. SCr, ALAT did not show significant difference.

Conclusion. Nonsevere CDI was more common than severe CDI. Severe CDI was associated with use of antibiotics before hospitalization. *Metronidasolum* was perscribed in most cases of severe CDI despite antimicrobial treatment with *vancomycinum* recommended by guidelines. *Omeprazolum* use was not significantly different with severe CDI. Higher mean leukocyte count and CRP level was more significant to severe CDI.

SPONTANEOUS BACTERIAL PERITONITIS ACTUALITY AMONG LATVIAN PATIENTS WITH LIVER CIRRHOSIS

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Keywords. Spontaneous bacterial peritonitis (SBP).

Introduction. SBP is a common and potentially fatal bacterial infection of peritoneal fluid (PF) in decompensated liver cirrhosis (DLC) patients with incidence of 10–30 %. SBP mostly caused by Gram-negative bacteria of intestinal origin, but also Gram-positive cocci can be etiological cause. The main diagnostic modality is early paracentesis (PC) with subsequent PF analysis (cell count, differential, bacterial culture (BC)). The diagnosis of SBP is based mainly on polymorphonuclear cell (PMN) count in PF of > 250/mm^3 and SBP symptoms, presence of positive BC is not mandatory.

Aim. To study SPB incidence and diagnostic options in patient with DLC in "Gailezers" hospital.

Materials and methods. The study was conducted in collaboration with RSU Infectology student interest group. 546 DLC patients, who were admitted in hospital from January 2011 to October 2016, were retrospectively reviewed. Patients' anthropometric data, initial complains, day of hospital stay (DHS), amount and results of non- and specific laboratory and instrumental investigations, antibacterial therapy (AT) regimes were considered. Data was analysed in IBM SPSS 21.0.

Results. 28 of 546 DLC patients had a suspected (N = 10) and proven (N = 18) SBP. 25 % (N = 7) of patients were female and 75 % (N = 21) were male. Patient age median (ME) value was 59 (min = 40; max = 89) years. Main reason of hospitalization was fever (N = 6). DHS ME = 13 (min = 2; max = 55) days, SPB establishment day ME = 3.5 (min 1; max 29) days. Therapy was successful in 16 cases; 12 patients died. Most commonly SPB manifested as abdominal pain – 43 % (N = 12), where 75 % also had positive peritoneal irritation signs. From all patients, only in 68 % (N = 19) PC was performed, from which PMN count was measured in 8 protein in 7, LDH in 10 cases. BC of PF was performed only in 68.4 % (N = 13) cases, and was positive in 6. Most common etiologic agent was S.aureus (N = 2). Most common choice of AT was ciprofloxacin and metronidazole with ME therapy duration of 6.5 days. Only in 25 % of all SBP patients recommended diagnostic volume was performed. Estimated incidence of SPB among DLC patients was 3.6 %, 1.1 %, 5.7 %, 7.1 %, 7.3 % and 8.7 % in the years 2011–2016 respectively.

Conclusion. SPB has lower incidence in DLC patients than was anticipated, but the numbers of established SBP diagnoses tend to increase. Currently complete diagnostic evaluation for SBP is performed only in 25 % of patients. The tactics of establishment of SBP diagnosis are not strictly determined and we conclude that a uniform diagnostic algorithm is required.

STAPHYLOCOCCUS AUREUS – MOST COMMON AND SEVERE CAUSE OF VERTEBRAL OSTEOMYELITIS AND EPIDURAL ABSCESS

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Keywords. Vertebral osteomyelitis, epidural abscess, Staphylococcus aureus.

Introduction. Persistent severe back pain may indicate vertebral osteomyelitis (VO) or epidural abscess (EA) – a rare spine infections that must be diagnosed and treated correctly to prevent serious complications. VO is most frequently caused by *Staphylococcus aureus (S.aureus) (IDSA Guidelines, 2015).*

Aim. To evaluate clinical findings and severity of VO and EA according to cause of infection.

Materials and methods. Patient data were retrospectively analysed in a single centre from year 2011 till 2016 diagnosed for VO and EA. Diagnosis was confirmed by imaging, clinical syndrome and microbiological analysis. Severity was defined by presence of neurological symptoms, worsening in imaging, inflammatory markers and mortality. Data were analysed by SPSS 21.0.

Results. Totally 83 patients were eligible for the study. Both VO/EA were diagnosed in 71 (85.54 %) cases, EA in 12 (14.46 %).

Blood culture analysis was performed in 54 (65.06 %) patients. The most common isolated microorganism was *S. aureus in* 23/54 patients (74.19 %), followed by *Streptococcus* species and *E. coli*

Statistically significant difference in white blood cell (WBC) count and C-reactive protein (CRP), measured at the day of hospitalization, was detected in patients with *S. aureus* infection ($p < 0.001$). Maximal WBC count: 18.98 ± 8.13 *vs.* 11.93 ± 4.11 ($p < 0.001$); maximal CRP level – 235.25 ± 116.33 *vs.* 144.43 ± 112.53 ($p = 0.002$).

Spinal pain was reported in all cases. Fever in patients with *S. aureus* was in 12/23 (52.17 %) cases *vs.* 20/60 (33.33 %) in the rest ($p = 0.114$).

Inpatient time was higher in patients with *S. aureus* infection: 36.30 ± 21.61 *vs.* 26.2 ± 18.51 days ($p = 0.037$), as well as length of antibiotic therapy: 43.43 ± 33.16 *vs.* 28.58 ± 22.28 days respectively ($p = 0.021$).

Surgical treatment for patients with *S. aureus* was used in 13/23 (56.52 %) *vs.* 12/60 (20.00 %) cases respectively ($p = 0.001$).

Higher death rate was in patients with *S. aureus* infection – 8/23 (34.78 %) *vs.* 6/60 in patients with other or no pathogen detected (10.00 %) (Odds ratio (OR) 4.8, 95 % confidence interval (CI) 3.88–45.68; $p = 0.006$).

Conclusion. *S. aureus* was the most common cause of VO. Patients in *S. aureus* group required longer antibiotic therapy and inpatient time. Mortality rate was also higher in patients with VO and EA caused by *S. aureus.*

THE DERMATOSCOPIC FEATURES OF
BASAL CELL CARCINOMA

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Keywords. Basal cell carcinoma, dermatoscopy, non-melanoma skin cancer, dermoscopy.

Introduction. According to the literature and Latvian statistics Basal Cell Carcinoma (BCC) is the most common non-melanoma skin cancer in Caucasians. The increase of the number of new cases of basal cell carcinoma has brought also an increase of BCC dermatoscopy to use. Dermatoscopy improves the clinical diagnosis of BCC, helps to predict clinical subtypes of Basal cell carcinoma, and also helps to differentiate BCC from other skin tumors and inflammatory skin conditions.

Aim. To investigate significant relationships between BCC type and dermatoscopic pattern.

Materials and methods. In this retrospective study one hundred and five BCCs were identified by archive search of clinical and dermatoscopic photos by histologically proven BCC. For dermatoscopic examination DermLite dermatoscopes (DL3N, hybrid) with Polarized and Non-Polarized dermoscopy technique was used.

Descriptive statistical analysis was performed with SPSS. Pearson Chi-square (CS) and Fisher's exact test was used to determine correlation between BCC type and dermatoscopic pattern of tumor. P value < 0.05 was considered statistically significant.

Results. The main population of study was – 64.8 % (n = 68) women and 35.2 % (n = 37) men with a mean age of 61.4 years, standard deviation (SD) – 13.5, range 16–89 years. The study included 105 tumors. The most frequent type of tumor was nodular BCC 65.7 % (n = 69). The main size of tumor was 0.5–1 cm in diameter 45.7 % (n = 48). The most frequent dermatoscopic criteria were: arborising vessels 53.3 % (n = 56), superficial fine telangiectasia 40.0 % (n = 42), shiny white-red structureless area 71.4 % (n = 75). Statistically most significant features for suggesting superficial BCC were: superficial fine telangiectasia (p < 0.0001); for nodular BCC: arborising vessels (p < 0.0001); for pigmented BCC: blue-grey ovoid nests (p < 0.0001), multiple blue-gray dots and globules (p < 0.0001); for ulcerative BCC: ulceration (p < 0.0001)

Conclusion. We evaluated the presence of dermatoscopic features in superficial BCC, nodular BCC, ulcerative BCC and morpheaform BCC in order to evaluate the role of dermatoscopy in the diagnosis of different clinical subtypes of BCCs.

THE BACTERIOLOGICAL CONTAMINATION OF PERIPHERAL INTRAVENOUS CATHETERS IN CARDIOLOGIC DEPARTMENT

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Keywords. Nosocomial infections, periferal venous catheters, bacterial contamination.

Introduction. Every year in Europe more than 4 million people acquire nosocomial infections, according to the European Centre for Disease Prevention and Control (ECDC) 2016 data. One of the causes leading to nosocomial infections is bacterial contamination of periferal venous catheters. The risk of contamination is increased by such factors as immune suppression, age and use of antibiotics.

Aim. The aim of this study is to identify the microorganisms that are most frequently associated with intravenous catheter contamination in patients at the cardiology department.

Materials and methods. The periferal venous catheters obtained at the cardiology clinic were transported to the laboratory within one hour maintaining the temperature at 37 °C. The canules were sonicated for one minute at 44 kHZ frequency. The obtained bacterial suspension was cultured on the following media – blood agar, trypticase soy agar, egg yolk salt agar, Sabouraud agar and McConkey *(Oxoid, UK)*. The pure cultures were identified using Latex agglutination test and VITEK 2. Bacterial resistance to antibiotics was determined using VITEK 2 and Kirby-Bauer disc diffusion method.

Results. 46 intravenous catheters were obtained (12 female and 34 male patients). The average patient age of the patients with uncontaminated catheters group was 66.7 years as compared to the contaminated patient group of 66.1 years. Microbiological examination of the i/v catheters showed that of the 46 catheters 21 were bacterially contaminated (7 female patients – 58 % and 14 male patients – 42 %). From all i/v catheters inserted in ambulances 63 % were contaminated as compared to the the contamination rate in hospital of 44 %. Coagulase-negative staphylococci (CNS) were identified in 24 % of the cases, in 10 % of cases it was *S.aureus*, 10 % – *Sarcina* and 5 % – *Saccharomyces*. The periferal catheters had remained *in situ* for the average of 3.3 days. No significant link between the insertion time and level of contamination was found. 50 % of the patients with contaminated catheters had been diagnosed with such diseases as diabetes, podagra and others. 29 % of microorganisms were identified as antibiotic resistant. CNS showed resistance to gentamicin, fosfomycin, while *S.aureus* was resistant to B-lactam antibiotics.

Conclusion. CNS were identified as most frequent cause of i/v catheter contamination. The risk of contamination is not increased by prolonged period of time the periferal venous catheter remains inserted. The study shows that the catheters inserted in ambulance cars pose increased risk of bacterial contamination.

THE QUALITY OF LIFE OF PATIENTS WITH NAIL PSORIASIS BEFORE AND AFTER THERAPY OF CALCIPOTRIOL

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Keywords. Nail psoriasis, quality of life, calcipotriol.

Introduction. Psoriasis is a chronic disease, which involves the skin and nails. The prevalence of disease ranges from 0.09 to 11.4 %. Up to half of the patients have nail psoriasis, which has high impact on quality of life. There is no pathogenetic therapy for psoriasis.

Aim. The main purpose of this study is to measure nail psoriasis impact on quality of life and to assess effectiveness of calcipotriol.

Materials and methods. Sixteen patients with nail psoriasis from Riga 1st Hospital were included in research. A questionnaire, partly based on the Dermatology Quality of Life Index (DLQI), was used to collect self-reported data from patients before starting therapy and six months after using calcipotriol. A questionnaire included 10 questions about patients quality of life related with nail psoriasis. A questionnaire evaluated symptoms and feelings, daily activities, leisure, work and school life, personal relationships and treatment related with nail psoriasis. All data was analysed using SPSS 22.0 and Excel 2010.

Results. In the study were included 16 patients with nail psoriasis. 81 % (n = 13) of participants were men and 19 % (n = 3) were women. According to the DLQI 50 % of patients (n = 8) had no effect on life at all related with nail psoriasis. 3 patients had small effect on life. Also 3 patients had moderate effect, 1 patient had very large effect and 1 patient had extremely large effect on his life. The most affected were daily activities, but the less affected were leisure and personal relationships. According to the DLQI questionnaire after six months of therapy of calcipotriol the quality of life has improved 56 % of patients (n = 9). The quality of life has not changed 19 % of patients (n = 3) while 25 % of patients (n = 4) the quality of life has decreased. The study showed that statistically significant ($p < 0.05$) improvement after therapy was in daily activities and in work or school life.

Conclusion. 50 % of patients with nail psoriasis had a negative impact on quality of life related with disease and the most affected were daily activities. After 6 months of therapy of calcipotriol the quality of life increased 56 % of patients. The most significant improvement was in daily activities and in work or school life.

TREATMENT OF BULLOUS PEMPHIGOID
IN REAL-LIFE CLINICAL SETTINGS

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Keywords. Bullous pemphigoid, compliance with treatment, treatment regimen.

Introduction. Bullous pemphigoid is an autoimmune blistering skin disease that occurs predominantly among elderly persons. The disease is treated with topical clobetasol in combination with an immunomodulating agent, referred to as adjuvant drug. However, there is no consensus regarding the first-choice adjuvant drug.

Aim. To evaluate the efficacy and safety of topical clobetasol propionate 0.05 % cream in monotherapy and in combination with the most popular adjuvant drugs – methotrexate and tetracycline with nicotinamide.

Materials and methods. We retrospectively review medical records of the Department of Dermatology of the Medical University of Warsaw from the last 3 years, identifying all patients with histological and immunological data typical for bullous pemphigoid.

Results. We identified 82 patients with bullous pemphigoid. All patients received clobetasol propionate 0.05 % cream as first line therapy. 30 patients were treated with tetracycline 1.5–2 g/day and nicotinamide 1.5–2 g/day and 25 patients received methotrexate 5–7.5 mg/week. One hundred percent of the patients showed an initial, complete clinical remission after a mean time interval of 36.8 days. Discontinuation of therapy in the first month after hospitalization was as follows – 85 % (23/27) for clobetasol propionate monotherapy (nursing difficulties, cost), 70 % (21/30) for tetracycline with nicotinamide (inadequate compliance – additional 16 pills/day, cost, and gastrointestinal adverse effects) and 20 % (5/25) for methotrexate (haematological and gastrointestinal adverse effects).

Conclusion. All of analysed treatment options were effective and safe for bullous pemphigoid. However use of topical clobetasol as well as tetracycline with nicotinamide was limited by inadequate compliance and nursing difficulties. Long-term low-dose MTX combined with short-term superpotent topical steroids may be useful in BP therapy in terms of practicality, cost and tolerability.

VI. PSYCHIATRY, PSYCHOTHERAPY, PSYCHOSOMATICS, NEUROLOGY, REHABILITOLOGY

ACCURACY OF THE MoCA AND MMSE IN THE DETECTION OF MILD COGNITIVE IMPAIRMANT IN PARKINSON DISEASE

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Keywords. Dementia, Parkinson, scale.

Introduction. Mild cognitive impairment (MCI) and dementia are increasingly recognized as part of the most frequent non-motor symptoms in Parkinson's disease. Cognitive impairment generally is defined by Mini-Mental State Examination score (MMSE) and the Montreal Cognitive Assessment (MoCA). Patients take detailed neuropsychological evaluations capturing 6 cognitive domains: psychomotor speed, attention, language, memory, executive functions, visuospatial/constructive skills. However, MMSE specifies more on memory domains, and MoCA on executive functions, abstraction and constructive skills.

Aim. The aim of the study was to identify and to determine the relationship between the severities of symptoms of cognitive impairment in Parkinson's disease patients of the Pauls Stradins Clinical University Hospital and evaluate accuracy of the MoCA and MMSE in the detection of MCI and dementia.

Materials and methods. A cross-sectional case-control study, stationary patients at the age 56–75 years: 31 patients with Parkinsonism's. The following parameters were evaluated: cognitive screening test with The Montreal Cognitive Assessment: ≥ 26 points – normal; cognitive impairment measurement with The Mini–Mental State Examination: 25–30 – questionably significant, 20–25 – mild, 10–20 – moderate, 0–10 – severe.

Results. In total 31 patients were included in data analysis. Approximately half of the sample met diagnostic criteria for a cognitive disorder. Based on the MoCA scale results, 48.4 % (15) (SD 7; 95 % CI 46.46–53.54 %) were identified with a mild cognitive impairment. However, MMSE of Parkinsonism's patients' shows that 61.3 % (19) have questionably significant impairment (25–30 points); 22.6 % (7) have mild impairment (20–25 points); 9.7 % (3) have moderate impairment (10–20 points); 6.4 % (2) have severe impairment.

Conclusion. According to our results with MoCA more patients had MCI, then according to MMSE. Memory and visuospatial/executive skills' degeneration more accurately are diagnosed by MoCA examination than by MMSE that influence results of MCI diagnosis. The MoCA has been shown to be more sensitive than the MMSE for the detection of MCI. Examination of language and abstraction skills is more detailed in MoCA examination, and helps to check patient's abstract thinking. The Montreal Cognitive Assessment has adequate psychometric properties as a screening instrument for the detection of mild cognitive impairment in Parkinsonisms's.

ALEXITHYMIA AND CARDIOVASCULAR RISK OF PATIENTS IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Alexithymia, cardiovascular risk, SCORE, TAS-20.

Introduction. Alexithymia is a personality trait associated with poor emotional awareness and self-regulation – difficulty identifying and describing feelings, characterized by externally oriented thinking, and a limited capacity for imagination. A high rate of alexithymia has been reported in association with several medical conditions, such as hypertension, chronic pain, and functional gastrointestinal disorders, as well as psychiatric disorders. As genetic factors and lifestyle choices do not fully explain the development of cardiovascular disease psychosomatic aethiological factors have to be considered.

Aim. To detect a possible connection between presence of alexithymia and cardiovascular risk of patients in Pauls Stradins Clinical University Hospital.

Materials and methods. A cross-sectional study of patients without any symptoms of cardivascular disease was done in various departments of Pauls Stradins Clinical Univeristy Hospital over the time span of 2 months starting from December 2016 until February 2017. The exclusion criteria for patients were: age over 65 years or under 40 years, an existing cardiovascular disease, diabetes mellitus, chronic kidney disease, usage of oral hormonal contraceptives or lipid lowering medication. 116 patients were included in the study and objective measurements of their total blood cholesterol and systolic blood pressure were gathered from their patient histories. Respondents were 40 to 65 years old (mean 52.86 ± 7.05), 58.6 % women and 41.4 % men. The presence of alexithymia in patients was assessed by validated Latvian and Russian versions of internationally recognized TAS-20 (20-item Toronto Alexithymia Scale) score. Cardiovascular risk of each patient was assessed by SCORE charts provided by European Society of Cardiology. Statistical data was processed in IBM SPSS v22 Statistics.

Results. According to the TAS-20 cutoff score of ≥ 61, 46.6 % (54 patients) of sample don't have alexithymia, 22.4 % (26 patients) possibly have alexithymia and 31 % (36 patients) have alexithymia. Kruskall-Wallis test showed that the distribution of SCORE result is not the same in groups of alexithymic and non-alexithymic patients. Spearman correlation coefficient (0.470) shows that SCORE result positively correlates with alexithymia ($p < 0.0001$). Patients with alexithymia generally had higher cardiovascular risk (mean 2.67 ± 1.55) than patients without alexithymia (mean 1.31 ± 0.82).

Conclusion. Alexithymia is linked to higher cardiovascular risk.

ALEXITHYMIA AND TRAIT ANXIETY LEVELS IN PATIENTS WITH PREMATURE CORONARY ARTERY DISEASE DOCUMENTED BY CORONARY ANGIOGRAPHY

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Keywords. Coronary artery disease, alexithymia, trait anxiety.

Introduction. Alexithymia is a personality construct characterized by the subclinical inability to identify and describe emotions in oneself. Trait anxiety is an enduring disposition to feel stress, worry and discomfort. Both of these personality characteristics have been associated with increased cardiovascular risk (Hernandez et al., 2014; Grabe et al., 2010).

Aim. To assess association of alexithymia and trait anxiety with presence of premature coronary artery disease (CAD).

Materials and methods. 52 patients with premature CAD were included in the prospective study. CAD was confirmed by coronary angiography in male and female patients aged below 55 years and 65 years, respectively. Control group included 15 male and female patients above the age of 55 and 65 with no significant stenosis in coronary angiography. Basic clinical and psychosocial data were acquired. Internationally validated Toronto Alexithymia Scale (TAS-20) questionnaire and State-Trait Anxiety Inventory (STAI) adapted in Latvian and Russian were used. Statistical analyses were performed using IBM SPSS 23.0.

Results. Mean age of studied group was 50.9 ± 6.1 years; 76.9 % (n = 46) were male. Mean age of controls was 68.5 ± 7.6 years; 40 % (n = 6) were male.

Alexithymia was observed in 19.6 % (n = 10) in studied group and 20.0 % (n = 3) in control group, p = 0.973. Possible alexithymia was present in 15.7 % (n = 8) in studied group and 26.7 % (n = 4) in control group, p = 0.332. No statistically significant difference between groups was detected.

Mean score for trait anxiety was 41.7 ± 9.0 in study group and 38.8 ± 9.0 in control group. The difference was not statistically significant (p = 0.273). After weighting data for gender differences, STAI score for trait anxiety was statistically significantly higher in premature CAD group (44.0 ± 9.8 *vs.* 38.1 ± 9.2, p = 0.041).

Conclusion. In our patient cohort we did not observe a significant association of alexithymia with premature CAD. Higher trait anxiety level was observed for premature CAD patients after adjustment for gender differences between groups. Bias with psychosomatic status of selected control group of patients undergoing coronary angiography could interfere with study results. Further studies with larger patient sample sizes are warranted to assess association between psychoemotional status and premature CAD.

ASSESSMENT OF EARLY REHABILITATION EFFECTIVENESS FOR PATIENTS WITH DISORDERS OF CONSCIOUSNESS

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Keywords. Barthel index, Lovett test, Motor assessment test, disorder of consciousness.

Introduction. Consciousness is defined as a condition, when a person comprehend himself and the environment and he is able to respond to external irritants adequately. Disorder of consciousness is when a person does not respond to external irritants, does not orientate in the environment and in himself. Disorders of consciousness is the result of brain damage. Frequently appear breaches of motor activity, balance, gait, cognitive functions. Serious disturbance of consciousness can occur with disorders of vital functions or even death.

Aim. To assess the effectiveness of early physical therapy for patients with impaired consciousness.

Materials and methods. The research was performed in Republican Vilnius University Hospital. The selected patients were with disorder of consciousness and qualified from 3 to 14 points in Glasgow coma scale. The sample of the patients were 88 (n = 88). The patients were divided in three groups by GCS points. First group GCS < 8 (n = 32), second group GCS 9–12 (n = 24), third group GCS 13–14 (n = 32) points. During the research testing of patients with disorders of consciousness were made twice (before and after physiotherapy procedures). During the research were testing strength of muscles (Lovett test), mobility and motility (the Motor Assessment Scale), self-service (the Barthel index).

Results. The range of patients age was 33–84 years. The mean age ± standard deviation (SD) was 61.7 ± 17.5. The patients with pathologies were included: brain injury 54 % (n = 48), stroke 46 % (n = 40). The means were compared before and after procedures. Lovett test result in GCS < 8 group before procedures both arms 0.42 ± 0.29 and both legs 0.49 ± 0.27 after procedures both arms 1.48 ± 0.33, both legs 1.55 ± 0.18. The correlation coefficient before and after procedures was r = 0.759 with p = 0.001 (both arms); r = 0.95 with p = 0.001 (both legs). The GCS 9–12 group before procedures: both arms 1.86 ± 0.46 and both legs 2.04 ± 0.41 after procedures both arms 2.71 ± 0.43, both legs 2.84 ± 0.39. The correlation coefficient before and after procedures was r = 0.997 with p = 0.001 (both arms); r = 0.989 with p = 0.001 (both legs). The GCS 13–14 group before procedures: both arms 3.31 ± 0.31 and both legs 3.41 ± 0.21 after procedures both arms 3.92 ± 0.22, both legs 3.96 ± 0.16. The correlation coefficient before and after procedures was r = 0.903 with p = 0.001 (both arms); r = 0.89 with p = 0.001 (both legs) (paired t-test).

Barthel index correlation before and after procedures in groups was statistically significant. The GCS 9–12 group r = 0.911 p < 0.05; the GCS 13–14 group r = 0.954 p < 0.05.

The Motor Assessment scale before and after procedures correlates statistically significant. The GCS 9–12 group r = 0.862 p < 0.05; the GCS 13–14 group r = 0.783 p < 0.05 (Pearson correlation).

Conclusion. Results showed that early physiotherapy was an effective way to improve the functional condition of patients with disorders of consciousness. After early physiotherapy patient's amplitude of passive movements, the strength of muscle, self-service, mobility and motility was improved.

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ASSESSMENT OF SLEEP QUALITY OF ADDICTED TO ALCOHOL PATIENTS

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Keywords. Alcohol, dependence, The Pittsburgh Sleep Quality Index.

Introduction. Alcohol is one of the most widely used psychoactive substances. People with alcohol dependence have 21 % higher risk of sleep disorders. Besides, sleep disorders like somnolence, fatigue, and depression are three times more frequent and more severe among alcoholics. Drinking alcohol before bedtime, can cause insomnia and frequent waking ups, may determinate higher respiratory problems, sleep apnea, restless leg syndrome, bother nightmares, snoring.

Aim. To assess sleep quality in addicted to alcohol patients.

Materials and methods. This survey was carried out from November 2016 to January 2017 in one Vilnius city hospital. During the study 61 patients has been interviewed. Participants inclusion criteria: patients who are dependent on alcohol; older than 18 years of age; patients who understands and speaks Lithuanian language. Respondents were asked about frequency of consumption of alcohol, alcoholic beverages and smoking. Sleep quality were assessed using The Pittsburgh Sleep Quality Index (Buysse, Daniel, Reynolds et al., 1989). P-value < 0.005 was considered statistically significant. Statistical data analysis was performed with software SPSS 20.

Results. The study involved 61 respondents. 54.1 % were male (n = 33) and 45.9 % (n = 28) female. Mean patients age was 46.03 years (the youngest was 23 and the oldest – 72 years). Statistically significant differences was not found between Pittsburg sleep quality index score and gender (p = 0.472), frequency of consumption of alcohol beverages (p = 0.222) and anxiety (p = 0.137). In the village lived little more than a quarter of respondents (29.0 %) and they all slept badly (p = 0.018). One third (33.0 %) respondents did not use sleeping tablets, though their sleep was bad (p = 0.001). Slightly more than a third (34.0 %) of bad sleeping respondents felt anxiety about 3 or more times per week. The majority (84.4 %) of the males slept badly. Slightly more than half (53.2 %) of poor sleep respondents drink alcohol every day before entering the hospital.

Conclusion. Statistically, Pittsburg sleep quality index score was significantly different among people, who are using sedatives and place of residence. It was found that, patients who lived in a village, slept worse than those who lived in a city. Assessment of sleep quality has not been affected by gender and anxiety.

ASSOCIATION BETWEEN SELECTED CLINICAL FEATURES AND DURATION OF THE DISEASE IN PATIENTS WITH DEMENTIA FROM THE UPPER SILESIA REGION

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Keywords. Dementia, disease duration, symptoms.

Introduction. Dementia is a widespread serious syndrome affecting behavioral and cognitive functioning as well as mood and physical health. This problem interferes with daily and social activities. The Upper Silesia region is a territory of Poland with the highest level of industrial development and with the largest population per square km. However, the prevalence of late or undetected dementia is still high globally.

Aim. To determine the time from the first symptoms to the dementia diagnosis and to investigate whether the number of the symptoms was related to the disease duration.

Materials and methods. Based on the patients' medical history from the Department of Neurology in Zabrze, 66 individuals with diagnosed dementia were enrolled in the retrospective study. Dementia incidence was recognized using International Classification of Diseases, Tenth Revision codes for Alzheimer disease (n = 32), vascular (n = 17) and nonvascular dementia (n = 17). Baseline and clinical characteristics of the patients were evaluated. Depending on the number of the selected dementia symptoms (memory problems and others cognitive dysfunctions, sleep disturbances, depression, anxiety, slowness of movements, etc.), the study group was divided into two subgroups: I (n = 43 individuals) and II (n = 23) (with n ≤ 3 and n ≥ 4 symptoms, respectively). Additionally, time of the disease duration was analysed according to the number of the dementia symptoms.

Results. The average age of the patients was 76.62 ± 11.39, the majority of them were females (57.58 %). Median duration time of the disease (from the first symptoms to the inclusion day FS-ID) was 60.9 months [36.5], while from the diagnosis to the inclusion day (D-ID) and from the first symptoms to the diagnosis (FS-D) were 36.3 [35.6] and 20.3 [25.9] months, respectively. Between I and II groups there were observed significant differences in FS-ID (48.7 [36.5] *vs.* 73.0 [49.6] months p = 0.01, respectively) and D-ID (30.2 [28.7] *vs.* 45.7 [42.4] p = 0.018, respectively) but there were no changes in FS-D (16.3 [27.4] *vs.* 22.5 [25.2] p = 0.74).

Conclusion. Considerable latency in the diagnosis of dementia was presented. Clinical features of the patients were associated with the disease duration. Great efforts are required to improve earlier dementia diagnosis and to reduce complex clinical course of the disease.

CHARACTERISTICS OF PREHOSPITAL AND INTRAHOSPITAL TREATMENT OF *STATUS EPILEPTICUS*

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Keywords. Status epilepticus; algorithm.

Introduction. *Status epilepticus (SE)* is a continuous generalized seizures lasting more than 5 min, or two or more seizures without full recovery of consciousness between any of them. *SE* is a medical emergency that needs to be evaluated and aggressively managed according to standard algorithms. Treatment recommendations are based on a staged approach depending on the duration of seizures and effectiveness of treatment in order to reduce complications and mortality.

Aim. The aim of my study was to evaluate applied *SE* treatment methods and its outcomes in patients with *SE* at Riga Eastern Clinical University Hospital "Gaiļezers".

Materials and methods. The present report is based on retrospective analysis of medical records of 58 patients with diagnosis of *SE* treated at Riga Eastern Clinical University Hospital "Gaiļezers" in the period from 2012 to 2016. The official *SE* treatment algorithm of Riga Eastern Clinical University Hospital "Gaiļezers" was used to analyse the accordance of practice to the recommendations. Data were statistically analysed using the *SPSS Statistics.*

Results. Of the 58 patients 25 (43.1 %) were females and 33 (56.9 %) were males. The average age was 49.3 years. 5 (8.6 %) patients developed SE as inpatients. 46 (79.3 %) were prehospitally treated with first-line therapy – benzodiazepines (diazepam 5–40 mg) and 36 (62.1 %) received benzodiazepines both – prehospitally and as inpatients, diazepam 10–40 mg. 11 (19.0 %) had total dose of diazepam 40 mg. 48 (82.8 %) were treated with second-line therapy, sodium valproate 500–2000 mg. 17 (29.3 %) were previously treated with sodium valproate as outpatients. 27 (46.6 %) required third-line therapy – general anaesthesia (midazolam 50 mg, thiopental 1g). No medical record with exact time of treatment initiation or termination of seizures was found. In majority of cases *SE* time characteristics were approximate to up to one hour in 42 (72.4 %) cases and in 16 (27.9 %) cases only date was mentioned. Based on the imprecise records, it was impossible to measure exact treatment duration in any case. Death was outcome in 6 (10.3 %) cases.

Conclusion. Mortality was lower in my study compared to literature data. Half of patients required third-line therapy to terminate *SE.* Study data show that *SE* therapy at Riga Eastern Clinical University Hospital "Gaiļezers" is consistent with the recommended algorithm. There is a clear need for precise recording of time when treatment is initiated or *SE* terminates. Study data show that seizure duration prehospitally is rather long, it is necessary to improve the education of patients' relatives in order to reduce mortality.

FREQUENCY OF MILD COGNITIVE IMPAIRMENT IN PATIENTS WITH PARKINSON'S DISEASE AND CONGESTIVE HEART FAILURE

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Keywords. Mild cognitive impairment, Parkinsonism, heart failure.

Introduction. The term Mild cognitive impairment (MCI) is used to identify intermediate stage between expected slight cognitive decline in normal aging and the more serious decline in dementia. MCI represents a heterogeneous clinical syndrome that can be ascribed to different etiologies: degenerative, vascular, psychiatric, or other medical conditions. MCI is among the most frequent non-motor symptoms in Parkinson's disease. Cerebral hypoperfusion due to alteration of cardiac output or cerebrovascular reactivity, arterial hypotension also is called into question in the determination of cognitive impairment.

Aim. The aim of the study was to compare two groups of different patient groups: Parkinsonisms' patients and congestive heart failure patients (CHF) II-IV class of the Pauls Stradins Clinical University Hospital and evaluate prevalence of MCI and dementia.

Materials and methods. A cross-sectional case-control study, stationary patients at the age 47–75 years: 31 patients with Parkinsonism's and 36 patients with CHF: 9 – NYHA class II; 14 – NYHA class III; 10 – NYHA class IV.

The following parameters were evaluated: cognitive impairment tests with The Montreal Cognitive Assessment (MoCA): ≥ 26 points – normal; The Mini–Mental State Examination: 25–30 – questionably significant, 20–25 – mild, 10–20 – moderate, 0–10 – severe; Parkinson Disease evaluation with Unified Parkinson's Disease Rating Scale (MDS-UPDRS).

Results. Based on the MoCA scale results, 48.4 % (15) (95 % CI 40.69–59.30 %) of patients with Parkinsonism's and 44.4 % (16) with CHF were identified with a mild cognitive impairment. MMSE of Parkinsonism's patients' shows that 61.3 % (19) have questionably significant impairment; 22.6 % (7) have mild impairment; 9.7 % (3) have moderate impairment; 6.4 % (2) have severe impairment. CHF patients' MMSE shows that 63.9 % (23) have questionably significant impairment; 36.1 % (13) have mild cognitive impairment; no moderate or severe impairment. Mild cognitive impairment was diagnosed in 2 CHF NYHA class II, 9 CHF NYHA class III and 5 CHF NYHA class IV patients (MoCA); in 1 CHF NYHA class II, 8 CHF NYHA class III and 4 CHF NYHA class IV patients (MMSE).

Conclusion. Our data showed, that MCI frequency in both groups were similar. That proves that mild cognitive impairment can be associated not only with cerebral structure's damage, as in Parkinson's disease, but also with chronic disease such as congestive heart failure. It is important for clinicians to recognize MCI, as it can worsen patients' quality of life and affect patients' compliance, that can cause more complications of disease and fail to reach therapy effects.

COMPUTER-BASED COGNITIVE TRAINING PROGRAM EFFECT IN PATIENTS AFTER STROKE FOR MEMORY AND INDEPENDENCE

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Keywords. Stroke, computer- based cognitive program, memory, independence.

Introduction. Stroke affects the cognitive domain. Memory is important in various situations, especially those that require the simultaneous holding and manipulation of information or complex reasoning. One proposed method for optimizing the effects of therapy is the use of computerized cognitive rehabilitation training.

Aim. The purpose of this study was to evaluate the effects of computerized cognitive rehabilitation training program on memory and independence for patients after stroke.

Materials and methods. The study was designed as a randomized trial. 49 patients after ischemic stroke participated in the study. Before the study, patients were randomly divided into two groups: control group (CG) – 26 patients and study group (SG) – 23 patients. The control group patients were given a standardized rehabilitation program tailored to the individual usual occupational therapy (OT) (5 times/week). The study group patients besides the usual standardized OT (2 times/week) had the OT based on the computerized cognitive training program (PssCogRehab 2012, USA) (3 times/week). The duration of the session – 45 min. Rehabilitation time – 32 days. The methods of the study were the following: MoCA, FIM. Tests were conducted before the rehabilitation and after 32 days of rehabilitation. Statistical data analysis was performed using IBM SPSS Statistics 22.0 program.

Results. The cognitive functions of CG significantly improved after the research (U = −2.60; p = 0.009). The cognitive functions of SG also significantly improved (U = −3.90; p < 0.001). After research, the mean total MoCA test score increased statistically significantly in both groups (p < 0.05). A statistically significantly greater (U = −2.36; p = 0.18) change between the groups was observed in the SG. We found out that the memory of CG after standardized rehabilitation program significantly improved (U = −2.56; p = 0.01). And the memory of the SG also significantly improved (U = −3.37; p = 0.01). We found no statistically significant differences between the groups, but we observed a trend showing greater change for the memory task in the SG than in the CG (U = −1.48; p = 0.139). The evaluation of total FIM score in both groups before and after the research revealed no statistically significant differences, but there was a trend showing greater independence levels changes in the SG (U = −1.62; p = 0.116).

Conclusion. Both patients groups improved memory and independence after OT sessions, but the patients who used computer-based cognitive training program along OT sessions recovered their memory and independence more effectively than their counterparts after standardized rehabilitation program.

CONTENT ANALYSIS OF OUTCOME MEASURES APPLIED TO YOUNGER SCHOOL-AGE CHILDREN WITH CEREBRAL PALSY

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Keywords. Cerebral palsy, child, outcome measures, content analysis, international classification of functioning, disability and health.

Introduction. Cerebral palsy (CP) is a life-long neurodevelopmental condition. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behavior, by epilepsy, and by secondary musculoskeletal problems (Rosenbaum, Paneth, Leviton et al., 2007). CP is also the most common cause of severe physical disability in childhood (Kuban, Allred, O'Shea et al, 2008) and disability, activity limitations and participation restrictions were all clinically strongly associated with each other (Beckung, Hagberg, 2002). However, choosing the appropriate outcome measures to plan interventions with this population is still a challenging task because there remains a lack of consensus regarding which measures are best used (Schiariti, O'Donnell, Tatla et al, 2016). The International Classification of Functioning (ICF) and Core sets for children with CP provide a universal framework for assessment, intervention and follow-up (Schiariti, O'Donnell, Sauve et al, 2013), therefore implementing valid and reliable tools, consistent with ICF, could help with selecting the most appropriate outcome measures for children with CP.

Aim. To analyse content of outcome measures in population of younger school-age children with CP and to recommend the most fitting ones for evaluating activities and participation.

Materials and methods. The aim was achieved with following tasks: 1) to identify outcome measures used in studies with younger school-age children with CP; 2) to link the content of each outcome measure to the ICF; 3) to analyse psychometric properties of outcome measures included.

ScienceDirect, PubMed, Wiley Online Library and Elsevier databases were searched with keywords "cerebral palsy", "child", "outcome measure" to identify studies involving younger school-age children with CP during November and December 2016. A total of 268 articles were analysed. All included articles were in English and studied children aged 7–12 years. Outcome measures were included if they fit the criteria: Most commonly mentioned in research papers among various authors; Outcome measure is applicable to 7–12 year old children with CP; Applicable for use in outpatient setting; Outcome measure is available online for free.

All items from outcome measures were linked to the ICF. Psychometric properties of outcome measures were evaluated from validity studies.

Results. Analysed articles described 18 most popular outcome measures. 6 outcome measures, that fit the inclusion criteria, were linked to the ICF. Included outcome measures were: GMFM-88, Modified Ashworth Scale, Abilhand-Kids, Thomas-Stonell and Greenberg scale, Viking Speech Scale and Nordic Orofacial Test-Screening. These outcome measures contained 158 items from which 156 were linked to the ICF and covered 78 categories. Out of the 78 categories, 47 % were related to Body functions and Structures, 51 % to Activities and

Participation, 1 % to Environmental factors. Two unlinked items could be related to Personal factors. Outcome measures that cover ICF components of Activity and Participation are GMFM-88, Abilhand-Kids and NOT-S.

Outcome measures were considered to be psychometrically sound if psychometric properties of both reliability and validity were adequate to excellent (if the values were ≥ 0.6). Modified Ashworth scale was found to not be reliable for this population due to reliability measures possessing mostly poor to adequate results. Another outcome measure that should be used cautiously in population of children with CP is Thomas-Stonell and Greenberg scale. Despite it being widely described in research papers, no psychometric testing was available. All other outcome measures were found to be psychometrically reliable and valid in population of children with CP.

Conclusion. Recommended outcome measures for evaluating activities and participation of younger school-age children with CP are GMFM-88 and NOT-S, as they have the highest coverage of ICF components and are psychometrically sound. There is advisement against the use of Modified Ashworth Scale and Thomas-Stonell and Greenberg Scale for assessment of children with CP. Further research is needed into psychometric indicators of Thomas-Stonell and Greenberg scale and other outcome measures, such as spasticity, for population of children with CP. Using ICF as a framework, information is provided, that can help in selection of an outcome measure, when setting goals for work with children with CP in clinical practice.

DEPRESSION AND ANXIETY SEVERITY DEPENDING ON HEROIN ADDICTION FOR PATIENTS WITH ABSTINENCE SYNDROME OR REMISSION

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Keywords. Heroin addiction, depression, anxiety.

Introduction. Affective disorders have a high prevalence among opioid users both during the abstinence syndrome and the remisson (Maremmani et al., 2015; Wong NM et al., 2015). There is not much information about the difference of affective sphere for patients with abstinence syndrome in comparison to patients who have achieved a clinically-stable remission during the opioid replacement therapy.

Aim. To detect the association between the heroin addiction severity and depression/anxiety for the patients with abstinence syndrome or stable remission.

Materials and methods. The interview consists of sociodemographic information, Addiction severity index (ASI), The Hamilton Rating scale for Depression, The Hamilton Rating scale for Anxiety. Data is statistically processed in Microsoft Excel and SPSS 20.

Results. 108 patients, 39 females (36.1 %) and 69 males (63.9 %). Minimal age is 19 years, maximal age – 45 years; mean – 31.96 years. All patients are divided into two groups: there are 57 patients with abstinent syndrome in the first group, who intook heroin at least one time during the last month; there are 51 patients with the stable remission in the second group, who did not intake heroin from 6 month to 3 years. Spearman's rank correlation between the addiction

severity index and anxiety (R = 0.898; p = 0.000), the addiction severity index and depression (R = 0.856, p = 0.000) both established statistically significant correlations. The independent sample T-test established statistically significant difference between the patients group with the abstinent syndrome and the patients group with the stable remission, the difference between two means of addiction severity index is 4.83 points, the difference between two means of depression severity is 15.59 points, the difference between two means of depression severity is 16.33 points, all differences are statistically significant (p = 0.000) and all means are higher in the group of patients with the abstinent syndrome. For patients with the stable remission the mean ASI is 3.1 points, the mean depression rate is 6.1, the mean anxiety rate is 4.35, for patients with abstinent syndrome the mean ASI rate is 7.93 points, the mean depression rate 21.68 points, the mean anxiety rate is 20.68 points.

Conclusion. There are strong correlations between the addiction severity, anxiety and depression. The clinically stable remission achieve by the methadone or buprenorphine programs shows a significant addiction severity decrease and better results of mental health, caused by a significant decrease in depression and anxiety rate.

DEPRESSION AND ANXIETY AMONG YOUNG PEOPLE SMOKERS AND NON-SMOKERS

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Keywords. Smoking, depression, anxiety.

Introduction. World Health Organization data shows that in 2015, over 1.1 billion people smoked tobacco. 24.6 % of Latvian citizens are daily smokers. Multiple studies have demonstrated an association between cigarette smoking and increased anxiety symptoms, with early exposures potentially predisposing to enhanced anxiety responses in later life [B. Behav, 2013]. Evidence suggests that individuals with increased anxiety are more likely to smoke. [Swendsen et al., 2010]. Around 70 % of smokers are more likely to suffer from depression and anxiety as seen in studies. Depression is associated with an increased frequency of smoking. Studies have shown that depression and smoking often go hand in hand and people with depression are not only more likely to smoke, but may also find it harder to quit smoking than those who are not depressed.

Aim. The aim was to determine the prevalence and correlation of depression, anxiety and smoking habits in young people and to assess severity of depression and anxiety.

Materials and methods. A questionnaire was used to gather data about smoking habits. Depression was assessed by the Patient Health Questionnaire PHQ 9, but anxiety was assessed by Taylor Manifest Anxiety Scale (Taylor, 1953). Participants were divided into 5 groups depending on smoking habits: daily smokers, occasional smokers, quitters 1–6 months ago, ex-smokers given up more than 6 months ago and non-smokers. Statistical data was processed in MS Excel and IBM SPSS Statistics.

Results. A cross sectional study was conducted among young people. Together there were 231 participants, of them 67.1 % (n = 155) women and 32.9 % (n = 76) men. Mean age was 25.3 years (SD = 3.5). Depressive symptoms were observed in 58 % respondents. High level of anxiety were

in 51.9 % respondents, but 45.5 % of respondents – moderate anxiety. 49.4 % of respondents were non-smokers, 30.3 % were daily smokers, 6.9 % occasional smokes, but 13.4 % were ex-smokers. There was no statistical significant correlation between smoking and prevalence and severity of depression or anxiety (p > 0.05). Also there was no significant statistical correlation between smoking regularity and severity of depression or anxiety (p > 0.05).

Conclusion. The correlation between smoking and depression or anxiety were conflicting. In this study there was no significant difference between smokers and non-smokers. In both groups anxiety and depression prevalence were high. But the highest level of evidence shows a statistical significant correlation between smoking and prevalence of depression and anxiety. This justifies that there were some unidentified factors what influence the results and the need for more studies.

DESCRIPTION OF PATIENTS WITH ACUTE CEREBROVASCULAR INCIDENT PREHOSPITAL DIAGNOSIS

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Keywords. Cerebrovascular, stroke, prehospital.

Introduction. Stroke is one of the leading causes of death in the world and a leading disability cause. It is important to recognize acute cerebrovascular incidents fast and accurate. Hospitals with Stroke Unit have a crucial role to aid the diagnosis and provide the necessary medical assistance. Emergency care professionals have a significant role in the selection of patients and transportation to Stroke Unite.

Aim. To evaluate the identification of acute cerebrovascular incident diagnosis during prehospital stage. To evaluate the patient distribution between all hospitals with Stroke unite in Latvia. To identify most common complications in patients with acute cerebrovascular accidents at prehospital stage.

Materials and methods. Retrospective review of all patient encounters by emergency care service resulting in transport to all hospitals with Stroke units in Latvia during one year (2015) period. Subjects were identified by emergency care coding of stroke/transient ischemic attack (G45, I60–I64 by ICD-10).

Results. In total, 14809 patients were identified. Compared to other decades of life most patients were in the age group 70–79 years (4507, 30.4 %). Female patients – 9280 (52.1 %).

From all patients included in this study 4323 (29.2 %) patients were transported to Riga Eastern Clinical University Hospital, 3405 (22.9 %) patients to Pauls Stradins Clinical University Hospital, 1815 (12.3 %) to Daugavpils Regional Hospital, 1488 (12.3 %) to Rēzekne Hospital, 1162 (7.9 %) to Vidzeme Hospital, 1106 (7.5 %) to Liepāja Regional Hospital, 510 (3.4 %) to Ziemeļkurzeme Regional Hospital.

52.2 % were diagnosed with "Stroke, not specified as hemorrhage or infarction" (I64 by ICD-10); 43.7 % of all patients were diagnosed with "Transient cerebral ischemic attacks and related syndromes" (G45 by ICD-10). Other diagnosis (I60, I61, I62, I63) together accounted 4.1 % of all cases included in the study.

2613 (17.6 %) patients had complications at prehospital stage. Most complications (944, 36.1 % from all patients with complications) were classified as "Other complications that require IT or urgent hospitalization", second most frequent complication were "Somnolence, stupor, coma, who is not related to diabetes" (391, 14.9 % from all patients with complications).

Conclusion. Patients with acute cerebrovascular incident prehospital diagnosis are mainly transported to both Clinical University Hospitals in Riga – 52.2 %. A large share of acute cerebrovascular incident prehospital diagnosis is made by transient ischemic attacks – 43.7 %. Most complications are classified as "Other complications that require IT or urgent hospitalization" which makes accurate complication assessment difficult.

EMOTIONAL CHALLENGES FOR STAFF IN CASES OF STILLBIRTH

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Keywords. Stillbirth, staff, emotions, stress.

Introduction. Stillbirth is an adverse pregnancy outcome, which is defined by fetal death after the 20th week of gestation. Worldwide about 2.7 million babies were stillborn in 2015; in Latvia there were 106 cases of stillbirth in 2015. In most cases stillbirth comes unexpected and unpredictable but it leaves a deep impact on the parents and staff. Providing care for bereaved parents, openly communicating and supporting them is crucial, but also can be emotionally draining for staff.

Aim. To determine emotional challenges for staff working with patients in cases of stillbirth.

Materials and methods. Research was done by surveying health care profesionals working in Maternity wards – midwives and obstetricians in 2 hospitals – *Riga Maternity Hospital* and *Pauls Stradins Clinical University Hospital* Perinatal Care Center. The survey consisted of various questions about the challenges of working with patients in case of stillbirth. 106 respondents completed the survey. Statistical analysis was done in IBM SPSS Statistics v23.

Results. 103 of the respondents were women. 66 % (n = 70) were midwives and 34 % (n = 36) obstetricians. The work experience staff had was less than 5 years (30 %, n = 38); 10–19 years (19 %, n = 28); 30–39 years (18 %, n = 26). Staff were asked about emotional factors they encounter when working with cases of stillbirth, 52.4 % (n = 54) mentioned stress, 31.1 % (n = 32) mentioned confusion, 25.4 % (n = 26) mentioned other factors (empathy, pain, depression, fear, powerlessness, feeling of unfairness, wanting to ease the pain, to help). 78.6 % (n = 81) agreed, that their mood and overall feeling good is altered and affected them outside work. 16.7 % (n = 17) think they sympathize with the patients on a more intimate level than they should as professionals. When asked about powerful emotions when working with these patients, specialists mentioned compassion (78.4 %, n = 69), sadness (52.3 %, n = 46) and helplessness (47.7 %, n = 42).

Conclusion. Healthcare professionals who work with patients in cases of stillbirth have many emotional factors contributing to their work, such as stress, confusion, sadness, compassion, pain and even depression or helplessness. Some specialists think they live through the emotional experience together with patients not as professionals, but on a more intimate level. Work with these patients is emotionally saturated and can affect the specialists even after working hours.

EMOTIONAL DISTRESS IN CHILDHOOD
IN TYPE 2 DIABETES PATIENTS

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Keywords. Distress, childhood, diabetes, type 2.

Introduction. Adverse childhood experiences are known to have an impact on mental and physical health of an individual through its life span. The biologic pathways which are involved in making this impact are neurobiological, immunological mechanisms, stress hormone axis and inflammatory mechanisms. Type 2 diabetes (T2D) is a chronic, metabolic disease with a multifactorial pathogenesis. One of the environmental factors associated with diabetes is acute or chronic stress. Chronic distress in childhood can cause heightened inflammatory responses, hormonal dysregulation and neurobiological changes such as risk behavior. All of these factors combined can lead to metabolic syndrome, insulin resistance or obesity which are main pathogenetic mechanisms of T2D.

Aim. To determine whether T2D patients have experienced any kind of emotional distress in childhood.

Materials and methods. The research was done by surveying T2D patients in a GP's office. The patients were given 2 surveys – Parental Bonding Instrument (PBI) and a survey with adverse childhood risk factors, that are empirically proven to have a long-term effect on individuals' health.

Results. Total count of respondents was 39; 21 of them were women and 18 men. The most frequent age group was 55–64 y.o. (14), followed by 45–54 y.o. (12). 13 of the respondents had experienced some kind of violence (physical, emotional) in their childhood. 21 often had arguments in their family. 33 of patients' fathers and 30 of mothers had only basic education level. 5 patients lived with their mother only and 1 patient lived with his grandparents. Only 2 respondents had "Optimal care" attachment (assessed with PBI) with their mothers and fathers. The majority (31 with mothers and 21 with fathers) had the attachment type "Affectionless control". Patients who often had arguments in family (p = 0.016) and whose mother had primary education (p = 0.047) experienced childhood violence more than others. Those who lived with their mothers only, assessed their childhood with lower VAS marks (1-3) more (p = 0.015), experienced sadness and anger more frequently (p = 0.006; p = 0.016) and experienced joy less (p = 0.015) than those, who spent their childhood with both parents.

Conclusion. T2D patients have had various childhood experiences that are potentially traumatising and emotionally distressing. The risk factors patients had experienced were living with one parent, oft arguments in family, violence, insecure parental bonding, poor education of parents and financial problems. However one patient did not experience any of the mentioned risk factors.

EXPRESSIONS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) WITH YOUNGER SCHOOL-AGE CHILDREN AT SCHOOL

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Keywords. Inattention, hyperactivity/impulsivity.

Introduction. ADHD is one of the most common types of psychic disorders in childhood that is widely spread all over the world. Usually it is observed with children of school-age, but it can start also earlier – at pre-school age; and it can also preserve at adult age. The main expressions are inattention and/or hyperactivity/impulsivity that is improper with age and development level of the patient. And it disturbs social, academic/professional functioning of the individual. In childhood ADHD is often combined with oppositional defiant disorders (ODD).

Aim. To determine the most often types of ADHD expression by age groups and sexes.

Materials and methods. Class master questioning on expressions of ADHD (inattention, hyperactivity/impulsivity, ODD). There are 30 descriptions of these expressions included in the questionnaire, where for assessment of their intensity answer choices are offered: never, sometimes, often, and always. For processing of statistic data application MS Excel 2013 was used.

Results. There were 67 children with ADHD included in the research at the age 7–12 – 20 girls and 47 boys. Children were divided in two age groups: 1) from 7 to 9; 2) from 10 to 12. In both age groups the most often type of expression in 82.2 % of cases is inattention. In age group from 7 to 9 inattention was observed with 86 % of children, but at the age of 10–12 it was observed with 88 % of children. Regardless age group inattention was most common with boys – 77 % of children at the age 7–9 and 68 % with children aged 10–12. The most rare were expressions of ODD – 39.4 % of children.

Conclusion. Following the research results data the most common expression of ADHD in both age groups is inattention, but the rarest – ODD expression. Regardless of age, most common expressions of inattention are with boys. But for girls inattention and hyperactivity-impulsivity are observed in quite equal indicators.

IMPORTANCE OF PHYSICIANS' KNOWLEDGE ABOUT GRIEF IN CASE OF STILLBIRTH

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Keywords. Stillbirth, grief, physicians.

Introduction. In Latvia were 106 cases of stillbirth in 2015. Parental loss of an infant through stillbirth is recognized as a traumatic life event. (Kersting, Wagner, 2012) Grief has five stages – denial, anger, bargaining, depression and acceptance. (Kübler-Ross, 1969) Goals of the health care team are to help the family start a normal grief reaction, actualize the loss, acknowledge their grief, assure the family that their feelings are normal and meet the particular needs of each family. (Aerde, 2001)

Aim. To understand the importance of knowledge about parental grief reaction in case of stillbirth in physicians.

Materials and methods. In the study participated 106 midwives and obstetricians. Surveys were collected in the Perinatal Care Center of Pauls Stradins Clinical University Hospital and Riga Maternity Hospital. Research was made by originally created study protocol. Statistical analyses were performed using IBM SPSS 22.0.

Results. The study included 106 respondents, 97.2 % (n = 103) were female. In the study participated 66 % (n = 70) midwives and 34.0 % (n = 36) obstetricians, 75.2 % (n = 80) of respondents were certified. 72.6 % (n = 77) of respondents were from Riga Maternity Hospital.

39.6 % (n = 43) of respondents knew the stages of grief and their order; 26.4 % (n = 29) knew the stages of grief, but did not know the order of them. 46.2 % (n = 50) of respondents always, 32 % (n = 34) sometimes, 11.7 % (n = 12) in most of cases and 8.7 % (n = 9) never had noticed grief stages in patients. Health care providers who knew the stages of grief more often noticed them in patients (p = 0.042). 84.5 % (n = 90) of respondents think that knowledge about the stages of grief could help in emotional support of patients.

Conclusion. More than half of respondents know the stages of grief and they more often notice grief reaction in patients. Physicians think that knowledge about grief stages could help in emotional support of patients. Because of patient-physician relationship improvement and ability to help to cope with child loss, physicians should improve their knowledge about grief reaction and its stages.

INDIVIDUAL OCCUPATIONAL THERAPY NEEDS AT HOME AFTER STROKE: TWO CASE STUDIES

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Keywords. Stroke, occupational therapy, home-based.

Introduction. Stroke is the third most common cause of death, with over 67,000 deaths each year, the significant impact of stroke is long term disability. Stroke survivors are able to return home and continue many activities they did. They experience many challenges: fear of having another stroke, loss of confidence, it's major negative factors in regaining independence. Rehabilitation can help prepare a person to go home, but cannot fully trained to live in the house.

Aim. Examine the need of occupational therapy at home and reintegration into the community after stroke.

Materials and methods. The study was designed as a qualitative method, two most similar cases analyses. First, two similar participants were found in Kaunas Clinical hospital, Rehabilitation department, according to selection criterias: MMSE (21 and more) and Barthel index evaluation (35–45 score, by Lithuania order Nr. V-50 a person after stroke gets 40 days of rehabilitation), also ischemic stroke type. At the beginning of rehabilitation program both was not able to eat, dress or walk, they had left side paresis. During rehabilitation respondents participated in four interviews and observed during occupational therapy intervention, after that it was continued at home, also four interviews (1 interview per 10 days), observations and goal aiming. Overall, the research was conducted for 80 days. Activities of daily living scale (ADL) was used to find the problems at home for persons after stroke and Goal Attainment Scaling to achieve goals with 2 older women. Both cases was independed before the stroke. After rehabilitation first case was able to walk with a stick and eat, but needed help while dressing and showering, case number 2 was able to walk again, dress upper body and eat. The findings suggest that the approach has the potential to successfully help clients with stroke achieve their everyday occupational goals, for example, making a sandwich while one side of the body is paralysed. Data analysis was performed using observation and information form the participants.

Results. The results of the research have revealed that persons after stroke face the task to make changes in a living place, ability to be independent, financial situation and participation in the community. The research has showed that having a family member involved in rehabilitation program has positive impact in daily living. Both participants were unable to perform all daily living skills independently. The results of research revealed that motivation, family support and hard work are the main recovery reasons for a person after stroke, who wants to be independent. Research has also revealed the needs of individual occupational therapy at home for people who suffered stroke. Occupational therapist can help focus on personal activities of daily living following stroke and improve recovery, also may benefit stroke survivors from re-stroke and home accidents, falling, injuries.

Conclusion. Individual occupational therapy at home for people after stroke improving independence in stroke survivors ability to perform personal activities of daily living. However, the exact nature of the occupational therapy intervention to achieve maximum benefit needs should be defined.

INTERLEUKIN-1 BETA OVEREXPRESSION IN HIPPOCAMPUS IS ASSOCIATED WITH DEVELOPMENT OF MEMORY DISORDERS AFTER MILD TRAUMATIC BRAIN INJURY

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Keywords. Mouse, Traumatic brain injury, weight-drop injury model, hippocampus, inflammatory gene expression.

Introduction. Traumatic brain injury (TBI) is one of the leading causes of neurological and cognitive deficiencies in people under age of 45. An immediate consequence of TBI is the induction of an early inflammatory response, which can later result in secondary injury mechanisms, cell death and neurological dysfunction. Understanding of the TBI-induced inflammation process related gene expression profile could help to develop treatment strategies to control inflammation and prevent secondary brain damage induced cognitive disorders.

Aim. The aim of the study was to measure the inflammatory gene expression in hippocampus at several time points and test memory function in mice after traumatic brain injury.

Materials and methods. Weight-drop TBI model was used to induce head injury in male *SW* mice. IL-6, IL-1β, IL-10, tumor necrosis factor (TNF)-α, matrix metalloproteinase (MMP)-9 and tissue inhibitor of metalloproteinases (TIMP)-1 gene expressions were measured by quantitative real time-PCR analysis in the hippocampus 12 h and 1, 3, 7, 10, 14 days after TBI. First-strand cDNA was synthesized using a *High Capacity cDNA Reverse Transcription Kit*. Quantitative real time-PCR analysis was performed using *SYBR Green Master Mix*. The neurobehavioral status of mice was assessed by the neurological severity score (NSS). Object recognition test was used to test short- and long-term memory deficits for up to 8 weeks after traumatic brain injury. The statistical calculations were performed using *GraphPad Prism* 3.0.

Results. Weight drop impact induced more than 2 fold increase in the expression levels of inflammatory genes IL-6, IL-1β and TNF-α up till day 3 after TBI. TBI induced high TIMP-1 gene expression during the first 3 days after trauma. The inflammatory gene expression decreased to control levels 7 and 10 days after TBI. 14 days after TBI a significant 3.4 fold increase of IL-1β gene expression level was observed in hippocampus. Novel object preference was decreased in object recognition test 5 weeks after TBI. Significantly impaired long-term memory function was observed 8 weeks after TBI.

Conclusion. TBI induces 14 day delayed IL-1β overexpression in hippocampus and is associated with development of long-term memory deficits in mice.

INTRACEREBRAL HEMORRHAGE: NEUROIMAGING, ETIOLOGICAL FINDINGS AND THEIR SIGNIFICANCE FOR A POOR OUTCOME

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Keywords. Intracerebral hemorrhage, etiology, neuroimaging, outcomes.

Introduction. Intracerebral hemorrhage (ICH) is an important neurological condition, amounting to around 10 percent of all strokes and it is associated with a higher risk for poor outcomes than ischemic stroke. Despite being a topic of many investigations, ICH is still characterized by poor outcomes and high burden to the society. It is important to know the factors that may signify non-favorable clinical course in order to be prepared and use more vigorous treatment.

Aim. We aimed to evaluate ICH epidemiologic, etiologic, neuroimaging findings and their significance for poor outcomes in a prospective study in Vilnius, Lithuania.

Materials and methods. Patients admitted with ICH in two Vilnius University hospitals were investigated from November 2015 to May 2016. Epidemiological, anamnestic, laboratory, neuroimaging data were collected. Physical examination was performed on admission and on discharge, and complications were documented. Early outcomes were assessed using modified Rankin scale (mRS). Bad outcomes were defined as mRS 4–6.

Results. 115 patients were enrolled in this prospective study, 53 % were men. Mean age of the patients was 65.4 ± 13.3 years (y). The main underlying disease was arterial hypertension – 91.3 %, thus only 48.7 % were taking antihypertensive drugs. Medial ICH localization was prevailing in both younger (< 60 y) and elderly (> 60 y) patients (41 % and 39.7 %, respectively). Incidence of lobar ICH increased in elderly (32.9 %). Patients with brainstem (50 %), lobar (51.6 %) and isolated ventricular (50 %) ICH had the most severe neurological deficit (mRS 4–5). The highest mortality rate was in mixed/undifferentiated (53.3 %) and isolated ventricular (50 %) ICH. The average ICH volume was 29.1 ± 34.9 ml. The highest means of ICH volume were in mixed/undifferentiated (66 ± 51.6 ml) and lobar (39.9 ± 32.6 ml) ICH. Bad outcomes were observed in 66.3 % of patients: severe neurological deficit occurred in 41.2 %, death – in 25.1 %. Statistically significant neuroimaging factors of poor outcome were ICH volume ($p < 0.001$), midline brain shift ($p < 0.001$), previous lacunar stroke ($p = 0.027$), ICH extension ($p = 0.002$). Major etiological factors presuming ICH were hypertension (76.3 %), amyloid angiopathy (9.3 %).

Conclusion. The main underlying disease and etiological factor was hypertension, which was poorly treated. Although predominant localization of the ICH was medial, frequency of lobar ICH increased in elderly age. Bad outcomes were observed in more than one half patients. Significant factors of bad outcome were the volume of ICH, midline brain shift, previous lacunar stroke and extension of ICH.

KNOWLEDGE OF MENTAL HEALTH FIRST AID
AND DISCRIMINATION AGAINST PEOPLE
WITH MENTAL ILLNESS STUDY

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Keywords. Discrimination, mental health first aid, mental health.

Background. Discrimination against people with mental health problems (MHP) is prevalent, though people are likely to have a contact with mental health (MH) crises. MH first aid (MHFA) teaches society to identify MHP. According to studies negative attitudes towards MHP had decreased after MHFA trainings. Our aim was to compare knowledge of MHFA and an assumption of discrimination against people with MHP in Lithuania.

Materials and methods. "Australian National Survey of MH Literacy and Stigma" was adapted to an anonymous internet survey. The questionnaire contained: demographic information; case vignettes (concerning depression, depression with suicidal thoughts, early schizophrenia, and chronic schizophrenia) – one of them was obtained randomly to every participant; identification of MHP and an opinion on whether a vignette person would be discriminated in society was tested. MHFA knowledge was evaluated by the ALGEE algorithm, maximum score – 5. Analysis used SPSS. Results were considered statistically significant when $p < 0.05$.

Results. 182 people took part in the survey during April 2016. 175 were involved in the final analysis. The age of respondents 18–59; male 24.6 %, female 75.4 %. The average evaluation of ALGEE was 1.84 ± 0.89, distribution by gender: female 1.96 ± 0.89, male 1.60 ± 0.82 (p = 0.021). ALGEE scores by identification of vignettes: correct identification (n = 136) 1.95 ± 0.88, wrong (n = 39) 1.62 ± 0.88 (p = 0.04). No statistically significant difference between ALGEE score groups by assumption of discrimination occurred (p = 0.829). Participants who had vignettes with schizophrenia were more likely to assume that a vignette person would be discriminated and those who had vignettes with depression assumed contrariwise (p = 0.003).

Conclusion. People of Lithuania have low knowledge regarding MHFA and female showed better results. The average ALGEE score was 2 of 5. There were no association between ALGEE knowledge and opinion on whether people with MHP would be discriminated. People assumed that a person with schizophrenia would be discriminated in society and someone with depression would not.

LOW BACK PAIN DIAGNOSTIC AND TREATMENT HABITS IN LATVIA'S OUTPATIENT PRACTICE

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Introduction. Low back pain (LBP) is primarily managed by general practitioners (GP) in outpatient setting. Guidelines for routine LBP emphasize conservative management: use of acetaminophen or non-steroidal anti-inflammatory drugs (NSAID), and physical therapy (PT), but avoiding early imaging or other aggressive treatments except in rare cases such as those demonstrating acute neurological compromise or other "red flags".

Aim. Describe the usual care provided by Latvia's general practitioners and to compare this with recommendations of guidelines for the management of LBP.

Materials and methods. Questionnaire for GP about the management of acute nonspecific LBP. Retrospective data collection from medical records about outpatients > 18 years old who received ambulatory LBP care during the period of 1 January – 31 Ocotber 2016. Data were pooled and analysed using IBM SPPS 22.0 (χ^2, Fisher's Exact test).

Results. Overall 26 GP were asked to take part in this study. Questionnaire was filled by 18 GP – 72.2 % would order laboratory investigations and imaging, 16.6 % would order neurophysiological testing, 38.8 % would refer to other physician, 100 % would refer to PT and prescribe medication. The most popular choice of medication was *diclofenacum* and *tolperysonum.* To retrospective data collection agreed 14 GP as a result 81 patient was ruled in to study. Mean age of study population was 47.59 ± 11.6 years, 54.3 % (n = 44) were male and 45.7 % (n = 37) were female. A total of 50.6 % (n = 41) had acute nonspecific LBP (ANLBP), 37.0 % (n = 30) had acute LBP with neurologic compromise (ALBPNC), 4.9 % (n = 4) had subacute and chronic nonspecific LBP, 7.4 % (n = 6) had subacute and chronic LBP with neurologic compromise. Further data analysis was done only for ANLBP/ALBPNC group: patients were undergoing laboratory investigations 9.8 %/6.7 % (p > 0.05), imaging 39.0 %/56.7 % (p > 0.05) and were referred to PT 2.4 %/6.7 % (p > 0.05), and to other physician 14.6 %/36.7 % (p < 0.05). All patients in ANLBP/ ALBPNC group received pharmacological treatment: *diclofenacum* 43.9 %/66.7 % (p > 0.05), *meloxicamum* 12.2 %/6.7 % (p > 0.05), *tolperysonum* 51.2 %/56.7 % (p > 0.05), *tizanidinum* 7.3 %/10.0 % (p > 0.05).

Conclusion. Laboratory investigations and imaging should be ordered in case of indications, that does not include ANLBP. Most popular medication choice among GP were NSAID and muscle relaxants. Acetaminophen was the least popular choice of medication among GP who filled in the questionnaire and was never prescribed to any patient in study group. General practitioners who were included in the study comply to conservative LBP pharmacological treatment, but imaging use doesn't comply to guideline recommendations.

QUALITY OF LIFE OF ADULTS WITH
URINARY INCONTINENCE

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Keywords. King's Health Questionnaire (KHQ), Urinary incontinence, Quality of life.

Introduction. Urinary incontinence is a widespread public health problem among both men and women. This disorder has a huge impact on patient's financial, psychosocial, emotional and physical status, causing discomfort, shame and loss of confidence, which negatively affect their quality of life.

Aim. The main purpose of this study was to evaluate the impact of urinary problems on sexual behavior and quality of life amongst patients with urinary incontinence.

Materials and methods. 68 patients (57 females and 11 males) aged between 33 and 77 (mean age 59 ± 10.94 years) with urinary incontinence volunteered for the study. The quality of life were assessed by using King's Health Questionnaire (KHQ).

Results. The analysis showed that 16.18 % never exercises or did sport activity in their life.41.80 % because of this problem does specific exercises to strengthen pelvic floor and 96.92 % of them believes that they will help with urinary incontinence. 86.76 % pointed that the current state of health was lower than good, 98.46 % of them believed that urinary symptoms interfere with their life. 83.33 % had discomfort in their daily activities because of urinary symptoms. 38.47 % reported that urinary symptoms raise problems with partner. 86.36 % said that at some point of life felt depressed because of this problem. 43.94 % has to count their fluid intake often or always.

Conclusion. Study showed that urinary incontinence has strong impact on quality of life. Patients sexual, mental as well as their lifestyles were affected by their urinary symptoms and they believe that pelvic floor exercises will help to deal with this problem.

QUALITY OF LIFE OF PARENTS OF CHRONICALLY ILL CHILDREN

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Keywords. Quality of life, parents, chronic, children.

Introduction. In Latvia were 684 children with invalidity in 2010 and 921 in 2015. The number of parents who care for a chronically ill child also is increasing. Because of advances in medical care, parental caring tasks are changing. (Hatzman et al., 2008) Parenting children with chronic diseases is highly demanding and has practical and emotional consequences. Young children with a chronic condition are dependent on their caregiver. It is important to address the caregivers' well-being and to identify needs for additional support of the caregiver and the child. (Tweel et al., 2008)

Aim. To compare the quality of life (QOL) of parents of chronically ill children and parents of children without chronic illness.

Materials and methods. Currently 37 parents have participated in the study. To be included in the research group parents had to have anamnesis of child chronic illness at least 6 months. In the control group were parents with child without chronic illness. Surveys were collected in the Children's Clinical University Hospital. QOL was assessed by Latvian and Russian versions of World Health Organization QOL scale (WHOQOL-BREF); domains of quality of life were physical health, psychological, social relationships, environment. Statistical analysis was performed using IBM SPSS 23.0. The research is on-going.

Results. The study included 37 parents. 48.6 % (n = 18) have chronically ill children. 94.6 % (n = 35) were females. Age of females was 35 ± 7, of males 42 ± 7. Anamnesis of children chronical illness was starting from 6 to 108 months, average 33 months. Self-report of QOL in control group and research group did not differ (4.00 ± 0.82 *vs.* 3.50 ± 0.70, p = 0.055). Compared to control group, research group had lower scores on psychological (70.18 ± 11.31 *vs.* 61.34 ± 13.24, p = 0.036) and social (74.12 ± 18.61 *vs.* 57.41 ± 22.67, p = 0.019) domains of QOL, on physical health (66.35 ± 13.21 *vs.* 63.50 ± 12.76, p = 0.506) and environment (62.50 ± 13.34 *vs.* 57.97 ± 13.48, p = 0.313) domains of QOL difference was not statistically significant. Full results will be presented in the conference.

Conclusion. Parents of chronically ill children evaluate their overall QOL the same as parents without chronically ill children. Parents with chronically ill children have impaired psychological and social domains of QOL.

REHABILITATION FOR PATIENTS AFTER
BREAST CANCER SURGERY

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Keywords. Rehabilitation, ICF, ICF Core Sets.

Introduction. Nowadays in Latvia every year are about 1.000 newly diagnosed breast cancer patients, who have been treated for breast cancer and who have received surgical, radiation and chemotherapy, and taking into account that these patients are not charged at the disposal of national rehabilitation, was selected for this study theme as one of the most urgent in rehabilitation.

Aim. The study aims is functional health assessment of patients after breast cancer treatment, to determine what kind of rehabilitation would be most appropriate.

Materials and methods. Type of study – prospective. The study consisted of patients studied – 22 persons. All patients enrolled in the study, have been found in breast cancer. Patients were applied to different types of treatment – surgical therapy, chemotherapy, radiotherapy. The study investigated the individual patient. Patients were interviewed and impartially investigated, based on the ICF classification methodology.

Results. Most disorders are expressed by functions of the body (44 % of all patients) and body structure (39 % of all patients). The most common functional and structural disorders are as follows: load tolerance functions; pain function; muscle power functions; emotional functions; shoulder area structures; the structure of the immune system. The most common functional and structural disorder severity: Immune structure – 91 % of patients moderately disorder. Load tolerance functions – 27 % in patients severe disorders; 45 % moderate impairment; 27 % mild disorders. Pain function – 27 % of patients severity of pain; 23 % moderate, 41 % easily. Muscle power functions – 27 % of patients severe disorders; moderate 55 %, 9 % easily. Emotional functions – 27 % of patients severe disorders; 45 % moderate; 5 % easily. The optimal rehabilitation plan for patients after breast cancer treatment is as follows: physical therapy; psychological help; complex lymphoedema therapy; patient training and support.

Conclusion. These results point to the existing extent of the problem and the fact that a large proportion of the surveyed and investigated breast cancer patients after completion of treatment of the disease experienced the consequences of continuing to overcome a variety of health problems in order to maximize return to normal life. However, the current situation shows that independently patients is almost impossible to return to the normal rhythm of life and regain a quality of life which existed prior to breast cancer detection. Due to the need to realize the possibilities of assistance to patients after breast cancer treatment, and to ensure the timely and affordable rehabilitation system that would include the rehabilitation plan to the necessary treatments. The plan needs to include a multidisciplinary team of specialists and individual rehabilitation plan.

RESEARCH ON THE ASSOCIATION BETWEEN DYSPEPTIC AND PSYCHOLOGICAL SYMPTOMS

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Keywords. Dyspeptic syndrome, anxiety, depression.

Introduction. Dyspeptic syndrome includes multiple symptoms such as epigastric pain, bloating, early satiation, fullness, epigastric burning, belching, nausea, and vomiting (Tack et al., 2016). There is a clear association between psychosocial factors and gastrointestinal disorders confirmed in various studies. Several pathophysiologic mechanisms have been suggested to underlie dyspeptic symptoms. One of them is somatization and it is directly related to the gut-brain axis. It considers the psychological discomfort conversion into a physical symptom. On the other hand the gut-brain axis consists of bidirectional communication between the central and the enteric nervous systems, linking emotional and cognitive centers of the brain with peripheral intestinal functions (Carabotti et al., 2015).

Aim. To research and detect the prevalence and association of dyspeptic syndrome with anxiety and depression.

Materials and methods. The questionnaire consists of sociodemographic information and variety of questions concerning evaluation of dyspeptic symptoms prevalence and duration, Hospital Anxiety and Depression Scale. Data is statistically processed in Microsoft Excel and SPSS 20 using Spearman's rank correlation coefficient and population descriptive statistics. Prospective – cohort study.

Results. 196 questionnaire respondents, 163 females (83.2 %) and 33 males (16.8 %). Minimal age 18 years, maximal age 47 years; median 23.45 years, moda 23. Spearman's rank correlation between the anxiety and epigastric pain ($R = -0.299$, $p = 0.000$), nausea ($R = -0.232$, $p = 0.001$), bloating ($R = -0.247$, $p = 0.000$) established statistically credible reverse correlations. Spearman's rank correlation between the depression and dyspeptic symptoms didn't establish statistically credible correlations. 93.9 % respondents had the same dyspeptic symptoms during the last 6 months. The most frequent symptoms were bloating and fullness, but the rarest ones – vomiting and epigastric burning. 144 respondents (73.5 %) had bloating at least once during the last week, 131 respondents (66.8 %) had fullness, but only 6 respondents (3 %) had vomiting and 56 respondents (28.6 %) had epigastric burning. The anxiety level in the population is higher than depression.

Conclusion. Several dyspeptic symptoms are associated with anxiety, but the correlations are reversed. The more severe dyspeptic symptoms are, the lower the level of anxiety is. The pathophysiological mechanism requires further study.

RISK FACTORS FOR SUICIDE IN PATIENTS WITH SCHIZOPHRENIA AND DEPRESSION

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Keywords. Depression, schizophrenia, suicide risk.

Introduction. Suicide is a major cause of death among patients with schizophrenia, and depression is present in at least 50 percent of all suicides. Research indicates that at least 5–13 % of schizophrenic patients die by suicide, but lifetime risk of suicide among patients with untreated depression ranges from 2.2 % to 15 %. Hopelessness, social isolation, hospitalization, deteriorating health after a high level of premorbid functioning, recent loss, limited support are risk factors for suicide in patients. Protective factors play an important role in assessing suicide risk and should also be evaluated. Better knowledge of suicide risk factors may help clinicians and caretakers to implement preventive measures.

Aim. The aim of the study was to identify and to determine the relationship between the severity of symptoms of depression and schizophrenia, evaluate suicide risks and protective factors that are described in the literature in inpatients of the Riga Centre of Psychiatry and Addiction Disorders.

Materials and methods. A cross-sectional case study, stationary patients at the age 18–75 years: 61 patient with schizophrenia (F20.-) and 62 patients with depression (F32.-; F33.-). In both target groups the following parameters were evaluated: socio-demographic variables; the symptoms of depression evaluated by the PHQ-9 and The Calgary Depression Scale for Schizophrenia for patients with schizophrenia; The Mini-International Neuropsychiatric Interview; the patient interview.

Results. In total 123 patients were included in data analysis. Based on the MINI interview results, 19.4 % (95 % CI 16.76–21.24 %) depression patients and 57.4 % (95 % CI 43.68–71.12 %) of schizophrenia patients were identified with a suicide risk: 24 patients (1–8 points) – low risk; 11 patients (9–16 points) – moderate risk; 14 patients ($\geq$ 17 points) – high risk; 74.5 % of them were women and 24.5 % men. Based on the PHQ-9 and Calgary Depression Scale 29 patients (47.5 %) were thinking or trying to attempt suicide. Suicidal thoughts observed more frequently among women than among men, 37.9 % and 62.1 %, respectively. Risk factors such as: single, family stress or instability, social isolation, unemployment, numerous hospitalizations, recent stress – present in 55 patients with schizophrenia (90.2 %) and in 19 patients with depression (30.6 %) and correlate with higher suicide risk. Protective factors, for instance, close family relationships, religion and employment, decrease suicide risk in both patient' groups.

Conclusion. The clinical implications of this review are that prevention is likely to result from active treatment of symptoms and maintaining special vigilance in patients with risk factors.

SELF-ASSESSMENT OF THE MENTAL STATE
OF THE PENSIONEERS

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Keywords. Family medicine, elderly person, mental function.

Introduction. According to WHO data, the ageing of the population is happening at a much faster rate than previously considered. The number of people ageing 60+ is expected to double between 2000 and 2050. It estimated that by 2030, 22 % of the Latvian population will be in ages between 60 and 79 years old. Furthermore, 6 % – above the age of 80 years. Cognitive impairment (CI) is estimated to spread in 2–30 % of the population. It is considered that CI is directly associated with the elderly population and aging processes. Last but not least, it is highly important to detect these problems as early as possible (possibly primary care professional), as these disorders can lead to dementia.

Aim. To evaluate elderly people's mental status, with questionnaires that will essentially analyse whether the aging process causes difficulties in person's daily life and in case of necessity – contact the relatives.

Materials and methods. The research included 100 respondents – 67 women and 33 men. A questionnaire was used to gather the data. Respondents answered 20 questions about their general state of health and completed two tests: the small depression test (SDT) and Mini Mental State examination(MMSE). Data was compiled in Excel tables and processed with SPSS 16.0 data processing method.

Results. From the 100 respondents with an average age of 75 years MMSE showed average cognitive function of 24.6 points, which means these people do not have CI. 23 % from respondents have CI and 7 % have signs of dementia, from them 28.5 % have not recognized any loss of concentration and memory problems.

The study showed correlation between people with higher levels of education and better cognitive function ($p = 0.03$). However research showed that there is no correlation between age and cognitive function. Also people with signs of depression have indications of cognitive dysfunction. From those people who reside in elderly homes – 40 % have CI, whereas from those people who reside in private home – only 25 % show signs of CI.

Conclusion. After summarizing all results it can be clearly stated that the age does not affect cognitive functions, however most importantly, the results show that mental ability can be stimulated by performing training throughout life and deal with your day to day tasks. Study showed – those people who are physically active and who have a hobby are able to think faster than those whose who are less active. Unfortunately, the study also demonstrated a feature that people with CI are placed in nursing homes mainly due to the fact that many relatives struggle to take care becomes more complex.

SUICIDE RISK AMONG PARANOID SCHIZOPHRENIA PATIENTS WITH DEPRESSION

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Keywords. Paranoid schizophrenia, depression, suicide risk.

Introduction. Paranoid schizophrenia (PS) is one of the most severe mental disorders and approximately 1.1 % of the population suffer from it worldwide. A significant problem is the high rate of committed suicides among persons with PS (Simeone et al., 2015). In the research, 25 % of the patients have depression when the productive symptomatics of PS decrease. It is necessary to differentiate between negative symptoms and depression, because it is proved that the risk of commiting suicide among people who suffer from depression is 6–15 %, however in the case of PS – even up to 38 % (Mensi et al., 2016).

Aim. To detect the association between the depression severity and suicide risk among PS patients.

Materials and methods. The interview consists of sociodemographic information, Calgary Depression Scale for Schizophrenia (CDSS), Columbia – Suicide Severity Rating Scale (C–SSRS). Data is statistically processed in Microsoft Excel and SPSS 20.

Results. 44 questionnaire respondents, 22 females (50 %) and 22 males (50 %). Minimal age is 24 years, maximal age – 68 years; median – 43 years. Spearman's rank correlation established statistically significant correlation between the depression severity according to the CDSS and suicide risk according to the C-SSRS (R = 0.540, p = 0.000). Depression was detected in 31 (70.5 %) and the suicide risk in 20 (45.5 %) of the patients. Most of the patients – 33 (79.5 %) suffer from the stable PS. The reminding 9 patients have episodic PS with increasing or stable residual symptoms. 8 of these 9 patients are females. During two independent sample T-tests it was established that the average score in accordance with the CDSS for males and females varies by 3.9 points. This difference is statistically reliable (p = 0.005), the level of depression is higher among females. Also the average score according to the C-SSRS for patients with a stable course and episodic course of PS varies by 1.14 points. This difference is statistically reliable (p = 0.038), and the suicide risk is higher among patients with episodic course of PS.

Conclusion. There is a high prevalence of depression among patients with PS, and the suicide rate among them is high. There is a strong correlation between the severity of depression and the suicide rate. Females with PS are more susceptible to depression and suffer more often also from episodic PS with residual symptoms; males are most likely to be susceptible to the stable form of PS and the risk of depression and suicide is lower. The rate of depression is undeniably important and attention should be paid to this aspect when treating the patients.

THE BICAMS BATTERY FOR ASSESSMENT OF COGNITIVE IMPAIRMENT IN MULTIPLE SCLEROSIS

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Keywords. Cognitive impairment, cognitive monitoring, BICAMS, multiple sclerosis, MS.

Introduction. In people with multiple sclerosis (MS) cognitive impairment is common, but usually underreported. It can appear in any subtypes or stages of the disease. Cognitive impairment, including memory and mental processing speed, has significant impact on employment, health – related quality of life and disease management. Recent survey shows that MS pathogenesis is connected with not only inflammation, but also with early neurodegenerative processes, that are connected with early cognitive impairments, thus bringing up the question about necessity to have a neuroprotective treatment. Full neuropsychological testing is complicated, time consuming and expensive, therefor expert committee recommends easily enforceable Brief International Cognitive Assessment for Multiple Sclerosis (BICAMS) battery that allows to assess cognitive impairment in MS.

Aim. Use BICAMS Battery to assess cognitive impairment for relapsing remitting multiple sclerosis patients and compare the results with a control group, matched for age, gender and years of education.

Materials and methods. The longitudinal study included 43 relapsing remitting multiple sclerosis patients in Pauls Stradins Clinical University Hospital MS Center from May to November 2016, compared with 73 cognitively healthy control participants matched for age, gender and years of education. Both groups were assessed with the BICAMS Battery, which includes the Brief Visuospatial Memory Test (BVMT), the Symbol Digit Modalities Test (SDMT) and the California Verbal Learning Test – Second Edition (CVLT2). For statistical analysis SPSS 22.0 was used.

Results. The average BICAMS test result for MS patients group (n = 43) was 20.30 ± 7.92 for BVMT, 47.12 ± 12.04 for SDMT and 51.05 ± 10.98 for CVLT2, but for control group (n = 73) results were significantly better, respectively 26.43 ± 4.70, 60.16 ± 7.17 and 61.82 ± 8.59. There was no statistically significant difference between the both groups in age (p = 0.284), years of education (p = 0.278) and gender (p = 0.981). Cognitive impairment in these tests was defined as value below controls' group average results.

Conclusion. Relapsing remitting multiple sclerosis patients, evaluated by BICAMS Battery tests, including BVMT, SDMT and CVLT2, performed significantly worse in all three tests compared to healthy control group, matched for age, gender and years of education.

THE DIAGNOSTIC ACCURACY OF CARPAL TUNNEL SYNDROME CLINICAL SYMPTOMS

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Keywords. Carpal tunnel syndrome, hand numbness, electroneuromyography.

Introduction. Carpal tunnel syndrome (CTS) is one of the most prevalent peripheral nervous diseases. Electroneuromyography (ENMG) is widely used to diagnose it; however, false negative or false positive results are possible. Moreover, not all hospitals have access to it, thus, anamnesis and clinical symptoms should also play a role while diagnosing CTS.

Aim. Determine the diagnostic accuracy of clinical symptoms of CTS.

Materials and methods. A prospective study was carried out during 2015 – 2016 years in Vilnius University Hospital Santariskiu Clinics. 29 patients complaining of hand numbness and whose ENMG data were typical for CTS were investigated. A sample included 48 hands. The patients filled a questionnaire, where they specified demographical data, symptoms they experienced and marked them in a hand picture. Then clinical examination was performed. Evaluated clinical symptoms were: thumb abduction, atrophy of the thenar eminence, index hypalgesia, impaired two-point discrimination, monofilament test, sensory of vibration test, fist test, shake out test, Tinnel's test, Phalen's test, carpal compression test. Data were analysed with Microsoft Excel 2013 and SPSS v.20. Pearson's and χ^2 tests were used for qualitative variables, difference between variables was considered to be reliable if $p < 0.05$.

Results. 6 (20.7 %) out of 29 participants were males and 23 (79.3 %) – females. The mean of age was 56.9 ± 1.83 years. All participants were right-handed. 48.3 % of participants had physical jobs in their life and 51.7 % – intellectual ones. After ENMG was carried out it was determined that 25 cases (52.1 %) had mild CTS, 14 cases (29.2 %) – medium CTS and 9 cases (18.7 %) – severe CTS. There was typical localization of CTS observed in 42 hand pictures (87.5 %). Shake out test was positive in 26 (54.2 %) cases, Tinnel's – in 28 (58.3 %). Evaluating these tests together, clinical sensitivity is 0.95. Other clinical symptoms were observed in less than half of cases. It might be due to low number of patients who had mild CTS. Medium strength correlation ($p = 0.01$) was determined between clinical symptoms and the amplitude of impulse conduction in motor fibers (mV) and the distal latency period duration of impulse conduction in motor fibers. The correlation between age and clinical symptoms was statistically significant ($p = 0.02$).

Conclusion. CTS occurrence depends on age, gender, type of work. The most sensitive clinical symptoms are: typical localization on a hand picture, Tinnel's symptom, hand shake out symptom. They allow reliably diagnose CTS without performing ENMG.

THE IMPACT OF LOWER PELVIC FLOOR EXERCISES TO PEOPLE WITH PELVIC FLOOR DYSFUNCTION PROBLEMS

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Keywords. Fecal incontinence, pelvic floor exercises, KESS scoring system, Wexner Fecal Incontinence score.

Introduction. Pelvic floor dysfunction is a complex and widespread problem among male and female. The major disorders of pelvic floor are urinary and fecal incontinence, constipation. They have widespread social implications, causing discomfort, shame and loss of confidence, which negatively affect their quality of life. These problems are most often caused by weak pelvic floor muscles. Therefore, it is important to train these muscles to restore their strength, speed and endurance.

Aim. To determed the impact of lower pelvic floor exercises for people with pelvic floor dysfunction problems like fecal incontinence and constipation.

Materials and methods. 16 patients (14 females and 2 males) aged between 32 and 80 (mean age 56 ± 16.29 years) with pelvic floor dysfunction volunteered for the study. All patients performed physical therapy 5 times per week for 2 weeks and continued exercises at home for 2 months. The impact of lower pelvic floor exercises were assessed by using Knowles-Eccersley-Scott-Symptom (KESS) scoring system and fecal incontinence questionnaire.

Results. The analysis showed that 37.5 % never exercises or did sport activity in their life. In their first visit 68.75 % noted that because of this problem do not do a specific exercises to strengthen pelvic floor and 100 % of them believes that they will help with bowel problems. 93.33 % about exercises heard from medical personal. 7 subjects with constipation, 9 with fecal incontinence and 1 with gas incontinence. Comparing first visit and second visit 66.75 % of subjects KESS score decreased, 12.5 % stay the same. 73.33 % of subjects score decreased when comparing first and second visit of Wexner Fecal Incontinence score.

Conclusion. Lower pelvic floor exercises for people with bowel evacuation problems like fecal incontinence and constipation improves the strength of the sphincter and pelvic floor muscles and improve bowel control.

THE USABILITY OF "CUBIES" –
THE INTERACTIVE EDUCATIONAL TOY

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Keywords. Educational toy, usability study, children.

Introduction. "Cubies" toy is an interactive educational product invented by Latvian producers. According to our research, usability study has never been carried out in Latvia.

Aim. Aim was to assess the usability of the toy amongst children of different age and gender.

Materials and methods. "Task-based scenarios", contextual interview, visual analogue scale, retrospective testing of video recordings were used for evaluation.

A sample of 125 children (51.2 % males) from Latvian kindergartens were involved in the study. All the participants were divided into 3 age groups: 2–3, 4–5, 6–7 years old; Descriptive statistics and nonparametric tests for comparison of groups were used for data analysis.

Results. For children to understand how the toy functions and start playing took from 1.79 to 248.81, with median 72.72 seconds. There was no statistically significant difference in the average time till 'successful attempt' between the gender groups (p = 0.47) and between the mean ranks of three age groups (p = 0.41); After the 'successful attempt' 82.4 % of children listened to the end of the first story. Average time children were playing with the toy during their "free time" was approximately 5 minutes; 39.2 % of children played for maximally allowed by the protocol "free playing time": 7 minutes.

More than a half of participants did not identified pictures of" badger", "lizard", "sparrow", "lynx" and only 7.2 % identified the picture of the "moss" on the cubes. The time for accomplishing the tasks with the toy was from 1.66 to 150.33, with median 10.27 seconds;

89.1 % participants would like to have similar toys at home. 93.6 % evaluated the toy as an 'interesting' or 'very interesting' according to visual analogue scale.

Conclusion. Children of both genders and all three age groups equally fast intuitively understood how to play with the toy and needed only one attempt to accomplish simple tasks. More than a half of participants found the toy interesting and would like to have a similar toy for their private use, which allows us to conclude that the toy can be successfully used amongst 2–7 years old healthy children.

We are planning this research to be the first one in a number of subsequent studies related to the developmental and therapeutic effect of the "CUBIES" toy.

Conflict of interests. Scientific group did not receive any financial support for this study.

THE ROLE OF GENE IN LACUNAR STROKE DEVELOPMENT FOR PATIENT WITH ARTERIAL HYPERTENSION AND DIABETES MELLITUS

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Keywords. Lacunar stroke, *ACE* gene I/D variant, hypertension, diabetes mellitus.

Introduction. Lacunar stroke or small subcortical infarcts result from occlusion of a single penetrating artery and account for one quarter of cerebral infarctions. Patients with a lacunar stroke usually present with a classical lacunar syndrome: pure motor hemiparesis, pure sensory syndrome, sensorimotor stroke, ataxic hemiparesis or dysarthria-clumsy hand and, less frequently, an atypical lacunar syndrome. *ACE* gene ID and DD genotype is more specifically associated with increased risk of lacunar stroke than with other types of ischemic stroke.

Aim. Find the association between the *ACE* gene I/D variant and lacunar stroke in Latvian population.

Materials and methods. Prospective study with 72 patients was performed during the period from 01.09.2016. till 31.01.2017. in Pauls Stradins Clinical University Hospital. There were two groups in the research enrolled: in first group (n = 10) were included patients with confirmed lacunar stroke by CT or MRI with arterial hypertension (AH), diabetes mellitus (DM), in second group (n = 62) were included patients with AH, DM without evidence of lacunar stroke. In total, there were 71 patients with AH, 14 with DM. For all patients standard neurological examination was done as well as evaluation by several scales as MOCA, MMSE, mRS, NIHSS as well as biochemical test results and used treatment was analysed. *ACE* gene I/D variant genotypes were determined by PCR. Data was processed in IMB SPSS.

Results. The prevalence of II, ID, and DD genotypes were 20 %, 50 %, 30 % in patient group (D allele frequency 0.55) and 22.6 %, 37.1 % and 40.3 % in controls (D allele frequency 0.64), respectively (p > 0.05). Analyzing DM association with *ACE* genotype it was found that DD genotype were more frequent in DM group (OR 3.695, CI95 % 0.949–15.006, p = 0.036). Of all lacunar stroke patients two had diabetes and both were with DD genotype.

Between all patients in total 17 patients used triple antihypertensive therapy (two patients were with lacunar stroke). Analysing *ACE* gene genotypes in these patients it was found that DD genotype is more frequent in this group than II genotype.

There were not found statistical correlation between clinical severity and *ACE* gene variant because of small patient group. There was no difference between typical and atypical clinical manifestation of lacunar stroke. Mean NIHSS score at hospitalization was 3.8 points and mRS was 2.2. Mean NIHSS on discharge from hospital was 2.8 points and mRS was 1.5. The highest NIHSS score was in patient with II genotype. Clinical improvement was observed in 9 out of 10 patients with lacunar stroke.

Conclusion. 1. There was not found association between *ACE* gene I/D genotypes or alleles and lacunar stroke. 2. *ACE* gene DD genotype could be risk factor for diabetes mellitus.

THE STATE OF DISABILITY AS A RESULT OF LUMBAR DISCOGENIC RADICULOPATHIES IN TASHKENT REGION IN 2010–2015

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Keywords. Disability, osteochondrosis, rehabilitation, lumbar discogenic radiculopathy.

Introduction. Epidemiological studies in the Great Britain showed that incidence of lumbar pain reaches 55 % of all residents. In the United States, the number of cases of lumbar pain is about 5 %, in Denmark 6 % per year, but the incidence is 62 %. Significant costs of treatment of lumbar osteochondrosis (in the United States – up to 30 billion dollars per year) allow considering the problem also from an economic point of view.

Aim. To study the structure of disability due to lumbar discogenic radiculopathy (LDR) of those registered in the EELC of Tashkent Region.

Materials and methods. Among 53 thousand people with disabilities registered in January 2010, the disabled of LDR amounted to 1765 people, including 64 people (3.6 %) with group I disabilities, 1181 (66.9 %) – group II and 520 people (29.5 %) – group III; at the same time, people with disabilities of LDR were 3.3 % of the total amount of the disabled in the region. All patients with LDR had CT investigations and MRI scans.

Results. Among the total number of people with disabilities in Tashkent Region with LDR, men composed 1129 people (64.0 %), but women – 636 people (36.0 %). In 2010, average disability indicators in Tashkent Region with LDR out of all people with disabilities on average amounted to 3.3 %. People with disabilities of group I averaged out at 3.6 % (64 people), people with disabilities of group II – 66.9 % and of group III – amounted out at 29.5 % in Tashkent Region.

The level of education among the disabled people was as follows: disabled people with higher education compiled 181 (10.3 %) people, of whom 124 were men (10.9 %), 57 were women (9.1 %); disabled people with secondary professional education compiled 229 (13.0 %) people, of them 147 were men (13.0 %), 82 were women (12.9 %); disabled people with secondary education compiled 1336 (75.7 %) people, of whom 847 were men (75.0 %), 489 were women (77.0 %); disabled people with no education compiled 19 (1.0 %) people, of whom 11 were men (0.9 %) and 8 were women (1.3 %).

Conclusion. During 5 years, more than 1,070 people with disabilities were rehabilitated, and the effectiveness of rehabilitation amounted to 60.7 %. Taking into account that the expense of funds of the Pension Fund for payment of pensions and benefits for each disabled person on average is 5 million soums per year, the cost reduction for 5 years amounted to more than 5.35 billion soums. Therefore, the implementation of complex, stage, planned, medical, social and occupational rehabilitation measures have shown their efficacy in terms of disabled people with LDR during 5 years in Tashkent Region by more than 60.7 %.

LEISURE ACTIVITIES PARTICIPATION ANALYSIS, PATIENTS WITH PHYSICAL DISABILITIES

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Keywords. Occupational therapy, leisure activity, physical disabilities.

Introduction. Patients with physical disabilities doesn't engage leisure activity, which previously provided pleasure, but leisure activities with other patients at the hospital, them are interested and it is important because it has a positive role in the psychoemotional status and also can help to develop the necessary skills on a daily basis of patients with physical disabilities.

Aim. To analyze leisure activities participation, patients with physical disabilities.

Materials and methods. The research was performed from september 2016 to march 2017 at Rehabilitation, Physical and Sports Medicine centre of Santariškių clinics, Vilnius University. The study involved 40 patients with physical disabilities, who participated in leisure activities. The testing applied a questionnaire testing: patients sociodemographic data are known questionnaire (direct) survey, modified the list of 45 activities Interest / Activity search, Anxiety and Depression Scale (HAD), Daily activities Assessment Test (ADL). Leisure activities through which the second and final session, patients direct observation to assess the Will questionnaire (VQ), repeated HAD scale and ADL test. After each of the sessions targeted interviewed by Leisure Boredom Scale (LBS).

Results. Compared psychoemotional status patiens with physical disabilities rehabilitation at the beginning and end, visible that increases by patients motivation to try new activities, tasks to complete till the end and decreases stress and depression level. The factors that reduce the participation of leisure activities, it is external, such as relatives visit, planned investigation and other procedures, as well as internal factors, such as diffident, fatigue and therapeutic status. Also, patients indicate that leisure activities are important and necessary at the hospital.

Conclusion. Leisure activities can be used as a tool to improve the patients psycho-emotional status and them to engage the afternoon in time, at the rehabilitation section.

RESEARCH ON THE ASSOCIATION BETWEEN DYSPEPSIA AND PSYCHOCOLOGICAL SYMPTOMS

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Keywords. Dyspeptic syndrome, dyspepsia, anxiety, depression.

Introduction. Dyspeptic syndrome includes multiple symptoms such as epigastric pain, bloating, early satiation, fullness, epigastric burning, belching, nausea, and vomiting (Tack et al., 2016). There is a clear association between psychosocial factors and gastrointestinal disorders confirmed in various studies. Several pathophysiologic mechanisms have been suggested to underlie dyspeptic symptoms. One of them is somatization and it is directly related to the gut-brain axis. It considers the psychological discomfort conversion into a physical symptom. On the other hand the gut-brain axis consists of bidirectional communication between the central and the enteric nervous systems, linking emotional and cognitive centers of the brain with peripheral intestinal functions (Carabotti et al., 2015).

Aim. To research and detect the prevalence and association of dyspeptic syndrome with anxiety and depression.

Materials and methods. The questionnaire consists of sociodemographic information and variety of questions concerning evaluation of dyspeptic symptoms prevalence and duration, Hospital Anxiety and Depression Scale. Data is statistically processed in Microsoft Excel and SPSS 20.

Results. 196 questionnaire respondents, 163 females (83.2 %) and 33 males (16.8 %). Minimal age 18 years, maximal age 47 years; median 23.45 years, moda 23. Spearman's rank correlation between the anxiety and epigastric pain (R = −0.299, p = 0.000), nausea (R = −0.232, p = 0.001), bloating (R = −0.247, p = 0.000) established statistically significant reverse correlations. Spearman's rank correlation between the depression and dyspeptic symptoms didn't establish statistically significant correlations. 93.9 % respondents had the same dyspeptic symptoms during the last 6 months. The most frequent symptoms were bloating and fullness, but the rarest ones – vomiting and epigastric burning. 144 respondents (73.5 %) had bloating at least once during the last week, 131 respondents (66.8 %) had fullness, but only 6 respondents (3 %) had vomiting and 56 respondents (28.6 %) had epigastric burning.

Conclusion. Several dyspeptic symptoms are associated with anxiety, but the correlations are reversed. The more severe dyspeptic symptoms are, the lower the level of anxiety is. The pathophysiological mechanism requires further study.

ASSOCIATION BETWEEN VASCULAR RISK FACTORS AND NATIONAL INSTITUTES OF HEALTH STROKE SCALE AT ADMISSION IN PATIENTS WITH ISCHEMIC STROKE FROM THE UPPER SILESIA REGION

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Keywords. Ischemic stroke, tissue plasminogen activator, acetylsalicylic acid.

Introduction. Ischemic stroke is a leading cause of long-term disability worldwide. The prevention of the disease includes elimination of smoking, overweight, unhealthy diet or daily inactivity. Treatment of diabetes (DM), hypertension (HT), coagulation and lipid disturbances is also effective in the reduction of stroke incidence.

Aim. To investigate whether well-known vascular risk factors are related to the worse clinical outcomes evaluated at admission by National Institutes of Health Stroke Scale (NIHSS) in the patients with acute ischemic stroke prior to the tissue plasminogen activator treatment (tPa).

Materials and methods. Based on the patients' medical history from the Department of Neurology in Zabrze, 36 individuals with diagnosed acute ischemic stroke (AIS) were enrolled in the retrospective study. Depending on the NIHSS results at admission, the study group was divided into two subgroups: I- determined as minor to moderate stroke severity (n = 26 individuals, NIHSS ≤ 15) and II- presented moderate to severe stroke (n = 10, NIHSS > 15). Vascular risk factors and treatment with acetylsalicylic acid (ASA) were compared.

Results. The mean age of the patients was 67.75 ± 12.07, the majority of them were males (69.44 %). The average NIHSS was 12.78 ± 5.32. The subgroups I and II were homogenous according to age (68.1 ± 12.5 *vs.* 66.8 ± 11.4, p = 0.45, respectively) and proportion of men (26.9 % *vs.* 40.0 %, p = 0.45, respectively). 23.1 % of the patients in I were treated with ASA prior the stroke, while none of the patients in II used ASA agents prior to the AIS. Between I and II there were significant differences in the HT diagnosed prior to the AIS (57.8 % *vs.* 100 %, p = 0.012, respectively). No changes were observed in the presence of the others risk factors established prior to the AIS: hypercholesterolemia (61.5 % *vs.* 80.0 %, p = 0.3), DM (11.5 % *vs.* 30.0 %, p = 0.19), atrial fibrillation (19.2 % *vs.* 50.0 %, p = 0.07), smoking (42.3 % *vs.* 30.0 %, p = 0.51) and obesity (11.5 % *vs* 40.0 %, p = 0.06) in I and II respectively.

Conclusion. In AIS, severe neurological condition evaluated in patients as NIHSS > 15 at admission was related to the HT and entire lack of ASA therapy prior to the stroke. Combination of the normal blood pressure and antiplatelet therapy should be considered as a protection from the aggravation of neuronal damage. Great efforts are required to provide ASA agents as primary prevention in the patients of high vascular risk.

VII. PUBLIC HEALTH, OCCUPATIONAL MEDICINE, NUTRITIONAL SCIENCE, SPORTS MEDICINE

A COMPARISON STUDY
OF STRESS IN MEDICINE FACULTY
AND COMPUTING FACULTY STUDENTS

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Keywords. Perceived stress scale (PSS). Depression, anxiety and stress scale (DASS).

Introduction. The psychological phenomenon of stress is closely allied to nervousness, fatigue, and anxiety and all of them are pervasive features of modern life. In general terms, stress has been defined as a feeling of self-doubt about being able to cope with some situation over a period of time (Ropper, Allan et al., 2014). Continuous stress can lead to decreased capability to study and work as well as affect quality of life.

Aim. The aim of study was to evaluate and compare stress levels of Faculty of Medicine 1st and 6th year students in Rīga Stradiņš University and Faculty of Computing 1st and 4th year students in University of Latvia. To identify signs of depression and anxiety and ways students deal with stress.

Materials and methods. In this study 181 students from Medicine and Computing faculties participated in survey. Students were divided in 4 groups. Faculty of Medicine 1st year – group 1, 6th year – group 2. Faculty of Computing 1st year – group 3, 4th year – group 4. Survey consisted of DASS-21, PSS scales and questions about lifestyle. PSS helps to measure individual stress levels. DASS assesses severity of the core symptoms of depression, anxiety and stress. Total amount of questions was 45. Statistical analysis of data was performed using IBM SPSS v.22.

Results. Group 1 students who lived outside Riga had lower depression symptom rates, than those form group 1, who lived in Riga ($p < 0.05$). In all four groups students with less depression symptoms on average spent more time on out of class studying. There was no statistically significant difference in DASS or PSS scores between groups, except group 1 had lower depression symptoms. In all groups females showed higher mean ranks in anxiety and stress symptoms ($p < 0.001$). There was no statistically significant difference comparing frequency of alcohol consumption and DASS or PSS score changes. There was increase in anxiety and PSS score in smokers ($p < 0.05$). Students, who had professional help because of stress before, demonstrated higher anxiety and stress levels. Groups 1, 3, 4 stated their main source of stress are studies, group 2 stated it is uncertainty of their future and career.

Survey showed that most common ways to deal with stress were physical activities and family/friends support. In all groups largest proportion of students had moderate stress in PSS score.

Conclusion. All study groups experience similar individual stress levels. Final year medical students main stress source is different from other student groups. Signs of depression should be addressed, because it leads to decreased studying capability. Smoking students has increased anxiety and stress levels. Females should focus more on stress and anxiety decreasing activities.

ABUSE OF ANABOLIC-ANDROGENIC STEROIDS-NECESSARY CONSULTATION FROM HEALTH CARE PROFESSIONAL?

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Keywords. Anabolic-androgenic steroids, influence, hypertension.

Introduction. The most common drug abuse among athletes, not only in professional sport, is anabolic-androgenic steroids (AAS) which lead to the development of cardiovascular diseases including hypertension, especially if used without physicians control. Research data reflect that AAS may elevate systolic and diastolic blood pressure (BP) and amount of increase depend on duration of AAS use.

Aim. Analyse observed side effects and influence on BP during AAS use in group of athletes for possibility of cardiovascular disorders.

Materials and methods. During the period from October 2016 to January 2017 prospective quantitative study was carried out in the Internet as anonymous questionnaire. Basic data were collected about respondent's age, smoking habits, period of AAS use, blood pressure measurements, physical activity.

Results. Data were collected from 97 respondents with an average age of 26.58 ± 5.6 years, mostly were men (91.8 %). Most of respondents (60.8 %) did not consult with a health care professional about AAS doses, side effects, drug interactions. Almost 5th part of study population (18.6 %) did not control their health state during period of AAS administration, despite the high prevalence of reported side-effects related to high BP (83.3 %), such as headache, dizziness, edema. From respondents who regularly checked their BP, 25.8 % were in pre-hypertensive level, 26.8 % – I stage hypertension according to systolic BP data. Respondents with systolic BP $\geq$ 140 mm/Hg (n = 28) were younger than 30 years (n = 21), mostly used trenbolone esters (n = 21) (p = 0.111). Such kind of influence on BP increase were observed in trenbolone users dividing groups according to continuation experience less or more than 5 years, respectively, for systolic BP 133.90 *vs.* 135.92 mmHg (p = 0.554) and for diastolic BP 82.00 *vs.* 85.57 mmHg (p = 0.107), 8 were smokers. Almost 3rd part of study population (27.8 %) planned to use AAS lifelong, 6 of them had systolic BP > 140, 3 smoked.

Conclusion. Increase in systolic or diastolic BP was a common complication of AAS users which can lead serious vascular disorders. Elevated BP were mostly observed in younger respondents which together with most common complaints about their health condition can lead to serious cardiovascular complications in future especially for long-term users.

ADHERENCE IN DIABETIC AND HYPERTENSIVE PATIENTS – WHAT COULD AFFECT IT?

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Keywords. Hypertension, diabetes, medication adherence

Introduction. Hypertension and diabetes are major risk factors for cardiovascular and cerebrovascular disease, also causes of death. Adherence is a primary determinant of the effectiveness of treatment. Poor adherence can reduce treatment benefits and contribute to complications arising in the future. Research data reflect that poor doctor-patient relationship, multiple drug therapy, side-effects, patients age and family status have an impact on medication adherence.

Aim. To analyse factors which affect patient adherence to antihypertensive and antidiabetic therapy.

Materials and methods. During the period from June 2016 to December 2016 prospective quantative study was carried out in pharmacies of two cities: Riga and Kraslava. Data with anonymous questionnaire was collected about respondent's age, gender, profession, education, physical activity, the number of daily used medications, period of antihypertensive and antidiabetic treatment, frequency of blood pressure and glucose measurements, regularity of doctor visits.

Results. Data were collected from 72 respondents with an average age of 64.1 ± 12.8 years. More than half were women (59.7 %; n = 43). According to the results 44.4 % respondents visited the doctor every month, 38.9 % once in a 2–3 months and only 11.1 % visited the doctor less than once a month. Most of respondents (63.9 %) received the information about medications from the doctor and pointed that for them it was clear how to take medication. Nevertheless 33.3 % of respondents were able to stop taking the medications themselves if they felt better and 44.4 % canceled treatment in case if they felt worse. Unmarried respondents with an average age of 68.2 ± 12.9 years who lived with children or relatives (23.6 %) more regulary used medications correctly because of reminders from them. In contrast, unmarried respondents with an average age of 70.9 ± 12.3 years who lived alone (22.2 %) used to forget to take their medications or took it occasionally. Almost 3rd part of respondents (30.6 %) used to change medication regimen themselves by increasing or decreasing the dose.

Conclusion. High regularity of doctor visits indicated that the most respondents were enough informed about diseases and therapy. Regardless of it 3rd part of respondents still seemed to be able for changing the use of drugs based on own feelings. Release of medications due to forgetfulness were more common in older and lonely group of respondents. Therefore pharmacists could inform about various tools for everyday use and therefore improve described situation.

ARE WE POTENTIAL CORTICO PHOBES?

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Keywords. Corticosteroids, phobia, dermatitis.

Introduction. Topical corticosteroids (TCS) with their strong anti-inflammatory, immune-suppressive and anti-proliferative properties are very welcomed in dermatology to treat different immunological skin diseases. It appears that many patients with atopic dermatitis or their parents are afraid to use TCS. The fear may lead to inadequate dosage, drug tapering or stopping the therapy which could result in poor treatment outcomes.

Aim. Analyse patients' attitude towards TCS therapy and determining the prevalence of TCS phobia (TCP).

Materials and methods. A quantitative study was carried out from October 2016 to January 2017 in community pharmacies and dermatologists' private practices. Patients or their parents who received TCS therapy and were diagnosed with psoriasis or atopic dermatitis were asked to fill anonymous survey form which included demographic data, information about the disease, drug therapy and patients' opinion and fear level of TCS, using a validated tool named TOPICOP©.

Results. The study consisted of 67 respondents, among them 43.1 % were female. Mean age of study population was 32.6 ± 18.3 years. In 43.3 % cases most common age group was between 31 to 55 years. The TCP was faced by 53.7 % of study population (TCP group), while 46.3 % was not (fear free group). In TCP group the topical anti-inflammatory therapy was changed more often-in 28.4 % cases than in fear free group where the necessity was by 3.0 % less. 16.4 % of respondents in TCP group noted that the use of TCS can lead to skin infections and 19.4 % of respondents in the same group believed that TCS containing medicine can damage the skin, while in the fear free group the same answers were by 17.9 % less (p = 0.02). The opinion about TCS negative impact on future health was represented in 22.4 % cases by TCP group, furthermore 14.9 % in the same group considered TCS dangerous, though they did not know any side effect of them (p < 0.00). Approximately third part of TCP group respondents (34.3 %) would like to stop the treatment as soon as they can, while in the fear free group the same opinion was on 26.8 % less. 26.9 % in TCP group needed reassurance provided by doctor or pharmacist to start TCS therapy.

Conclusion. In more than half of the cases the use of TCS caused the unsafe feelings and phobia. The dominated opinions of increasing risk of skin infections, damage and negative effect on health in the future show that TCS are considered dangerous. The medical opinion is desirable before starting TCS therapy. Approximately more number of patients would stop TCS treatment as soon as possible, that could lead to poor local treatment adherence and frequent therapy failure.

ASSESSMENT OF PROFESSIONALISM AND COMMUNICATION SKILLS OF MEDICAL GRADUATES: A COMPARISON BETWEEN LATVIA AND GERMANY

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Keywords. Communication skills, professionalism, medical graduates.

Introduction. Communication skills and professional attitude towards patients is fundamental to the doctor – patient relationship. A modified and validated American Board of Internal Medicine's (ABIM) Patient Assessment questionnaire is used worldwide as an authentic tool for assessment of communication skills and professionalism. To author's knowledge, this is the first study of this kind to be conducted in Latvia.

Aim. To assess medical graduate's professionalism and communication skills from the patient's and medical graduate's perspective, to examine its association with patient's and medical graduate's socio – demographic variables.

Materials and methods. This was a descriptive study enrolling two study groups – patients and medical graduates in Latvia and Germany, size of each study group – 50 persons. The study was conducted from August 2016 till February 2017. Informed consent was obtained in all cases according to the local ethics committee requirements. Data was collected using an adapted and validated ABIM Patient Assessment questionnaire. Descriptive statistics, the Chi-Square, Mann–Whitney U, Kruskal–Wallis H tests were used as statistical methods.

Results. Patient's rating of the medical graduates ranged with a mean from 4.47 to 4.72. There was no statistically significant difference between medical graduates in Latvia and Germany in statements regarding "being truthful", "friendly", "listening carefully", "showing interest", "warning during physical examination", "discussing treatment options", "encouraging patients to ask questions". Medical graduates in Germany showed a statistically significant difference in rating themselves higher than medical graduates in Latvia talking about respectful attitude to the patient ($p < 0.05$). A statistically significant difference was observed between surgical and therapeutic medical graduates rating following statements "being truthful" ($p = 0.039$), "warning during physical exam" ($p = 0.022$), "encouraging to ask questions" ($p = 0.048$) – surgical medical graduates reported higher levels of rating than therapeutic medical graduates.

Conclusion. Patients rated medical graduates at very good level in Latvia and Germany. The finding of the current study revealed there is no relationship between Latvia's and Germany's patient's rating of medical graduate's communication skills and professionalism and patient's age, gender, education level, residence. Medical graduates in younger age groups and with less work experience were more critical in their assessment.

ASTHMA PHARMACOTHERAPY MODIFYING
FACTORS REVIEW AND ANALYSIS

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Keywords. Asthma, medication, modifying factors.

Introduction. Asthma is one of the most common chronic diseases in the world. Asthma negatively affects work productivity as well as labour force participant. This disease continues to grow in the adult population. The main objective of asthma treatment is controlled asthma. It can be achieved by avoiding allergens, stopping smoking, type of medications.

Aim. To analyse modifying factors of asthma treatment in adult population.

Materials and methods. Retrospective quantitative study in practice of pneumonologist was conducted in period between January 2016 and January 2017. During the study information from outpatient cards were collected such as age, gender, duration of asthma diagnosis, forced expiratory volume (FEV) before and after treatment, smoking status, allergies and medications. Data were analysed by using SPSS.

Results. Totally 66 patients with average age 59.1 ± 16.4 years were included in the study. Most of them were women (63.6 %). The mean period of asthma diagnosis was 17.0 ± 16.9 years. For the allergic patients (18.2 %) FEV values were lower than for non-allergic (81.8 %), respectively, 76.83 ± 25.68 % *vs.* 8.41 ± 18.35 % (p = 0.099). Active smokers were more than one-fifth (21.21 %) of study population. For allergic and active smokers with smoking experience more than 20 years (n = 11) FEV values were quite lower than for smokers who are smoking less – from 1 to 10 years (n = 3), respectively, 68.45 ± 21.97 % *vs.* 90.33 ± 21.55 % (p = 0.151). In total, more often in asthma pharmacotherapy was used a combination of corticosteroids and long-acting beta agonists (86.4 %). FEV_1 and FEV_2 changes before and after these medications were statistically significant, respectively 85.60 ± 18.86 % *vs.* 90.72 ± 17.99 % (p = 0.007). Using only corticosteroids changes of FEV_1 and FEV_2 were 69.0 ± 6.0 % *vs.* 73.0 ± 8.89 % (p = 0.018). Statistically significantly lower FEV was for users of dry powder inhalers than metered dose inhalers, respectively, 75.33 ± 25.03 % *vs.* 85.74 ± 17.36 % (p = 0.011).

Conclusion. Negative influence of asthma treatment effect was observed for patients with allergy and active smokers according to the observed differences in FEV measurements. Also, smoking duration correlated with treatment results. FEV differences observed in different kinds of drug forms could be related with correct inhaler technique. Therefore, consultation from the pharmacist about correct technique of inhaler use, dangerous effects of smoking and healthy lifestyle could improve situation of pharmacotherapy in asthma patients.

ATOMIC SPECTRAL ANALYSIS OF TOBACCO

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Keywords. Tobacco, ICP-OES, trace elements, sample digestion.

Introduction. According to the World Health Organization now there are about six million people who die every year as a result of smoking tobacco. The scientific literature has a large number of articles about determination of toxic organic contained compounds in tobacco. However, the determination of heavy metals in the same object attract not so much attention. Metals such cadmium and lead mainly get into tobacco leaves from the soil, as well as during process of pre-processing. When smoking, these metals move easily in tobacco smoke and penetrate into the human organism. It is well known, that this metals are able to accumulate into organism and can have harmful effects on the human life. Thus, the determination of heavy metals in cigarette tobacco is an actual problem of modern toxicology and public health.

Aim. The purpose of this work is the development of the technique of tobacco sample digestion to determine trace elements by ICP-OES.

Materials and methods. Packs of fifty (50) different cigarette brands were purchased from retail outlets at Saint-Petersburg city, Russia, in 2016–2017. Calibration standards were prepared from a 1000 mg/L multi-element standard solution CertiPUR IV (Merck, Germany). For samples digestion we use microwave system MDS-10 (Sineo, China), electric stove, muffle furnace. Multi-elemental analysis was performed using an ICPE 9000 (Shimadzu, Japan). The data obtained were subjected to the correlation analysis.

Results. The experimental comparison of different ways of sample mineralization with choosing the most preferred one with its subsequent optimization (selection of the optimum sample weight, the amount of reactants and degree of dilution, calculation method of the analytical signal, etc) were carried out. The optimum methodic of mineralization was acidic decomposition of the sample in a microwave oven using 4 ml of $HNO_{3\ (conc.)}$ and 2 ml of $H_2O_{2\ (conc.)}$ with dilution the final solution to 10 ml flask by deionized water. Developed technique was verified by analysis of few standard reference materials of grass and leaves (due to the lack of tobacco standards), as well as standard addition method and alternative methods of analysis. The data obtained confirm the validity of procedure. Results of identification of the tobacco elemental composition and assessment of the content of detected elements are also presented.

Conclusion. The method of sample preparation of tobacco has been developed for the subsequent ICP-OES determination. This method allows the simultaneous determination of 17 elements (Al, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Sr, Ti, Zn) which can give a broad picture of the microelement composition of tobacco.

CEREAL BARS: COMPOSITION AND CONSUMPTION

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Keywords. Cereal bar, nutritional value, label accuracy, fiber, sugar.

Introduction. People mostly use cereal bars as snacks in between meals or instead of breakfast. In choosing one, many consumers rely on nutritional value labels. Information about nutritional value of a product indicated on the product's label is considered a very reliable source of information, however, there have been studies raising the question about how precise the labels are on various products that are consumed as snacks.

Aim. To analyse ingredients of cereal bars – as indicated on the labels of these products, and to perform a factual analysis of nutritional values indicated therein, as well as to assess the consumption of cereal bars by physically active residents of Latvia.

Materials and methods. The analysis of the nutritional value of 10 cereal bars was performed at the laboratory of the BIOR pursuant to international standards. For the purposes of the study, 167 graduates and students of the Sports Education Agency answered questions of the survey about consumption of cereal bars.

Results. Information about nutrients indicated on the labels mostly do not correspond to the actual value, however, they lie within the tolerance range and is lower than the actual determined value. Nutritional values of proteins for 10 samples were within the permissible tolerance range. One sample fat value is lower than that indicated on the label and lies outside the tolerance range. Determined carbohydrates values for two samples are higher than those indicated on their labels and lie outside the tolerance range. Difference between the determined nutritional value and that indicated on the label is from 7.2 % (one sample value is lower than indicated on the label) to 17.1 % (one sample value is higher than that indicated on the label). 54.5 % of respondents interviewed consume cereal bars between meals, 43.2 % use them before or after exercises. 35.2 % of respondents who use cereal bars and pay attention to their labels gave wrong answers about the nutritional value of a cereal bar.

Conclusion. Information about nutritional value and nutrients indicated on the labels mostly do not correspond to the actual value, however, they lie within the tolerance range and is lower than the actual determined value. Cereal bars are a source of fiber; but have high sugar content. More than half of respondents consume cereal bars, and most use cereal bars as snacks between meals. Second in popularity is eating cereal bars before or after an exercise. More than half of respondents believe that cereal bars are healthy, but a portion of respondents have wrong perceptions about the nutritional value of cereal bars.

COMPARISON OF MEN'S SELF EVALUATED LEVEL OF KNOWLEDGE OF CONTRACEPTION WITH THE ACTUAL ONE

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Keywords. Men, woman, contraception, self-evaluation.

Introduction. Nowadays contraception is a widely-discussed issue. There has been a lot of scientific studies about women's knowledge of contraception, but there is only a few studies about men's. For now there has not been any scientific studies about this topic in Latvia and because of that it is really useful to get information on how good can men orientate in the topic of contraception.

Aim. To find out how the men's and women's self-evaluated level of knowledge on the topic of contraception compares to the actual one.

Materials and methods. The study group includes 493 men's and control group includes 297 women's voluntary answers on 16 questions obtained using originally created study protocol, collected from September 2015 to February 2017 in Latvia. In the end of the questionnaire participants had to answer whether they think they do or do not orientate well in questions about contraception. The level of knowledge was estimated as good if the amount of correct answers was ≥ 9 and as bad if the amount was ≤8. Analyzing was done using IBM SPSS software, 20.0 version.

Results. A total of 493 men and 297 women from Latvia participated in the study. Age of men ranged from 16 to 70 years (mean 29.05 ± 22.32), age of woman from 16 to 48 years (mean 24.54 ± 4.64).

60.0 % (n = 296) of men have showed good knowledge of contraception. Of whom 57.4 % (n = 170) thought they have good knowledge of contraception. In control group 86.9 % (n = 257) of women have showed good knowledge of contraception. Of whom 99.6 % (n = 256) thought they have good knowledge.

40 % (n = 197) of men have showed bad knowledge about contraception. Of whom 62.9 % (n = 124) thought they have bad knowledge about contraception. In control group 13.1 % (n = 40) of women have showed bad knowledge of contraception. Of whom 97.5 % (n = 39) thought they have good knowledge.

Cohen Kappa statistics showed that men's self-evaluation of their own knowledge of contraception is slightly reliable ($\kappa = 0.195$; $p < 0.001$) versus control groups' ($\kappa = 0.98$; $p < 0.001$).

Conclusion. Men who have showed good knowledge of contraception were more critical towards themselves in self-evaluation than those who showed insufficient level of knowledge.

While women have showed that they can evaluate their knowledge of contraception more accurately.

CONTRACEPTION METHOD CHOISE AMONG YOUTH IN LATVIA: THE IMPORTANCE OF CONTRACEPTIONS PRICE

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Keywords. Contraception, youth, price.

Introduction. There is no contraceptive method compensated in Latvia. World Health Organization has said that one of the reasons why contraception is not used is limited access to contraception, particularly among young people and poorer segments of populations.

Aim. The aim of the study was to evaluate which contraceptive method is mostly used by youth and to identify if contraception price influences the choice of contraceptive method.

Materials and methods. 188 respondents from Riga Stradiņš University, University of Latvia, Riga French lycee and some interest groups were included in research. A questionnaire was used to collect self-reported data from respondents about their choice of contraceptive method and factors influencing it. All data was analysed using SPSS 22.0 and Excel 2010.

Results. Research included 188 respondents. 73 % (n = 138) were women and 27 % (n = 50) were men. The age of respondents was between 18 and 22 years. The mean age was 19 years. 89.4 % (n = 168) of participants was sexually experienced. 35 % of respondents (n = 66) have always used a contraception during a sexual activity, 4.8 % of respondents (n = 9) have never used a contraception during a sexual activity. The most used contraceptive method was a condom (78 %, n = 147). 30 % of participants (n = 58) marked a *coitus interruptus* as a birth control method they used. 17 % (n = 31) used hormonal contraceptive pills and 10 % (n = 19) used emergency contraception. The greatest importance (20 %) on choice of contraceptive method was answered to be a partners wish. 19 % of respondents said that the most important factor is doctors consultation. 7 % of participants did not use a contraception because of a wish of partner. Almost half of the participants (46.3 %, n = 87) answered that the price of contraceptive method has influence on their choice. Meanwhile only 28.7 % (n = 54) said that contraceptive methods are not easy to access because of the price.

Conclusion. The results showed that the usage of contraception is not highly used among youth, because only 35 % had always used a contraceptive method during sexual intercourse. Although the price has not the greatest impact on contraceptive choice, almost half of participants admitted that the price is important when choosing a contraception and 28.7 % of respondents said that it is too expensive. This conclusion evokes a discussion why one of the least effective contraceptive method as *coitus interruptus* is used so often when we know that this method has no price.

DIAGNOSIS AND TREATMENT OF BACTERIAL TONSILLOPHARYNGITIS IN PRIMARY CARE: A QUALITATIVE STUDY

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Keywords. Tonsillopharyngitis (TF), point of care tests (POCT), upper respiratory tract infections, antibiotic prescribing, qualitative interviews.

Introduction. TF is a frequently observed condition, but most cases are viral, benign, and self-limited. Group A beta-hemolytic streptococcus (GABHS) is the only bacterial etiology of TF for which antibiotic (AB) treatment, usually 10 days of penicillin, is recommended. AB are used to prevent complications of GABHS, but they are rare and there are no significant differences in their rates with or without AB therapy. In the diagnostic process, clinical scoring systems (CSS) and POCT can help general practitioners (GPs) to reduce overtreatment of viral TF and unnecessary use of AB.

Aim. First, to explore practices of GPs in using POCT and clinical criteria for diagnosis of bacterial TF and decisions regarding antibiotic prescribing and second, to understand factors that shape these practices.

Materials and methods. This was a qualitative study. The data were collected through individual, in-depth semi-structured interviews with 10 GPs from 6 territorial regions in Riga. Interviews were continued until data saturation was reached. The interviews were audio-recorded and transcribed. Data analysis was done in 2 stages. First, all data were coded, second, codes were reviewed and organized in overarching categories describing practices of GPs. Atlas.ti program was used for data analysis.

Results. First, regarding the preferences of POCT, interviewed GPs did not use C-reactive-protein (CRP) test, guidelines or CSS. The only POCT utilized was the rapid strep-test (RST), usually in cases of atypical TF clinical picture. GPs mentioned lack of time, perception of usefulness and financial incentives as reasons for their choice of express diagnostic tests. Second, when deciding whether to prescribe AB, GPs considered various factors such as clinical picture, RST results, progression of symptoms, previous experience and patient expectations. Third, decision about specific AB therapy depended on their perception about AB effectiveness and whether the AB was reimbursed. Limited availability of phenoxymethylpenicillin sometimes led to prescription of wide spectrum AB while narrow spectrum AB would be sufficient. Fourth, choice of duration of AB therapy varied depending on the physician's belief about the right therapy, the patient's expectations and available AB packaging size.

Conclusion. The use of RST led to prescribing narrow spectrum AB whereas in the absence of the test interviewed GPs tend to prescribe wider spectrum AB. Decisions regarding prescribing and choice of duration of AB therapy in many cases was subjective if GPs wanted to fulfill patient expectations. Introduction of easy to use clinical guidelines would lead to more standardized diagnostic and prescribing practices and knowledge of effectiveness of different AB leading to more effective health care services and rational prescribing of AB.

ENVIRONMENTAL LIGHTENING POSSIBILITY
TO CAUSE RETINAL DAMAGE

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Keywords. Retina, damage, photochemical, light, toxicity, hazard, photoreceptor, necrosis, apoptosis, stress.

Introduction. Light rays passing through the optical system of the human eye can reach the retina and cause pathological changes depending on the intensity, dose and spectral characteristics of the exposure. In particular, there are numerous scientific studies proving that light consisting mainly of short wavelengths (blue light) can induce retinal damage. By comparing spectrum of different light sources we can get more understanding how aware we should be using artificial lightening at home and at the workplace.

Aim. The aim of this study is to explore light as a physical natural phenomenon and its negative impact mechanisms. With reference to the data obtained from other publications author sets the goal to investigate and compare the spectral power distribution of various light sources in order to estimate the possible negative effects on retinal structures.

Materials and methods. Scientific studies used are taken primarily from PubMed and ScienceDirect databases. Included reports met following selection criteria: English language studies, full text available, content matching the objective of the work. The different light sources spectral data was taken from *Lamp Spectral Power Distribution Database*. Using "Wolfram Mathematica 10.0" percentile distribution of harmful wavelengths of light sources was calculated and compared with each other. The etalon of spectral power distribution was chosen the spectrum of the sun, the combined spectrum of the sun and the sky and the spectral sensitivity of the human eye. The obtained results of descriptive study of the secondary data are illustrated in a table.

Results. The obtained results show that none of the light sources exceeded the norm of the combined etalon. The highest overall coefficient of the negative influence was observed for fluorescent and LED bulb, and the least – for incandescent lamp. The similar results were observed using the spectrum of the sun. In contrast, taking the curve of spectral sensitivity of the human eye as an etalon for light spectral power distribution function author acquired all overall coefficients higher than the norm. The calculated coefficients of CFL and FL exceeded the chosen standard the most, whereas incandescent lamps had the lowest coefficient among other light sources.

Discussion. Despite the great variety of available publications on light induced damage, it is hard to estimate adequate chronic cumulative effect of light on retina. During the work it became obvious that obtained results require additional parameters to make the indisputable Conclusion. It is essential to investigate further the negative impact of LED lightening to assess the latest concerns of their daily use.

FOOD SUPPLEMENTS' PURCHASE SAFETY BESIDES PHARMACY FROM IN PHARMACY WORKING PHARMACISTS' AND PHARMACIST ASSISTANTS' POINT OF VIEW

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Keywords. Food supplement, pharmacist, pharmacist assistant, safety.

Introduction. In Latvia it is allowed and possible to purchase a food supplement not only from pharmacies but also from any other stores that are and are not related with food. Also it is possible for anyone to buy a food supplement without knowing the purpose of its action. Furthermore, the supplements do not need to be tested, if they are considered safe to use. Nowadays it is normal to use not only medicines, but also many food supplements, that are dosed in tablets, or capsules, etc., though only pharmacists have learned what kind of interactions between medicines and food supplements in a human body may be. There are many other safety issues with food supplements and their marketing.

Aim. The aim was to find out the viewpoint of pharmacists and pharmacist assistants, who have worked in a pharmacy, about safety of food supplements that can be bought places other than pharmacy, because in pharmacies the pharmacists can consult with a client and may find a way to help with clients' health issues or doubts, and by suggesting the most suitable and reliable product.

Materials and methods. The scientific literature of the use of food supplements in Latvia was identified and the available food supplements in stores in Rīga and Jelgava (Latvia) and online pharmacies of Latvia was recorded. With received information was made a form to interview in pharmacies working pharmacists and pharmacist assistants. The results were processed with Microsoft Excel and IBM SPSS Statistics.

Results. There were 195 distributed forms, received 91 (46.67 % response rate) and 81 forms were processed after inclusion and exclusion criteria. Pharmacists were 61 (75.31 %) and pharmacist assistants – 20 (24.69 %). Only 8 (9.87 %) participants think that it is safe to buy food supplements beside pharmacy, nearly half (39; 48.15 %) thinks that it is partially safe and 33 (40.74 %) – that it is not safe. The safest place to purchase supplements beside pharmacy is online pharmacies of Latvia (60; 83.33 %), though the most unsafe is considered online shop (12; 16.67 %). Products that are relatively safe to buy beside pharmacy are tea for immunity (51; 75.0 %), vitamin C (30; 42.86 %). Results show that such risk groups as pregnant women and young mothers (67; 97.10 %), children until 12 years old (65; 94.20 %), and seniors (62; 91.18 %) should consult with doctors or pharmacists before using a food supplement.

Conclusion. Relatively many pharmacists and pharmacist assistants are more likely to suggest to purchase food supplements in pharmacies for safety reasons, especially for risk groups as pregnant women and young mothers, children until 12 years old, and seniors.

HEALTH PROBLEMS RELATED TO AIR TRAVEL AND GOING ON HOLIDAY OR/AND CULTURAL VACATION

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Keywords. Travelling, health problems.

Introduction. People from developed countries travel a lot. Travelers prefer planes, but sometimes different health problems may occur during plane trip and stay in foreign country.

Aim. We aimed to determine health problems connected to air travel and stay in foreign country.

Materials and methods. The research included electronic questionnaire from 1014 Estonian residents who travelled by plane during last five years on holiday and/or cultural trip (864 of them were women). The planned sampling had to cover 1000 people, which represents 0.1 % of Estonian population. The permit was given by committee on human research ethics of Tartu University (protocol number 250/T-5).

Results. Main health problems during plane travel were ear- and headaches, flatulence. Fear of flying occurred nearly in third of subjects on both short and long distance flights. It manifested in tachycardia episodes (55.7 %) and pre-travel insomnia (53.5 %). In order to come through situation female passengers preferred to listen to music and male to consume alcohol. 59 different countries were visited. The most frequent trip destinations were Turkey (11 %), Spain (9.6 %) and Italy (8.3 %). Diarrhea (35.4 %), sunburn (20 %), severe headaches (19.5 %), fevers (16 %) and flu-like symptoms (16 %) were main health problems in destination country. Diarrhea was the most frequent problem in Bulgaria (63.6 % of health disorders, experienced in this country), Turkey (50 %) and Egypt (70 %), and various virus infections in Britain (60 %). Sunburns were most frequent in Thai (55.6 %). These problems were mostly caused by bad hygiene, consumption of local food, not applying sunblock creams and change of environment. Only 1.9 % respondents were vaccinated against infectious diseases. 10.5 % were vaccinated before, but not connected to this trip, and 87.7 % believed that the vaccination is not suggested. Based on the Health Board vaccination recommendations, it was revealed that 21.4 % respondents gave wrong answers, i.e. they thought that vaccination is not suggested in relevant state and vaccinated less than recommended. Travelers received information about diseases in destination country mainly by themselves; only 1.6 % of respondents received their information from travel companies; 52.9 % believed they were aware about health dangers in destination countries while 30.7 % were totally unaware of such dangers.

Conclusion. Fear of flight was experienced by 1/3 of passengers. Southern countries are visited more frequently, and main health disorders manifest in diarrhea, sunburns and strong headache, which indicate to neglecting hygiene rules, insufficient consumption of liquid and use of sun protection. The major share of information about potential dangers of trip was received from Internet or friends. Tourism agencies provide little information though they are bound to give it. Few people use vaccination against potential infectious diseases.

HNF1B AND CYP19A1 GENES VARIATIONS GENOTYPE FREQUENCIES CORRELATION WITH OVARIAN CANCER INCIDENCE AMONG DIFFERENT POPULATIONS

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Keywords. Ovarian cancer, *HNF1B, CYP19A1.*

Introduction. Ovarian cancer (OC) is the leading cause of death from gynecological malignancies in developed countries, but OC incidence varies among different countries and populations. However, not much is known about common genetic factors in the OC etiology. Genome-wide association studies have discovered several OC susceptibility loci for example *HNF1B* and *CYP19A1* genes loci. *HNF1B* gene encodes transcription factors, but its role in the development of OC is still unexplained. *CYP19A1* encodes enzyme aromatase, which converts androgens to estrogens after menopause.

Aim. The aim of this study was to analyse the influence of the *HNF1B* gene variations rs4430796, rs7501939 and *CYP19A1* gene variation rs727479 genotype frequencies in general population on the OC incidence among different populations.

Materials and methods. The design of this study is-correlation study. Frequency of genetic allelic variants and their genotypes in different populations was obtained from The 1000 Genome project, HGDP and HapMap studies. The OC age corrected incidence was extracted from the WHO database and regional registries. Multiethnic populations, where 1 ethnic group is < 80 % of total population were excluded from the study. After exclusion, data of 17 populations was available for the analysis. To assess variations distribution in populations Hardy-Weinberg equilibrium was performed using PLINK v1.07 software. Statistical analysis of the obtained data was performed using the SPSS 22.0 software. Correlation between genotypes and allele frequencies and OC incidence in different populations were calculated using Spearmen's rank correlation (r_s). To calculate the predictive power of variants genotypes on OC incidence linear regression was used.

Results. Analyzing association of genetic variants and OC incidence it was found that *CYP19A1* genes' variation rs727479 genotype CC frequency significantly correlates with the incidence difference of OC among different populations (r_s = 0.5, p = 0.04). Variations rs727479 CC genotype may contribute to 25 % of the OC difference among different populations (R^2 = 0.247)

HNF1B gene SNPs rs4430796, rs7501939 alleles and genotypes frequencies were not associated with OC incidence in different populations (p > 0.05).

Conclusion.

1. *CYP19A1* genes variation rs727479 in the recessive type of inheritance significantly correlates with the incidence of OC among different populations.
2. *CYP19A1* genes variation rs727479 CC genotype may contribute to 25 % of the OC difference among different populations.
3. *HNF1B* gene rs4430796, rs7501939 variant frequencies were not associated with OC incidence in different populations.

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HOW DOES ®CROSSFIT TRAINING SESSION AFFECT DAILY ENERGY EXPENDITURE IN MALE HEALTHY INDIVIDUALS?

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Keywords. ®CrossFit training, energy expenditure, non-professionals.

Introduction. CrossFit is a fitness program which is increasingly popular in the western world. This training method is based on the idea of combining all together within 1-hour training session (WOD- workout of the day) many different functional movements and heavy weightlifting exercises all performed in relatively fast pace. It is widely said among ®CrossFit enthusiasts that this connection results in high efficiency of this program in increasing daily energy expenditure – calorie burn.

Aim. The aim of the study was to determine how does ®CrossFit training session increase calorie expenditure in workout-day comparing to non-workout regular day among non- professional male participants.

Materials and methods. The group of 13 male, non-professional ®CrossFit participants, in the age between 22–33 took part in the study. All of the participants attended workouts in the same ®Crossfit gym in Warsaw. Including criteria were: male sex, minimum 3-months ®CrossFit classes participation experience, good health. Each of the them got Armband Bodywear- (device measuring daily activity). Device was measuring participants daily activity for 7 consecutive days. Volunteers were asked to attend 5 ®CrossFit training within defined 7 day period of the study. Obtained data was analysed for each of the cases. Average daily calorie expenditure in non-training-days and in training-days, for each participant was identified and compared. This two values were subtracted in order to determine an increase of calorie burn resulting from ®CrossFit training.

Results. As it was suspected, an increase in average calorie expenditure between training and non-training day was noted in each of the cases. The increase varied from 7 % to 31 %. Average increase was by 15.6 %.

Conclusion. Small size of the study group was significant limitation to the study, therefore further studies on bigger group are required. However, our results showed that 1 hour ®Crossfit training session increase daily energy expenditure with the mean value of 15.6 %.

IMPACT OF AGE ON THE QUALITY OF SEXUAL RELATIONSHIP

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Keywords. Sexual relationships, sexual activity, ageing.

Introduction. As globally medicine develops more and more, life expectancy has tendency to grow also in Latvia. It is very important not only to prolong the life expectancy of population but also preserve and support the quality of life, which includes sexual relationships as well. Lack of research in this field and prejudice surrounding sexual relationships keep patients and health care professionals in Latvia from actively talking about this topic and tackling sexual life quality problems which arise with ageing.

Aim. To evaluate changes in sexual relationships existence and quality with ageing.

Materials and methods. A cross-sectional study was conducted with 173 respondents in age under 40 till 90. Assessment of persons' sexual health was through anonymous questionnaire where it was evaluated how aging effects sexual health. The data and the results of the research were processed with SPSS program.

Results. The quality of sexual life is the highest in period from 30 to 40 years of age, afterwards gradually decreasing until the period of 70 to 80 years, when it is evaluated slightly higher.

The study shows that with increasing age more respondents recognize a decrease in frequency of sexual relationship in some period of the lifetime. The most common factors for the decrease in all of the life periods are lack of sexual desire and lack of partner. Statistically significant connection is found between ageing and decreased sexual relationship frequency due to severe diseases and medication.

134 out of 173 respondents answer that health care professionals have not inquired about their sexual relationship quality. Less than 12 % of respondents have turned to health care specialist with questions about their sexual life quality or have tried to use sexual function stimulating products.

73 % of those respondents who have active sexual life have showed that existence of sexual life have positively impact on overall quality of life. However, 70 % of those respondents who don't have active sexual life have answered that sexual life absence doesn't affect overall quality of life.

Conclusion. There is significant association between ageing and decreasing of sexual life quality. With increasing age more people recognize a decrease in frequency of sexual relationships in a particular period during their lifespan. Ageing also positively correlates with the decrease being caused by severe diseases and medication. Meanwhile healthcare professionals pay very limited attention to the sexual life quality of their patients.

IMPACT OF LONG-TERM REGULAR AEROBIC PHYSICAL ACTIVITIES ON EXECUTIVE FUNCTIONS IN SENIORS

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Keywords. Aerobic activity, executive function, inhibition, working memory, ageing.

Introduction. World Health Organisation (WHO, 2015) prognoses is that by the year 2050 the amount of people aged over 60 will nearly double from 12 % to 22 %. These predictions raise an issue regarding the well-being of the future generations as ageing is often accompanied by different chronic diseases as well as decline in cognitive functioning (Dziechciaz & Filip, 2014). Lately there have been indications regarding the impact of aerobic physical activities on executive functions by increasing the volume of grey and white matter in prefrontal cortex, increase of volume in hippocampus and reduced brain atrophy due to physical exercise (Colcombe et al., 2003; Varma et al., 2015). Executive function is a broad attentional construct thought to be involved in higher level cognitive tasks performed in the service of a goal (Vaughan & Giovanello, 2010).

Aim. To examine the impact of long-term regular aerobic activities on two executive functions – working memory and inhibition of attention.

Materials and methods. 33 participants aged 65–85 (M = 72.73, SD = 4.95) were included in the data analysis. They were divided into three groups – seniors involved in regular long-term aerobic activities, seniors recently involved in regular aerobic activities and seniors with sedentary lifestyle. To assess working memory, *The Numbers Reversed test* (Woodcock, McGrew, & Mather, 2001) was used. To assess inhibition of attention three instruments was used: *Visual Matching test* (Woodcock, McGrew, & Mather, 2001), *Map Test of Everyday Attention* (Robertson, Ward, Ridgeway, & Nimmo-smith, 1996) and *Reaction time test* (Molotanovs, 2011). To determine the physical activity of each participant a modified version of *Social Determinants of Health Behaviours* (FINBALT, 2008) was used.

Results. The data was analysed with ANOVA analysis with Post Hoc test (LSD). There were significant differences in long-term aerobic activity group and sedentary group in attention switching (p = 0.015), working memory (p = 0.031) and simple reaction time (p = 0.045).

Conclusion. The results indicate that involvement in regular long-term aerobic activity have impact on such executive functions as working memory, attention and reaction time, thus suggesting that involvement in regular aerobic physical activities should be advertised more. The study had several limitations. Firstly, the participants were not divided equally regarding their gender and secondly, the education of participants were not taken into consideration in data analysis.

INCREASED MALNUTRITION RISK IN ELDERLY ARE ASSOCIATED WITH XEROSTOMIA AND LOSS OF APPETITE

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Keywords. Elderly, malnutrition, xerostomia, appetite loss, gerontology.

Introduction. In almost every country, the proportion of people aged over 60 years is growing faster than any other age group. Malnutrition is a common problem in the elderly. Today the world faces two kinds of malnutrition, one associated with nutritional deficiency and the other with dietary excess. Older people are more likely to have health conditions that can cause dry mouth, or xerostomia. It is not clear if oral health is associated to malnutrition in elderly.

Aim. To determine whether an association exists between oral health and malnutrition in the elderly.

Materials and methods. In current cross-sectional study, oral and dental health examination, as well nutritional assessment of 52 patients, which were hospitalized in the "Bikernieki" gerontology center, was carried out using the WHO manual validated *Oral Health Survey – Basic Methods* and the *Mini Nutrition Assessment (MNA®)*. MNA® is a validated nutrition screening and assessment tool that can identify geriatric patients age 65 and above who are malnourished or at risk of malnutrition. In our study n = 33 (63 %) of patients were women, n = 19 (37 %) were men. The mean of age was 80 ± 8 years.

Statistical analysis was performed using SPSS version 22.0. Results expressed as mean, standard deviation. Comparisons between means were carried out using the two-tailed t-test. Significance was accepted at the 5 % probability level.

Permission to carry out the study was issued by the Ethics Committee of the Faculty of Medicine at University of Latvia.

Results. Mean body mass index (BMI) of patients was 28 ± 5 kg/m², n = 35 (68 %) of patients were overweight/obese, n = 13 (24 %) of patients have too low BMI, only n = 4 (8 %) of patients have normal BMI. Insufficient nutrition, according to MNA® method, was found in 20 % of patients. Despite more patients were overweight, or had normal weight, in 40 % of patients was found insufficient nutrition risk. Another 40 % of patients has sufficient nutrition according MNA®. Seventy six percent of elderly patients have dry mouth symptoms in our study, 52 % have loss of appetite, and 67 % have difficulties in chewing and swallowing.

We found statistically significant positive correlation between dry mouth symptoms and appetite loss (p < 0.05), between loss of appetite and malnutrition risk (p < 0.01), dry mouth and chewing difficulties (p < 0.01), as well positive correlation between age and malnutrition risk (p < 0.05).

Conclusion. We found an association between poor oral health status and increased malnutrition risk in gerontology center patients. Xerostomia and appetite loss, can lead to malnutrition, nutrient deficiencies, fatigue, worsening of health conditions.

INTERACTION BETWEEN SYMPTHOMS OF DEPRESSION AND SINGES OF VIOLENCE AMONG THE TEENAGERS

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Keywords. Violence, depression, teenagers.

Introduction. Lots of researchers are developed on this topic, but in these papers the pupils of secondary school are figuring more often, those who live in full families. In this research paper the target audience includes the orphanage's students. The spreading of negative experience during the childhood depends on the environment teenagers live in. Person, who has grown up in the full family, cannot imagine how the orphanage children live.

Aim. The main aim of this research is to find out the symptoms of depression and signs of violence within the two boarding schools, and enlisting.

Materials and methods. Quantitative method, for data analysis 40 questionnaires filled by respondents.

Results.

1. 83 % of respondents have ever endured the emotional violence, 15 % have not, 2 % did not want to answer.
2. 70 % have ever suffered from physical influencing by other teenager, or influenced other teenager physically by himself; 27 % of respondents have never suffered from physical violence and have never took part in the process of violence; 3 % did not want to answer.
3. 50 % of respondents have never suffered from sexual harassment; 38 % declared that have gone throw sexual harassment; 12 % did not want to answer.
4. 63 % of respondents suffer from verbal violence, the answers of 35 % of respondents were negative and 2 % did not want to answer.
5. Boys suffer more from physical violence (60 %) then girls (32 %). Girls have more experience of sexual violence (50 %) than boys (1 %), also the suffering from emotional violence is defined more among girls (80 %) than among boys (30 %). The experience of verbal violence among girls is also wider than among boys.
6. For 80 % of respondents have problems of concentration.
7. 90 % of respondents have never thought about the suicide and are glad about the life as it is.
8. The level of appetite has a little bit decreased lately for 55 % of respondents.
9. 42 % of respondents answers that they are irritable.

Conclusion.

1. The majority of respondents did not have any thoughts about the suicide.
2. Respondents mostly suffer from emotional violence
3. Almost all respondents suffer from humiliation by friends or classmates.
4. Mostly boys than girls suffer from physical violence. Mostly girls than boys suffer from emotional violence.

5. Comparing the results of this research with the results of research performed by The Centre for Disease Prevention and Control (CDPC) in 2012, it is possible to summarize that students of two boarding schools suffer from all types of violence three times more often than the teenagers of secondary schools.

6. Within the results of research can be observed the tendency, that for each respondent, who suffers from any type of violence have at least two symptoms of depression. According to this fact it is possible to confidently conclude that one of the consequences of violence are depression's symptoms.

LED LIGHT SOURCES DAILY USE CHOISE, DEPENDING ON POSSIBILE NEGATIVE EFFECTS ON RETINA

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Keywords. Retina, damage, led, light emitting diode, blue light, toxicity, hazard.

Introduction. Nowadays constantly developing light emitting diode technology gradually overtakes the artificial lightening market due to energy-saving and duration advantages. Author's previous study showed that LEDs have no blue light spectral excess comparing with various artificial sources and taking different etalons. However, numerous researches claim about retinal pathological changes. Is there any need to take into account the doubts about the safety of long-term use? What are the other ways of LED impact on retinal structures?

Aim. The aim of this study is to explore the main principles of light emitting diode technology, to get the idea of possible ways of negative impact on retina. Additionally, to identify the most and least dangerous LED types for proper choice for the daily use.

Materials and methods. The systematic search was conducted in Pubmed and ScienceDirect databases. The selection was determined by the defined criteria. Three Led type spectrums was used – cool white, neutral white and warm white, which spectral data was taken from *Lamp Spectral Power Distribution Database*, Canada. The percentile distribution of harmful wavelengths of different light sources was calculated by using the "Wolfram Mathematica 10.0". The different etalons are used. The light sources intensity is supposed to be equal. The results of descriptive study with comparison of secondary data are illustrated in the table.

Results. The calculated data show that comparing with all etalons the highest overall coefficient of the negative impact of the light sources was observed for cool LED bulbs, but the least – for pure white. The coefficients of all three lightings exceeded the spectral sensitivity of the human eye etalon. Cool white LED also exceeded the norm of two others: the spectrum of the sun, the combined spectrum of the sun and the sky.

Discussion. The received information gives an approximate idea about the possible consequences of excessive illumination of the retina. Due to the lack of information of intensity, time of impact, temperature and other parameters it is difficult to establish undoubtedly how dangerous LEDs are. Based on the obtained results, there obviously exists the presence of harmful waves in LED sources. However, the conditions for pathological reactions still remain

unknown. The most of studies show that chronic exposure only increases oxidative stress markers instead of causing pathological structural changes, which should occur later. Therefore safety in using LED's as a domestic and workplace lighting still remains an open question, therefore the recomendations would be to avoid the usage of cool white emitting light bulbs.

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LONG-TERM COMPLIANCE –
TEST OF PATIENCE AND ENDURANCE?

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Keywords. Compliance, hypertension, regimen.

Introduction. Patient compliance is a key factor for successful treatment and lack of it is the main reason for predicting therapy failure. It is often assumed that with time patients comprehension of their drug regimen grows and with it – compliance to therapy. However this may not be true, because as they get more accustomed to the regime, patients also tend to modify their medication regimen without consulting their doctor.

Aim. To analyse the causes of reduced compliance during long-term treatment of arterial hypertension.

Materials and methods. From December 2015 to January 2017 a quantitative survey was conducted by including respondents who had been diagnosed with arterial hypertension and were prescribed at least one fixed dose combination drug. Data was collected anonymously about their demographic information, co-morbidity, other prescribed medications, intake regime, the average blood pressure during treatment, and patients assessment of the prescribed therapy. Collected data was analysed with SPSS.

Results. The study included 241 respondents, most of whom (66.4 %) were women and the average age was 61.2 ± 12.1 years. Out of the study population there were 117 (48.5 %) who admitted deliberately changing their drug regimen. In this non-compliant group patients who received ≥ 3 prescription drugs (n = 82), more often deliberately adjusted treatment regimen compared to respondents (n = 35) treated with ≤ 2 prescription drugs, respectively 70.1 % *vs.* 29.9 %; $p < 0.001$. Proportion of non compliant respondents substantially increased according to age, respectively 43.9 % for under 70 years *vs.* 60.0 % for 70 years or older; $p = 0.023$. Compliance was also reduced based on duration of received treatment, respectively 43.8 % of patients who received treatment for 10 years or less were not compliant comparing to 67.4 % for the group with more than 10 years of treatment experience ($p = 0.003$). From 124 patients who claimed to follow doctors' orders almost half (42.0 % *vs.* 58.0 %, $p < 0.001$) admitted sometimes splitting their tablets for blood pressure medication which indicated false compliance.

Conclusion. The most common factors that reduced compliance were number of prescription drugs, patient age and the duration of received treatment. Despite more experience with drug regimen, adherence noticeably dropped with time. Furthermore, even the compliant patients sometimes admitted to divide their fixed-dose medication, which is forbidden and indicates misunderstanding and false perception of correct drug regimen. Therefore it is essential for physicians and pharmacists to invest extra attention for long-term patients to promote proper use of medication.

MASTERS BASKETBALL PLAYERS CARDIOVASCULAR PARAMETERS CHANGES DURING TRAINING AND COMPETITION

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Keywords. Heart rate, blood pressure, oxygen saturation, training, competition.

Introduction. It is a fact that the world's population is aging. This trend has implication for nearly all sectors of society, including sports sector. As athletes grow older, their desire to compete does not diminish, even contrary.

Aim. To evaluate masters basketball players heart rate, blood pressure and oxygen saturation changes during training and competition.

Materials and methods. Sixteen male basketball players from four different teams participating in the MaxiBasket league were included in the study. The subjects were familiarized with the process of the experiment and provided written informed consent. Measurements were taken by the CONTEC™ Pulse Oximeter CMS50D1 and Little Doctor® sphygmomanometer LD-71. The experiment was carried out in real training and competition conditions. Heart rate, blood pressure and oxygen saturation were measured before warming-up, three times during process (training/game) and after stretching. Collected statistical data where analysed by MS Excel 2010 and SPSS *V20.0* software and data are represented as mean ± standard deviation in parametric data and median (25; 75 percentile) in nonparametric data. A significance level of $P < 0.05$ was applied.

Results. The mean age of participants was 49.4 ± 6.3 [95 % confidence interval (CI) = 46.1–51.9] years. The average heart rate (HR) during training was 133 ± 10 [128–138], bpm but during game 148 ± 13 [142–154], bpm which showed statistically significant difference between both events ($p = 0.0002$).

There was no statistically significant difference between systolic (SBP) or diastolic blood pressure (DBP) during training (dT) and competition (dC): SBPdT 174 ± 22 [163–185] *vs.* SBPdC 185 ± 16 [177–193], mmHg; $p = 0.084$. DBPdT 88 ± 11 [83–93] *vs.* DBPdC 89 ± 8 [85–93], mmHg; $p = 0.610$.

There was statistically significant difference between mean diastolic blood pressure after training 84 ± 9 [79–89], mmHg and after competition 89 ± 7 [85–93], mmHg; $p = 0.046$. The same changes was shown comparing median (25; 75 percentile) oxygen saturation after training 97 (96; 97), % and after game 95 (94; 96), %; $p = 0.018$.

Conclusion. Heart rate increase during competition is more pronounced than during training. Game affects blood pressure similar to training process. Also oxygen saturation after competition is statistically significant lower than after training. Study shows that competition is greater load to the body than training.

METFORMIN AS FIRST-LINE THERAPY FOR TYPE 2 DIABETES: WHAT ARE THE ADVANTAGES?

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Keywords. Diabetes, metformin, advantages.

Introduction. Metformin has been used as first line pharmacotherapy for treatment of type 2 diabetes (T2D) due to its safety and beneficial effects on hemoglobin A1c, weight and cardiovascular mortality compared with other pharmacotherapy. The tolerability of metformin is improved by using an appropriate dose titration, starting with lower doses.

Aim. Analyse advantages of metformin as the first-line drug for T2D patients based on changes in patients' blood tests before and after starting the pharmacotherapy.

Materials and methods. During the period from December 2016 to February 2017 retrospective quantitative study was carried out at two physicians' practices. The following data were collected: patients' age, sex, body mass index (BMI), weight, smoking habits, information about performed blood tests before the pharmacotherapy, after changing the dose of initial drug and after adding another group of drugs, patients' current antidiabetic pharmacotherapy and other groups of drugs taken during their treatment.

Results. During study 71 T2D patients were included. Nearly half of them (n = 33) were women. BMI was higher than 25 kg/m² in 67 cases. Metformin as the first-line therapy (metformin group) was used more frequently (n = 55; 77.5 %) compared with other group. Out of all metformin users, majority remained on metformin monotherapy (n = 39, 70.9 %). Patients from metformin group were older than those from the other group, accordingly 69.4 ± 11.5 *vs.* 64.0 ± 18.0 years. In metformin group BMI decreased insignificantly (31.79 *vs.* 31.77 kg/m², p = 0.782), whereas in other group BMI increased (30.25 *vs.* 31.63, p = 0.011). Before starting the therapy, blood glucose level was lower in the metformin group, respectively 7.70 *vs.* 7.98 mmol/l, p = 0.001. In metformin group blood glucose levels improved after increasing the dose (7.7 *vs.* 7.35 mmol/l, p = 0.326) and adding the 2nd drug (7.7 *vs.* 7.25 mmol/l, p = 0.045). Out of all patients, less than half was taking statins during hypoglycemic therapy both in metformin and other group, respectively 40 % *vs.* 31.3 %, p = 0.526. Among all statins, atorvastatin was the most commonly prescribed drug (n = 20, 74.07 %). Cholesterol levels in metformin group improved after increasing the dose (5.9 *vs.* 5.34 mmol/l, p = 0.645) and adding the 2nd drug (5.9 *vs.* 4.18 mmol/l, p = 0.002).

Conclusion. Patients on metformin therapy, regardless of their age, had better improvements in blood tests (glucose, cholesterol levels), BMI changes even in initial doses and especially during dose titration compared with other antidiabetic drugs. Majority of metformin users did not initiate add-on therapy.

OCCUPATIONAL SKIN DISEASES AMONG HEALTHCARE PROFESSIONALS AT PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Occupational skin diseases, healthcare providers, desinfectants, hand washing, shift work.

Introduction. Occupational skin disorders are one of the most frequent occupation related diseases. It should be a priority for public health because they represent up to 30 % of occupational diseases. In Poland, the frequency of allergic contact dermatitis in healthcare workers accounts for 25.6 % of all occupational pathologies.

Aim. Evaluate the prevalence of occupational skin diseases and its symptoms among the healthcare providers of different departments, age groups and genders at Pauls Stradins Clinical University Hospital during their work experience. Collected data will be used to raise people's awareness about this important issue.

Materials and methods. The study group consisted of 175 respondents. The administration department was chosen as a control group. The questionnaire partially based on Nordic Occupational Skin Questionnaire NOSQ-2002 and Hand Hygiene Australia: Generic Skin Care Questionnaire was used. To process the data Microsoft Exel and SPSS Statistics programs were used.

Results. 175 respondents took a place in this study: 73 nursing assistants (41.4 %), 36 nurses (20.6 %), 41 physicians (23.4 %) and 25 administrators (14.3 %). It was revealed that 65 respondents (37.1 %) were suffering from occupational skin diseases. From them only 20.0 % had been affected by skin disease before starting to work, while 80 % had no skin problems before that (p = 0.002). The study showed that 52.3 % of all healthcare professional with skin symptoms worked ≥ 24 hours per shift work (p = 0.028) and 64.7 % of them washed hands ≥ 20 times per shift. As the study showed 52 (80.0 %) of respondents had skin symptoms always localised at the same place and from them 48 (90.6 %) had symptoms just localised on hands. Drought (23 %), redness (22 %) and itching (19 %) were main reported symptoms. Nursing assistants (26.4 %) more frequently suffered from the skin symptoms at workplace (p = < 0.001). 52 respondents (80.0 %) admitted that their skin condition improves during vacation (p = 0.001). The statistical significance was not found between genders and different age groups.

Conclusion. Occupational skin diseases are very important and significant issue among healthcare professionals that needs to be studied, analysed and discussed. It is relevant to prevent occurrence of symptoms by educating employees, employers and by avoiding substances with skin-damaging properties. In this study it showed that working at the hospital as a healthcare professional highers the risk of occupational skin diseases than working at the administration department.

PARENTAL ATTITUDES TOWARDS CHILDREN'S VACCINATION IN LATVIA

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Keywords. Vaccination, parental attitude.

Introduction. Vaccination is a scientifically proven method of preventing specific diseases. It is protecting both – the individual and the society. Vaccination is a safe method with very few associated risk factors, nevertheless, the perceived risk factors are increasing and misleading the society, causing a rise in parents who are refusing to vaccinate their children. It is important to recognize the factors which are causing this issue and raise awareness of the importance of vaccination. Parental attitudes towards vaccination are the determining factor regarding child's immunization status.

Aim. To explore parental attitudes towards children's vaccination and the factors which determine these attitudes.

Materials and methods. An anonymous questionnaire was created, consisting of two parts. First part included 10 questions about general information of parents. Second part – 22 questions aiming to asses the attitude and knowledge of parents regarding vaccination. Survey was distributed via social networks and directed to parents having a child up to the age of 18.

Results. 155 parents took part in the questionnaire of which 83.2 % were mothers and 16.8 % fathers. 80 % of parents have higher education and 84.5 % are vaccinated themselves. 85.8 % of participants support vaccination of children. Children of 92.9 % parents are fully or partly vaccinated according to the National vaccination calendar. Main reasons for supporting children's vaccination – the necessity to protect the child from dangerous diseases (80.6 %), the complications of these diseases (63.2 %) and protection of other members of society against dangerous diseases (31.6 %). Main reasons not to support vaccinations – to exclude possible side effects of vaccinations (55.6 %), uncertainty about safety of vaccinations (34.6 %), concern about dangerous substances within vaccines (23.3 %) and the thought that children are receiving vaccinations too early (23.3 %). Main source of information regarding vaccinations is family doctor for 82.5 %. 50.6 % of parents feel that their family doctor has not informed them about the risks or benefits of vaccines and 49 % are not informed about the risks of diseases for which vaccinations are available. 58.1 % would like to receive more information from family doctors regarding vaccination. For only 8.4 % of parents vaccination was recommended by their family doctor. 35.3 % of parents do not follow their children's vaccination calendar.

Conclusion. A strikingly high number of parents do not support children's vaccination. Main reasons for this are connected with lack of information about the issue from family doctors, as well as, fear of vaccinations being dangerous themselves.

PATIENT ENABLEMENT IN GENERAL PRACTICE
IN LATVIA: A PILOT STUDY

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Keywords. Patient enablement, general practice, primary health care.

Introduction. Holistic biopsychosocial health care requires an effective partnership and active mutual participation between people, who need care, and people, who provide care. To improve it, there is a need of action for better aware and empowered individuals and patients. Enablement is the result of individual empowerment and involves building on a person's strengths, it is now recognized internationally as a valid measure of the quality of general practitioner consultation and according to WONCA one of general practitioner duties.

Aim. To evaluate patient enablement in GP practice setting in Latvia and its association with patient consultation related parameters and other influencing factors, as well as to find out sociodemographic characteristics of GP patients in Latvia.

Materials and methods. Quantitative research method was used – The Patient Enablement Instrument with additional questions about person's health, reasons for visiting the doctor and consultation feedback. Questionnaire showed high internal consistency (Cronbach's alpha 0.9). In order to analyse data SPSS program was used. Research is carried out with Rural Family Doctors Association of Latvia support.

Results. Together 1000 questionnaires were collected, 250 questionnaires from each region – Kurzeme, Zemgale, Vidzeme, Latgale. Age distribution: 19.5 % of participants were younger than 30 years of age, 51.7 % were 30–60 years old and 28.8 % were older than 60 years old, 66.5 % of participants were females and 33.5 % males. Research showed that 82.4 % of patients went to GP consultation with one health care problem, 13.1 % – with two and 4.2 % – with three or more health care problems. Mean length of a GP consultation was 16.6 minutes (SD 7.9 min.), the average patient enablement score (PEI) was – 5.8. It was found that 42.5 % of patients, who visited GP, suffered from a chronical physical health problem, mean PEI for this group was – 6.0 and 37.2 % visited GP with acute problem, average PEI for this group was higher – 6.6. The longest consultation length (18.8 and 18.0 minutes) had patients with sexual health and social problems, PEI for these groups was 5.2 and 4.3.

Conclusion. Consultations in GP practice in Latvia resulted in a relatively high average level of enablement – 5.8. That is higher in comparison to UK (PEI – 3.1) and Poland (PEI – 3.6) studies, however PEI score found in Croatia was 6.6. The different PEI scores between the countries could be explained by probable cultural differences. These are only preliminary results, there is a need for further research.

PREVALENCE OF DEPRESSION SYMPTOMS AMONG COMPUTER SCIENCE PROFESSIONALS

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Keywords. Computer science, Information technologies, Depression, *PHQ-9*.

Introduction. With the rapidly evolving business market and advancing technologies, there is increasing concern with the mental health of specialists employed in computer science and information technology fields. Different factors may contribute to depression rates in occupational medicine, such as stressful work environment, isolation due to peculiarities of working with data and technologies opposed to social interaction, among others. Work in a startup in opposition to a large, as well as financially more stable company, can increase the risk of developing or triggering depression and related disorders.

Aim. The aim of this study was to determine whether working in startup company setting carries a greater depression risk among computer science professionals.

Materials and methods. The data was gathered over the time period of two months (from December 2016 until January 2017). Specialists working with information technologies were interviewed by using online *Patient Health Questionnaire 9 (PHQ-9)* and a questionnaire about age, gender, work experience in computer sciences and whether they work in a startup company. Statistical data interpretation and processing was performed with MS Excel 2013 and IBM SPSS 20.0 software.

Results. In total 81 computer science specialists took part in the research; 21 females and 60 males, between the age of 23 and 54 (median = 28).

Research participant estimation utilizing *PHQ-9* questionnaire revealed; 64.2 % (n = 52) of the respondents had total score of less than 10, which means they did not have enough symptoms for the diagnosis of depression. 35.8 % (n = 29) of respondents had a total score above or equal to 10 points. *PHQ-9* questionnaire score ≥ 10 has sensitivity of 88 % and a specificity of 88 % for Major Depressive Disorder. Out of all computer science specialists employed in startup (n = 35), 48.3 % of the respondents (n = 17) scored 10 or above points. Respondents employed in non-startup type of companies (n = 46), of which 26.1 % (n = 12) presented with 10 and above score. In male group (n = 60); 26.7 % (n = 16) presented with mild depression symptoms, 43.4 % (n = 26) of the respondents presented with moderate and above moderate severity depression symptoms. In female group (n = 21); 47.6 % (n = 10) had mild depression symptoms and only 14.4 % (n = 3) presented with moderate or more severe depression symptoms.

Conclusion. This study concludes that prevalence of depression symptoms is higher among computer science professionals employed in startup companies. Prevalence of depression symptoms among computer science specialists is higher in males compared to females.

PROBLEMS WITH DIAGNOSTICS AND TREATMENT OF OCCUPATIONAL DISEASES AMONG OFFICE WORKERS

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Keywords. Occupational health, medicine, office.

Introduction. Approximately 8 % of all diseases are associated with occupational risk factors [*Maija Eglīte, 2012*]. An estimated 1.3 million people who worked in 2015/16 were suffering from an illness they believed was caused or made worse by work [*Labour Force Survey*]. Since 2012, the number of newly registered occupational patients in Latvia have been increased from 91.5 cases per 100,000 employed in 2012 to 138.0 cases per 100,000 employed in 2014 [*Labklājības ministrija*]. Early diagnostics and treatment of occupational diseases may significantly affect the health status and quality of life.

Aim. To determine the problems with diagnostics and treatment of occupational diseases among office workers.

Materials and methods. Qualitative retrospective research. 106 office workers from various offices in Riga were anonymously interviewed. The obtained data was analysed in Google forms and GraphPad Software (*http://graphpad.com/*) using the descriptive statistical method.

Results.

1. 41.5 % of respondents are males and 58.5 % – females.
2. 67.9 % (95 % CI 54.9 to 80.9) of respondents are under 30 years old with the length of service under 10 years (95 % CI 57.8 to 81.8).
3. 84.9 % (95 % CI 69.9 to 99.9) of respondents recognize the increased visual tension, 79.2 % (95 % CI 64.2 to 94.2) – forced postures, a sedentary lifestyle, frequent and repetitive movements, 47.2 % (95 % CI 32.2 to 62.2) – psychoemotional load.
4. 57.5 % (95 % CI 41.5 to 73.5) of respondents complain about musculoskeletal disorders, 43.4 % (95 % CI 27.4 to 59.4) – poor vision, 86.7 % (95 % CI 70.7 to 102.7) – nervous system disorders, and only 16 % (95 % CI 0 to 32) have no complaints.
5. Only 25.5 % (95 % CI 16.2 to 34.8) of respondents visited the doctor (or psychologist) due to health (or psychotic) disorders caused by work.
6. 43.9 % (95 % CI 35.7 to 52.1) of respondents did not visit the doctor because the health problems do not significantly impact their lives yet, 23.5 % (95 % CI 15.3 to 31.7) of the interviewed have no time for visiting the doctor, the others have other reasons.
7. 69.8 % (95 % CI 62.3 to 77.3) of the interviewed know what occupational medicine is.
8. 70.5 % (95 % CI 62.7 to 78.3) of respondents have mandatory health checkup.
9. 34.3 % (95 % CI 28.3 to 40.3) of respondents believe that they have health (or mental) disorders caused or made worse by work.

Conclusion.

1. The first health disorders occur at an early stage of employment.
2. The musculoskeletal system, nervous system/mental health and vision are mainly affected.

3. Only ¼ of the respondents are visiting the doctor due to health (or mental) disorders caused by work.
4. Most of the respondents that do not visit the doctor believe that the health problems do not significantly impact their lives yet.
5. Despite being aware of all the risks and knowing what occupational medicine is, people are still waiting until the last moment to visit the doctor.
6. Perhaps, this "indifference and irresponsibility" may be the reason why statistics of occupational diseases worsen each year.

RELATIONSHIP BETWEEN FRUIT INTAKE, ORAL HEALTH AND NUTRITIONAL STATUS IN A SAMPLE OF LATVIAN ELDERLY PEOPLE

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Keywords. Elderly, fruits intake, oral health, nutritional status, gerontology.

Introduction. Maintaining an adequate nutritional status in elderly is important because an inadequate health status can lead to either underweight, which increases the risk of infections and mortality, or possible overweight, which increases the risk of chronic diseases such as hypertension and diabetes. The relationship between oral health and nutritional health in the elderly is complex and controversial, and current understanding of it is limited. Elderly people tend to experience some changes in appetite, whereas degraded oral health could reduce intake of necessary solid food groups, which are rich in nutrients. Nevertheless, it is little known as nutritional and oral/dental health status influence fruit intake in elderly.

Aim. This study was designed to evaluate the relationship between fruit intake, oral health and nutritional status in Latvian gerontology center patients.

Materials and methods. In this cross-sectional study, 52 elderly people from the "Bikernieki" gerontology center, located in Riga, completed two questionnaires for information on oral health status and nutritional assessment. The oral health status was assessed using *WHO Oral Health Survey – Basic Methods.* The nutritional status was assessed using *Mini Nutrition Assessment (MNA®)* tool.

Statistical analysis was performed using SPSS version 22.0. Results expressed as mean, standard deviation. Comparisons between means were carried out using the two-tailed t-test. Significance was accepted at the 5 % probability level.

Results. The evaluated elderly patients had a mean age of 80 ± 8 years. The man Body Mass Index (BMI) was 28 ± 5 kg/m². Loss of all tooth was found in 59 %. Thirty-one percent reported to have 1–9 teeth, 6 % 10–19 teeth, 4 % 20 and more teeth. Ninety six percent of patients use dentures. Sixty-seven percent of patients had difficulty in chewing, and 76 % reported dry mouth symptoms.

The statistical results support the association between lower fruit intake and increased malnutrition risk (↓MNA® points), p < 0.05, which could contribute to increased risk of developing chronic diseases. A significant correlation was found between lower fruit intake and chewing difficulties (p < 0.01). As well, between chewing difficulties and dry mouth symptoms (p < 0.01).

Conclusion. Oral conditions, such as teeth loss, chewing difficulties, dry mouth, can lead to an inadequate nutritional status. Restricted intake of fruits are impaired due to the reduced masticatory, chewing difficulties, loss of teeth. Although older adults tend to eat more often fruits than the general population, however the intake does not reach recommended levels.

SAFETY OF CONTRACEPTIVE THERAPY – WHAT SHOULD BE TAKEN IN ACCOUNT?

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Keywords. Progestagen, contraception, safety.

Introduction. Use of combined oral contraceptives (COC) is associated with a 3- to 6-fold increased risk of venous thromboembolism (VTE) specially associated with higher estrogen doses and progestagen types. The most important risk factors for VTE: age over 35 years, obesity, smoking, and family history of VTE, 3rd generation progesterone therapy.

Aim. Analyse influence of risk factors on the safety of hormonal therapy based on prescribing trends.

Materials and methods. During the period from June to December 2016 prospective quantitative study was carried out at three pharmacies in Riga. The following data were collected: woman's age, height, weight, smoking habits, information about performed blood analyses at the beginning of COC, prescribed drug, total duration of COC use, family history of VTE.

Results. Data were collected from 103 women with an average age of 34.6 ± 12.0 years. Almost half of them (n = 44) were in age group ≥ 35 years. More than third part were smokers (n = 40). Body mass index (BMI) was increased in 32 cases. Oral hormonal contraceptives were used more frequently (n = 88; 85.4 %) compared with other forms. Blood test in the beginning of therapy was performed for 40 women. COC totally were prescribed for 96 (93.2 %) women, of which the 3rd generation progestogens were more common (91.7 %). For age group ≥ 35 years with no blood test on first appointment, were more likely prescribed 3rd generation progestogen, respectively 55 % *vs.* 10 %, p < 0.001. For women group who were ≥ 35 years and smoked, more often of cases (86 %) were prescribed the 3rd generation progestagen compared to the second generation. More frequently were women without family history of VTE, accordingly 78.6 % *vs.* 21.4 %; p = 0.045. In all cases with VTE in relatives the 3rd generation progestogen was prescribed. Women who were ≥ 35 years the highest ethinylestradiol dose with the 3rd generation progestagen were prescribed more frequently, respectively 47.1 % (0.03 μg), 17.6 % (0.02 μg) and 11.8 % (0.015 μg); p = 0.046. Described therapy prescribing tendency was also more pronounced in the whole study group (p = 0.001). Observed trend showed that transdermal/vaginal forms were more popular in prescriptions for women in age group < 35, respectively 73.3 % *vs.* 26.7 %; p = 0.174.

Conclusion. Almost half of study population during COC therapy had at the same time one or more risk factors on thrombosis occurrence as age above 35 years (42.7 %), active smoking (38.8 %), elevated BMI (31.1 %), family history of VTE (21.4 %). Despite mentioned risk factors 3rd generation progestogen in higher doses was statistically significantly more common in COC prescriptions.

SELECTION OF OMEGA-3 SUPPLEMENTS – WHAT MOSTLY AFFECT IT?

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Keywords. Omega-3, cardiovascular, prevention.

Introduction. Omega-3 fatty acids are among the most commonly prescribed supplements in worldwide pharmaceutical market. Also in Latvia there is growing trend in use of omega-3. While these supplements have been tried in various conditions, they have been mostly commonly used for primary and secondary prevention of cardiovascular diseases. Taking into account fact that omega-3 products are mostly available as over the counter supplements, it is more complicated to find correct dose and more appropriate form for every person.

Aim. To analyse factors effecting choose of omega-3 fatty acids supplement according to information about fatty acids role in prevention of cardiovascular disease.

Materials and methods. Prospective quantitative study was conducted from November 2016 to January 2017 in pharmacies, Latvia. Data about respondent's gender, age, used omega-3 fatty acids supplement (dose, form, time of usage), reason for use, other medicines were obtained by anonymous questionnaire and then analysed using SPSS software.

Results. Data were collected from 85 respondents. The majority were women (63; 74.1 %) in age group 51–65 years (32 %). Decision about taking omega-3 fatty acids supplements mostly was affected by contain (67; 78.8 %) and price (46; 54.1 %). Most frequently respondents used capsules (47; 55.3 %) in dosage under 1000 mg per day (78; 91.8 %). About half of the respondents (36; 42.4 %) experienced usage of other medicines simultaneously, most frequently antiplatelet agents (aspirin) and non-steroidal inflammatory medicines, respectively 14.1 % and 9.4 %. For cardiovascular prevention more than half of respondents were taking the omega-3 supplements in dose 500–1000 mg (56.4 %), more rarely higher doses (1000–2000 mg) were used (10.3 %). The data showed that after received recommendation from physician or pharmacist (47.6 %) more frequently were observed usage of omega-3 in dose 500–1000 mg (27.4 %). After advise from friends and relatives or decision about necessarity to use omega-3 made by themselves there were observed trend in usage of smaller doses (200–400 mg), respectively 10.7 % and 19.0 % (p = 0.218).

Conclusion. Contain of omega-3 fatty acids was most important factor in choice of food supplement compare to other criteria as price or dosage form. After receiving information from health care professionals omega-3 food supplements more often were used in doses with approved role in cardiovascular disease prevention. Possibility of interaction with aspirin should be taken in to account during pharmaceutical care.

STATE ESTABLISHED CANCER SCREENING MONITORING IN DIFFERENT GP PRACTICES IN RIGA

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Keywords. Cancer screening program, GP Practices, women's health.

Introduction. Women's average life expectancy in Latvia is 78.6 years, which is one of the lowest in Europe. Disease prevention, timely diagnosis and treatment is essential to prolong life expectancy. The leading causes of death worldwide is from chronic non communicable diseases (NCD's). Main groups of NCD's are cardiovascular diseases, cancer, chronic pulmonary diseases and diabetes. Approximately 20 % of all causes of death in Latvia in 2015 were from cancer. Women in age group from 50 to 70 years of age are included in all three cancer screening programs in Latvia (breast, cervical and colorectal cancer). To inform women for a chance and the need to participate in state – funded screening program letters are sent out (for breast and cervical cancer). In average, there are 10 times more letters sent than tests done. Many researches shows that patients are more compliant after communication with their general practitioners (GP).

Aim. The aim of this study is to compare cancer screening coverage in actively involved GP practices with randomly chosen GP practices in Riga.

Materials and methods. The study took place in four different GP practices in Riga. Two of GP practices where actively involved in cancer screening monitoring, other two were not. Including criteria was women who needed to do a mammogram in 2015 (data taken from national cancer screening data base). From these women every third was included in this study. Collection of data included information from national cancer screening data base, patient's ambulatory cards and interview's.

Results. This study included 148 women with average age of 59.7 ± 5.8 years and average BMI of 27.8 ± 5.5 kg/m². 50 % of all study's population was screened for breast cancer, 18.3 % for cervical cancer and 22.3 % for colorectal cancer. 37.2 % of cervical cancer screening was done not using the state program. Combined 29.1 % of all women were screened for cervical cancer. There was not statistically significant difference between age and BMI for women who have done and who had not done screening program ($p > 0.05$). Two active involvement GP practices in combined had 88 women, other two – 60 women. Results of cancer screening coverage differed mostly in breast cancer (67 % in active group and 25 % in other) and colorectal cancer screening (29.5 % in active group and 11.7 % in other group) ($p > 0.05$).

Conclusion. The breast cancer screening coverage in the study is higher than average in Latvia, but still not satisfactory. Compliance for cervical and colorectal cancer screening is lower. The study shows that GP's practices which takes active involvement in cancer screening program has better results in overall cancer screening coverage. More active involvement from all GP can result in adequate cancer screening coverage in Latvia, and can be more effective than the state sent letters.

STRESS PERCEPTION AND STUDY HABIT RELATED DISORDERS: A COMPARISON OF FIRST AND FIFTH YEAR MEDICAL STUDENTS AT RĪGA STRADIŅŠ UNIVERSITY

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Keywords. Occupational medicine, stress, posture, back pain, computer vision syndrome (CVS), medical students.

Introduction. Stress perception and study habit related symptoms occur frequently among today's students. Students are exposed to several stressors such as examinations, deadlines for submitting independent works and work overload.

Aim. The aim of this study was to illustrate the presence of stress, effects of stress and effects of work on the computer on health of international medical students at Rīga Stradiņš University. Stress, its related symptoms, posture related symptoms like back pain as well as vision were investigated. Data of students from the first and fifth year were compared.

Materials and methods. An observational cohort study was conducted by using a questionnaire of 23 questions. The whole sample size was 100 subjects with 50 students from the first and 50 students from the fifth year. Data were analysed with SPSS and Excel.

Results. Regarding the sociodemographic data there is an average three-year age difference between the two compared groups.

Psychological reactions such as fear, depression and headaches occur frequently. The majority of the medical students in this study experiences fatigue, tiredness and sleep disturbances, back and neck pain.

First year students feel more stressed in general, have more sleep disturbances and less time for their hobbies and to meet friends than those from fifth year.

According to the statistical test, there are no differences between the two groups in vision deterioration, weight disturbances, alcohol consume and number of smokers or usage of other substances to calm down.

No statistical significant differences are present for time spent on studies or in front of the computer.

Correlations were found between feeling of being stressed in general, the amount of time spent on studies and weight disturbances.

No correlation could be found between time spent on studies or on the computer and back and neck pain or wearing glasses or lenses.

Conclusion. Many students suffer from stress and study habit related disorders. First year students suffer more from stress than those from fifth year and have less time to meet their friends and for their hobbies. Proper education about stress, workstation design and posture as well as preventive measures are important. To be more representative for Europe this study with a larger sample size of medical students from different countries is necessary. It would be interesting whether students of other subjects are similar influenced by stress perception and study habit related symptoms as medical students in this study.

THE IMPACT OF ELECTRONIC CIGARETTES ON ORAL HEALTH

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Keywords. Electronic cigarettes, vaping, oral health.

Introduction. Electronic cigarettes have lately become very popular. The number of people who start using them or, as it is called, vaping is rising dramatically. Not much information is currently available on their health effects due to recent introduction of this product. While there is some published research concerning the impact of vaping on respiratory tract, heart and lung tissues, little data can be found about its influence on oral health. However, it is extremely important as mouth cavity is the first part of human body which e-cigarette vapor first comes in contact with.

Aim. Document oral health effects of e-cigarettes which are reported by current e-cigarette users and find out if there is correlation between influence and vaping frequency or e-liquid flavor. Moreover, discover vapers' opinion about e-cigarette impact on oral health when compared to conventional cigarettes and determine if there is a link between respondents' age and point of view.

Materials and methods. 127 current e-cigarette users filled in an online survey and listed all effects of vaping they have experienced which affected tongue, teeth, gums, oral mucosa, lips, breath, salivation and sense of taste. Moreover, respondents compared the influence of e-cigarettes and conventional cigarettes on mouth cavity based on their subjective opinion. Results were analysed using Microsoft Excel and SPSS 22 programs. Chi-square and Fisher's Exact tests were deployed for exploratory data analysis.

Results. The most widespread negative symptom with the result of 32 % is altered sense of taste. Even occasional e-cigarette users report such experiences as dryness, inflammation, burning sensation in the mouth. Some people mention positive effects such as whiter, less coated teeth and improved breath after vaping with 10 %, 14 % and 59 % respectively. There is correlation between frequent vaping and breath improvement ($p = 0.005$), as well as citrus e-liquid flavor and less coated teeth ($p = 0.004$). Several people got oral traumas after e-cigarette explosion including burned oral mucosa and fractured teeth. Most respondents believe that e-cigarettes release less dangerous chemical substances (91 %) and less frequently cause oral health problems than conventional cigarettes do during both short-term (73 %) and long-term (72 %) vaping. There is no link between respondents' age and opinion ($p > 0.05$).

Conclusion. Current e-cigarette users report experiencing both positive and negative influence of e-cigarette use on their mouth cavity. Most of them think that e-cigarettes are less dangerous to oral health than conventional cigarettes are. It is crucial for dental care professionals to know the most widespread oral health effects of e-cigarettes to educate patients.

THE ASSESSMENT OF PATIENTS' SATISFACTION RATE DEPENDANCY OF THEIR SEX AND AGE AT KAUNAS CLINICS

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Keywords. Emergency medicine, patient satisfaction.

Introduction. Patient satisfaction is a significant indicator showing the quality of health care in the emergency department (ED). It helps to determine the gaps in the ED and to improve ED work. Improvement leads to better health care quality and happier patients.

Aim. To evaluate the patients satisfaction of medical care in the Hospital of Lithuanian University of Health Sciences Kaunas clinics of the Emergency Medicine department in the year 2016–2017 and compare patients satisfaction level by sex and age.

Materials and methods. Emergency department patients were asked to fill a cross-section anonymous questionnaire. The questionnaire was distributed at the hospital reception, patients were briefly introduced with aim of the study. They were asked to throw filled questionnaires in the box.

The questionnaire contained questions about patient demographic data, the reasons why and how they came to the ED, also there were 14 questions about patient general health, ED personnel work and is the patient going to recommend this emergency department for his family members. In these 14 questions patients had to evaluate their opinion from 1 to 7 points, when 1 – very bad and 7 – very good.

Patients who came to the ED in the year 2016–2017 were involved in the study. Patients who were younger than 18 y. o., drunk, unable to sign or refused to fill questionnaire were not included in the study.

Data was analysed using SPSS v.23 statistical package with nonparametric Kruskal-Wallis test. We considered P values of less than 0.05 statistically significant.

Results. 604 patients participated in the study, 51.9 % were women and 48.1 % were men. Patients were divided into groups following their age. Age groups and patient percentage of each group were: 18–30 y. o. – 25.7 % of all patients; 31–40 y. o. – 16.7 %; 41–50 y. o. – 13.9 %; 51–60 y. o. – 13.2 %; 61–70 y. o. – 13 %; 71–80 – 11.1 %; > 81 y. o. 6.4 %.

The overall satisfaction level of the respondents was rated 6.596 (s = 0.958). Patients in the age group above 81 y. o. had significantly higher health care satisfaction level 6.79 (s = 0.413; $p < 0.05$) than other age groups. Furthermore, the satisfaction of providing treatment among the age group 18–30 y. o. was significantly lower than the other age groups – 6.50 (s = 1.019; $p < 0.05$).

Conclusion. The satisfaction level of patients who came in the Hospital of Lithuanian University of Health Sciences Kaunas clinics is high. It was determined that there is no significant correlation between sex and satisfaction levels among the patients. Patients who are older than 81 indicated significantly higher treatment satisfaction levels than the others. Patients aged between the 18–30 years indicated significantly lower treatment satisfaction levels than the others.

THERAPY FOR NON-TOXIC MULTINODULAR GOITER: RADIOIODINE THERAPY AS ATTRACTIVE ALTERNATIVE TO SURGERY

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Keywords. Goiter, radioiodine therapy, non-toxic.

Introduction. There is no consensus regarding the optimum treatment of benign non-toxic goitre. Randomised studies have shown that levothyroxine has poor evidence of efficacy and is inferior to radioiodine therapy regarding goitre reduction.

Aim. The aim of our study was to assess the efficacy of radioiodine therapy (RIT) to reduce thyroid volume with minimal risk of hypothyroidism in patients with non-toxic nodular goitre.

Materials and methods. During the last 4 years we treated 120 patients, aged 22–72 years; 89 % female and 11 % male; initial RAIU after 24 h was ranged between 22 and 44 %, and thyroid volume ranged between 48 and 160 ml. Qualifications of these patients were based on normal levels of serum TSH, fT3, and fT4, and characteristic appearance on thyroid scans and ultrasound. Some of the patients complained of compressive symptoms (65 patients). Malignant changes were excluded in all nodules by fine needle aspiration biopsy. The therapeutic radioactivity was calculated by the use of Marinelli's formula and ranged between 400 and 800 MBq. The absorbed dose (Gy) ranged between 180 and 300, and was proportional to thyroid volume. Follow-up control was done every 6 weeks.

Results. After 12 months of radioiodine therapy a mean thyroid volume reduction of 45 % was achieved in all the patients, euthyroidism persist in 93 % of patients, and hypothyroidism develop in 7 % of patients. All patients were highly satisfied; the compressive symptoms relieved and exercise tolerance improved.

Conclusion. Radioiodine is non-invasive, safe and cost effective method of therapy for reduction of goitre and should be used as first choice in every patient with non-toxic nodular goitre (> 40 ml) especially in patients with special professions (singer, teacher) or in patients who wish a non-invasive treatment modality. The reduction of thyroid volume with low percent of hypothyroidism, were due to accurate measurement of administered activity, relatively high effective half-life, and well-organised follow-up.

TRACE ELEMENTS IN HUMAN MILK AMONG LACTATING WOMEN IN LATVIA

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Keywords. Human milk, trace elements.

Introduction. Statistics of 2015 indicate that the proportion of children who are breastfed up to one year of age shows an annual increase in Latvia, however breast milk composition among lactating women in our country is not comprehensively studied. Concentration of nonessential and potentially toxic trace elements raises concern, especially for exclusively breastfed infants when milk is the only food source.

Aim. The aim of this study was to determine the concentration of trace elements (Al, As, Cd, Ni, Sb, Sn, Pb) in mature human milk and possible association with mother's dietary habits.

Materials and methods. The preliminary study was carried out from November 2016 to January 2017. In total, twenty four pooled 24 h mature breast milk samples were obtained from mothers whose infants had reached the age of two months. Mothers also completed a food intake frequency questionnaire. Milk samples were kept frozen at −20 °C until analysis. Aluminum (Al), arsenic (As), cadmium (Cd), nickel (Ni), antimony (Sb), tin (Sn) and lead (Pb) were determined using inductively coupled plasma mass spectrometry (ICP-MS Agilent 7700x, Japan). Analysis were done in duplicate. Data statistical processing was performed using software R version 3.3.2. The Shapiro-Wilk test was used to test element concentration distribution for normality($\alpha = 0.05$). Spearman's rank correlation coefficients were obtained to evaluate correlation between mother's dietary habits and element content in milk. Inter-individual variations were evaluated based on the coefficient of variation (CV). The study protocol was approved by Rīga Stradiņš University Ethic Committee. Written informed consent was obtained from all participants.

Results. Antimony (Sb) concentration was below detection limit in all samples. Aluminum, arsenic, cadmium, nickel, tin and lead content was not normally distributed with maximum concentrations of 1112.23, 0.50, 0.002, 0.78, 0.14 and 0.44 μ L^{-1}, respectively. The inter-individual variation on concentration between those elements were 3.14, 4.01, 4.90, 1.98, 2.72 and 1.73, respectively. Freshly squeezed fruit juice consumption possibly influences Al content in human milk (Sperman's rho = −0.41, $p < 0.05$). Herbal tea drinking could affect As content (−0.48) but Sb concentration in milk possibly correlates with cereal (0.49) consumption. Both Sn and Ni content correlates with fish (0.44 and −0.46) and shrimps (0.41 and −0.70) consuming. Nickel content could also be affected by fresh vegetable (−0.42) and snack (0.41) consumption. Lead concentration possibly correlates with turkey meat (−0.50), cooked vegetable (−0.43) eating and cappuccino (0.56), tea (0.52) drinking frequency.

Conclusion. Preliminary results show that trace element concentration in human milk is not normally distributed and could be influenced by mother's dietary habits. However more samples need to be analysed for further Conclusion. Possible contamination should not be a reason for a mothers to choose against breastfeeding.

VISUAL ACUITY IN PRIMARY SCHOOL CHILDREN

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Keywords. Vision acuity, children, myopia.

Introduction. According to WHO, over 285 million people in the world have vision impairment; 42 % of all cases are due to uncorrected refractive errors. Myopia affects 1.89 billion people worldwide, and if the current prevalence do not change in the future, it is estimated that it will affect 2.56 billion people by 2020. Prevalence of myopia has been increasing over the past few decades among adults and children. Some ophthalmologists think that the surge in the number of cases of myopia can be attributed to electronic displays.

Aim. The purpose of this study was to determine the prevalence of myopia in primary school children in Riga Secondary School No 96 and evaluate the roles of the use of electronic device use and other factors in causing myopia in children.

Materials and methods. In this study, the parents of preschool children in Riga 96 secondary school were asked to fill a questionnaire about their children's vision, vision correction, eye trauma, eye symptoms, children's habits regarding electronic devices, and myopia among their parents. Medical documentation about children's visual acuity was surveyed as well. The data were analysed using MS Excel 2010 and IBM SPSS 22.0.

Results. All in all, the parents of 177 children filled the questionnaire, among these children 46.9 % (n = 83) were boys and 53.1 % (n = 94) were girls. 22 % (n = 39) were in the 1st grade, 29.9 % (n = 53) in the 2nd grade, 27.7 % (n = 49) in the 3rd grade and 20.3 % (n = 36) in the 4th grade. According to the responses of parents, 55.9 % (n = 99) of children were using tablet and/or computer for less than 1 hour, 33.3 % (n = 59) from 1 to 3 hours and 10.7 % (n = 19) more than 3 hours per day. 75.1 % (n = 133) of children were using smartphone for less than 1 hour, 20.3 % (n = 36) from 1 to 3 hours and 4.5 % (n = 8) for more than 3 hours per day. 26 % (n = 46) of children had one and 7.9 % (n = 14) had both parents with myopia. 10.7 % (n = 19) of children had myopia; for 2.8 % (n = 5) children, there were no data about their visual acuity. There was a correlation between tablet or/and computer use and vision acuity among girls ($p < 0.001$). There were also correlations between eye symptoms and vision correction ($p = 0.026$), trauma and visual acuity in OD ($p = 0.030$) and OS ($p = 0.049$), and tablet or/and computer use and visual acuity in OS ($p = 0.014$).

Conclusion. There was a significant correlation between tablet and/or computer use and vision acuity among girls, which may be explained as due to the fact that myopia worldwide is more prevalent and develops faster in girls. There were also correlations between visual acuity in OS and the use of tablet and/or computer, eye symptoms and vision correction, and trauma and visual acuity in children.

WEARABLE SENSOR NETWORK AND MOBILE APPLICATION FOR PHYSICAL ACTIVITY MONITORING FOR CHILDREN WITH DISABILITIES

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Keywords. Sensor Networks, Activity Monitoring, Children with Disabilities, Rehabilitation, Mobile Software.

Introduction. Physical activity is essential to prevent and reduce risks of many diseases and improve physical and mental health. Physical inactivity is an important modifiable risk factor for non-communicable disease. Research from the American Journal of Preventative Medicine indicates that regular exercise can add up to five years to life length. Research from the American Journal of Preventative Medicine indicates that regular exercise can add up to five years to life length. The benefits of physical activity are universal for all children, including those with disabilities. The participation of children with disabilities in sports and recreational activities promotes inclusion, minimizes deconditioning, optimizes physical functioning, and enhances overall well-being. Despite these benefits, children with disabilities are more restricted in their participation, have lower levels of fitness, and have higher levels of obesity than their peers without disabilities.

Aim. The goal of this project is to present an approach for physical activity monitoring and motivation for children with different types of disabilities by using specially developed architecture consisting of wired and wireless sensors and mobile software.

Results. In the scope of this project existing solutions were examined in order to define the pros and cons of used technologies. After completing market research, it was stated, that presented solutions are able to acquire data about activity, however it lacks notification and communication system, that will be valuable in scope of this project – interactive communication with children will motivate them to be active during everyday. EDI researchers also participated in meetings with LSPA, RPIVA and Norwegian School of Sport Science in order to define the requirements for system prototype development. Based on previous information a vision of solution was described and development of the first prototype version was started. Proposed solution consists of a combination of a wearable sensor system and a mobile application. Prototype version was tested in real-time environment: research team took part in testing phase during the Sport festival for children with disabilities.

Conclusion. Aim of the research project is to study the opportunities for physical activity monitoring using wireless sensor networks. Based on this study an innovative approach for physical activity measures and children motivation was introduced and prototype version was developed, consisting of an embedded device and mobile application for data gathering. Prototype was tested involving children during physical activity and also received a positive feedback from young participants. Accumulated data will help during further movement analytics. Research team continues development of the prototype version in order to monitor and motivate children to be involved in moderate and vigorous daily physical activities under free-living physical activity conditions. As the next iteration, the system can include physiological parameters (electromyography),

psychological and social correlates (e.g., stress tolerance, short and long term memory, self-esteem etc.). The collected data about the child's physical fitness, cognitive and psychological status will provide interdisciplinary model for comprehensive physical activity management.

CERVICAL CANCER SCREENING PROGRAM
IN GP PRACTICE IN RIGA

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Keywords. Cervical cancer, national cancer screening program, general practitioners.

Introduction. Oncological diseases (OD) morbidity is increasing worldwide. In Latvia the incidence of OD is one of the highest incidence. OD incidence in Latvia in 2015 was 562.5 per 100,000. In Latvia women aged 25 to 69 years are provided with government funded cervical cancer screening program. Unfortunately, only small percentage take this opportunity.

Aim. Aim of this study was to evaluate the process of state organized cervical cancer screening program in General Practitioners practice (GP practice) as well as to evaluate reasons for the small patient compliance

Materials and methods. Study included all women of GP practice who had received a letter of invitation for National cervical cancer screening program during 2015. Study included 147 women who were included in screening program based on the National Health Service(NHS) Latvia data. Patients were divided into two groups, in one group patients had done the test but in the other group patients who hadn't taken the test. Patients who had not taken the test were interviewed identifying the reasons why the test was not performed, as well as re-invited to take the screening test. After 3 months, study data about screening results were analyzed again.

Results. 25 % of women (37) had done the test on their own. There are 147 women in the study aged 45.8 ± 10.6. There was no statistically significant difference in age between women in groups with and without the test ($p > 0.05$). 48 women didn't receive the letter of invitation (32.7 %). Out of 110 women who had not taken the test, 102 agreed to do the screening test but 2 were excluded due to the operative treatment which was not registered in NHS Latvia and 40 women (40 %) did the investigation. After analyzing the reasons why patients haven't taken the screening test was concluded that 4 (3.6 %) patients did not want to, 23 (23.6 %) claimed that they didn't have time, 41 (37.3 %) forgot about the invitation, and 42 (38.2 %) had not received the letter. There was no statistically significant difference between the patients age and reasons ($p > 0.05$). After repeated invitation 76 (51.7 %) women did the screening test. The results were following: 73 women were diagnosed with A1 (within the normal range), 1 with A2 (atypical squamous cells of unknown significance), 1 with A3 (mild dysplasia) and 1 with A5 (atypical glandular cells of unknown significance).

Conclusion. Women test performance compliance throughout the country organized by the national program for cervical cancer screening is low. Unfortunately, the letters of invitation receive about three-quarters of patients. There was no age difference found when analyzing who takes the test and if not what the reasons are. Active GP involvement in cervical cancer screening program increases the number of performed tests in twice. In order to ensure more comprehensive cervical cancer screening it is important to invite patients individually, what can be done by the help of GPs.

VIII. PAEDIATRICS, GYNAECOLOGY, OBSTETRICS

ANAEMIA OF PREMATURITY IN EXTREMLY AND MODERATELY PREMATURE INFANTS: SINGLE CENTRE EXPERIENCE

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Keywords. Anaemia of prematurity, premature infants, treatment.

Introduction. All premature infants experience a decline in circulating red blood cell mass due to diminished erythropoietin levels in the first weeks of life, it is also a risk factor for iron deficiency anaemia.

Aim. To describe the frequency and management of anaemia in extremely and moderately premature infants at the Children's Clinical University Hospital and to evaluate correlation between gestational age and used treatment.

Materials and methods. A retrospective study was conducted analysing 74 newborns (under 33 gestational weeks (GW)) at the Children's Clinical University Hospital between May 2016 and January 2017 using patient data from electronic data bases and medical archives. Patients who underwent surgical treatment were excluded. Patients were divided into two groups according to gestational age – group 1 – 23–27 GW (n = 24) *vs.* group 2 – 28–33 GW (n = 50). Data was analysed using IBM SPSS Statistics 22.0.

Results. From 74 analysed newborns, 54 had anaemia – 91.7 % (n = 22) in group 1 and 64 % (n = 32) in group 2. No gender disparity (p = 0.501) was found between the two groups. Presumed day of onset did not statistically differ between the groups (*Mn* = 7.96 ± 8.05 *vs. Mn* = 8.78 ± 7.67, p = 0.607). When comparing both groups, no statistically significant difference was found in the iron supplement prescription day (*Mn* = 33.08 ± 13.628 *vs. Mn* = 26.87 ± 12.31, p = 0.083) and the iron supplement dosage (*Mn* = 3.9 ± 0.69 *vs. Mn* = 3.7 ± 0.77, p = 0.272). In group 1 – negative, strong and statistically significant correlation between GW and number of RBC transfusions was found (r = −0.742, p < 0.001). In group 2 – negative, moderate and statistically significant correlation between GW and anaemia (r = −0.439, p = 0.001) was found. Ferritin levels upon discharge were tested only in 32.5 % (n = 24) patients – 54.2 % (n = 13) in group 1 and 24 % (n = 11) in group 2 (p = 0.341). Normal ferritin levels were in 29.2 % (n = 7) and 16 % (n = 6) of cases, whereas decreased levels in 25 % (n = 6) and 6 % (n = 3) of cases, respectively.

Conclusion. There is a higher number of cases with anaemia in extremely premature infant group. Treatment tactics do not differentiate between extremely and moderately premature infants. Red blood cell transfusions count decreases with every increasing gestational week. Frequency for testing of ferritin levels was inadequate and should be improved in the future.

ANALYSIS OF HOSPITAL ACQUIRED NEONATAL SEPSIS CAUSING MICROOGANISMS AND ANTIBIOTIC RESISTANCE IN PRETERM INFANTS IN 2007–2016

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Keywords. Hospital-acquired neonatal sepsis, antibiotic resistance, neonatal morbidity, neonatal mortality.

Introduction. Hospital-acquired (HA) neonatal sepsis is an important cause of immediate morbidity and mortality of preterm infants. Preterm infants are heavily exposed to nosocomial infections because of invasive treatment in the first few days of life.

Hospital-acquired sepsis in preterm infants is sepsis occurring after 72h in neonatal intensive care unit (NICU). Approximately 25 % of premature neonates develop HA sepsis during NICU stay based on published data.

Aim. The aim of the study was to determine causing pathogenes, their antibiotic resistance, clinical outcomes of the hospital-aquired neonatal sepsis in preterm infants in Latvia.

Materials and methods. A retrospective study was conducted in six NICU at Level II and III Perinatal Care Centres in Latvia between April 2007 and November 2016. For the statistical analysis, preterm infants were graded according to gestational age: extremely preterm (< 28 weeks), very preterm (28 to < 32 weeks) and moderate to late preterm (32 to < 37 weeks). Etiological agents and antibiotic resistance were analysed.

Results. In the study 52 hospital-acquired neonatal sepsis cases were included. The gestational age was between 23 and 37 weeks. 26.9 % were extremely preterm and 38.5 % very preterm neonates. There were 5 death cases.

In preterm infants Gram-positive organisms caused 50 % of neonatal sepsis, the majority being with coagulase-negative Staphylococci (CoNS) (38.7 %). Gram-negative microorganisms caused 45.2 % of neonatal sepsis and Gram-negative flora was the most common cause of mortality (80 %). In 12.9 % the causative agent was *Klebsiella spp.*, in 11.3 % *Escherichia coli*. Fungi (*Candida albicans*) caused only 1.6 % of hospital-acquired late-onset neonatal sepsis in preterm infants. Combined flora (more than one microorganism) was determined in 17.3 %. 62.5 % of coagulase-negative Staphylococci were resistant to erythromycin, 54.2 % to penicillin. It was found that 50 % of hospital-acquired neonatal sepsis were caused by ampicillin-resistant *Escherichia coli.* The gentamicin-resistance of *Klebsiella spp.* was established in 62.5 % cases.

Conclusion. Hospital-acquired neonatal sepsis in preterm infants is mainly caused by coagulase-negative Staphylococci (38.7 %) and *Klebsiella spp* (12.9 %). There is no significant difference between etiologic agents of hospital-acquired neonatal sepsis in preterm infants' gestational age groups. Multidrug-resistant Gram-negative micro-organisms in neonatal intensive care units (NICU) seems to be a problem in Latvia which should be managed by appropriate antimicrobial therapy strategy and preventive measures.

ANALYSIS OF MATERNAL COMPLICATIONS OF AMNIOCENTESIS AND CHORIONIC VILLUS SAMPLING PROCEDURE

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Keywords. Amniocentesis, Chorionic Villus Sampling (CVS), complications, screening, prenatal diagnostic.

Introduction. Amniocentesis and CVS are the most common screening methods which detect chromosome abnormalities, neural tube defects and genetic disorders. As these are invasive procedures, they might have complications. The complications may vary from mild-cramping, lower abdominal discomfort to severe-amniotic fluid leakage, vaginal bleeding, amnionitis and miscarriage. Worldwide the rate of miscarriage after Amniocentesis and CVS is about the same – approximately 1–2 %.

Aim. The aim is to detect most frequent maternal complications after Amniocentesis and CVS procedures. As well as finding out the correlation between complications and gestational time, and between complications and ultrasound finding.

Materials and methods. Retrospective material analysis of 190 patient medical records after Amniocentesis and CVS procedures at Riga Maternity hospital since June 2013 till December 2015. The information about complications was collected by telephone interviews. SPSS 22.0 and Excel 2015 were used for statistical analysis.

Results. The study involved 190 patients, of whom majority were done Amniocentesis and minor part CVS. 10.0 % from 190 patients had complications. 2.6 % of 19 had a miscarriage and another 7.4 % had mild complications such as lower abdominal discomfort, cramping and fatigue.

In our study the rate of miscarriage after an invasive procedure (Amniocentesis/CVS) is 2.65 % (n = 190). The rate of miscarriage after Amniocentesis is 2.35 % (n = 170), but after CVS 5.00 % (n = 20).

The connection between correlation and gestational time (p = 0.884) and also with ultrasound finding (p = 0.260) is not statistically significant.

Conclusion. The most frequently used invasive diagnostic method was recognized amniocentesis. In our study the most common complications from both of the procedures were lower abdominal discomfort for 24–48 hours, fatigue and cramping. Comparing to global statistics data miscarriage rate in this study is slightly higher than average.

ARE VACCINE PREVENTABLE DISEASES STILL A THREAT FOR PEDIATRIC POPULATION OF LATVIA?

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Keywords. Pediatrics, vaccine, vaccine preventable disease.

Introduction. The National Immunization Program (NIP) is very successful example of effective preventive care for children. The NIP helps to reduce morbidity and mortality of vaccine preventable diseases (VPD) but despite that immunization still remains an emotional issue for many parents and more often they choose to skip or partly skip the vaccination.

Aim. The aim of the study is to collect statistics of VPD in the Children's Clinical University hospital (CCUH) in Riga, Latvia from 2005 to 2016 year and to prove that VPD still quite often emerge among children in CCUH and is a pressure to health care's budget in Latvia.

Materials and methods. The retrospective study took place in the CCUH. The statistical data were collected in CCUH about the period from 2005 to 2016 year. Medical histories of pediatric patients and questionnaire to the parents of unvaccinated patients were used to collect all data needed.

Results. Despite the national immunization program 883 cases of VPD conformed to selection criteria in CCUH in the time period from 2005 to 2016. During this time period there was no one case of tetanus or poliomyelitis and more detailed information was collected of patients with diphtheria and pertussis. All together 64 patients with diphtheria and 80 patients with pertussis were hospitalized at CCUH. From all the patients 39.64 % were girls, while 60.36 % were boys. The mean age of patients was 65.72 ± 65.01 months, with an interval from 1 to 215 months. Confidence interval (CI 95 %) of age mean value is from 52.75 to 78.68 months. 10 % patients with diphtheria and 8.2 % patients with pertussis received treatment in ICU. Looking at each individual disease it shows that diphtheria is observed on mean for older children, and this difference is statistically significant. For all vaccine preventable diseases average length of treatment in hospital was 12.45 ± 7.10 days, with an interval from 2 to 31 days. The study also included questionnaire that was sent to those parents whose child was hospitalized in CCUH in 2014 with VPD and 52 % answered that child was not vaccinated according to vaccination calendar.

Conclusion.

1. VPD are still important issue to deal with in Latvia because during 12 year period 883 patients received medical treatment in CCUH with the mean length for 12.45 ± 7.10 days.
2. Every hospitalization with VPD is painful for little patients, e.g., full blood count was taken in 90 % (108/120 patients).
3. In 2014 52 % (12) out of 22 of patients with VPD were not vaccinated according to vaccination calendar.

AWARENESS OF HEALTHY NUTRITION AMONG
PREGNANT WOMEN IN LATVIA

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Keywords. Nutrition, recommendations, pregnancy.

Introduction. Women's eating habits affect not only the course of pregnancy, but also the later life metabolic health of their offsprings [Smith et al., 2015]. In 2016 Latvian recommendations on healthy nutrition during preconception period, pregnancy and lactation were published. The aim of these recommendations is to improve the lifestyle of women in reproductive age by educating healthcare professionals about the principles of healthy nutrition.

Aim. To evaluate the awareness of healthy nutrition among women in Latvia.

Materials and methods. A descriptive cross-sectional study was carried out in Riga Maternity Hospital. Analysis was performed using MS Excel 2010 and IBM SPSS Statistics 22 software.

Results. 110 pregnant women aged 20–41 participated in the study. 64.5 % (n = 71) of respondents received recommendations on proper nutrition from healthcare professionals during pregnancy, whereas only 20.9 % (n = 23) were informed in the preconception period. 68.7 % (n = 46) of participants, who received information about the principles of healthy nutrition, considered them to be sufficient. The majority of women got the recommendations from gynecologists-obstetricians – 84.9 % (n = 62). 16.4 % (n = 12) were informed by general practitioners, 9.6 % (n = 7) – by doctors of other specialties, 12.3 % (n = 9) of respondents attended antenatal classes for parents-to-be, 6.8 % (n = 5) – were consulted by dietologists. 39.1 % (n = 43) of women were looking for the information about healthy nutrition during pregnancy in the internet. 34.5 % (n = 38) of all pregnant women had at least one health or social risk factor, which required individualized diet planning, however 26.3 % (n = 10) of them did not receive any recommendations at all. 28.7 % (n = 31) of respondents started pregnancy with abnormal Body Mass Index (BMI). In 51.9 % (n = 54) of cases weight gain during pregnancy did not meet the normal values for the particular gestational age. Weight gain showed no association with BMI at the beginning of pregnancy (p = 0.375).

Conclusion. Although the majority of women received recommendations on healthy nutrition during pregnancy, weight gain in half of the cases did not correspond to the normal values. Nearly one third of the study participants started pregnancy with abnormal BMI. Women should be advised to make diet corrections before conceiving, therefore more consultations in preconception period are needed. Since only 68.7 % of women were satisfied with the provided recommendations, additional educational sources should be considered. The fact, that weight gain during pregnancy did not depend on BMI at the beginning of gestation, can be explained with a great effect of both healthy and inappropriate diet changes during pregnancy.

CHILDREN AGED 3–36 MONTHS WITH PRIMARY DIAGNOSED FEVER WITHOUT SOURCE: RISK EVALUATION IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL 2 YEARS AFTER IMPLEMENTATION OF FEVER MANAGEMENT TOOL

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Keywords. Fever in children, risk evaluation, fever management tool.

Introduction. Fever or body temperature increasing above 38 °C is a common symptom among infants and children seeking medical care. It is proven that in 90–95 % of cases the main reasons are uncomplicated course viral infections and 5–10 % children with fever evolves sepsis with multiorgan damage. In 2012 Children's Clinical University Hospital developed and implemented children's fever management tool to define evaluation, clinical investigation and therapy tactics.

Aim. To ascertain the use and effectiveness of fever management tool in Children's Clinical University Hospital introduced at 2012.

Materials and methods. The retrospective descriptive study included children aged 3–36 months hospitalized Children's Clinical University hospital with fever in time period from year 2014 until year 2016. Patients with positive SIRS were evaluated by: activity, skin color and elements, hydration, clinical analysis panel, blood culture, urine analysis, chest X-ray, lumbar puncture, faecal culture, infused bladder catheter. Patients with negative SIRS were evaluated by activity, skin color, elements, hydration, inflammation localization, clinical analysis panel, blood culture, chest X-ray, pulse oximetry. Data were compiled in Excel tables and processed with SPSS 16.0 data processing method.

Results. After assessment of exclusion criteria the study included 30 children aged 3–36 months with fever, although initial selection included 102 valid patients. The median age was 21.5 months (min 3, max 35), 63.3 % (19) of children are girls, 36.6 % (11) – boys. The majority of children were hospitalised in June – 19.98 % (6), July – 16.65 % (5), march – 16.65 % (5). The average temperature was 39.1 °C (min 37.7 °C, max 40 °C). The median day in which children's parents were looking for medical help is third day (min 1, max – 20). 66.66 % of patients (20) have full course of vaccination, 3.33 % have not been vaccinated, 13.35 % (4) have no information about vaccination. Initially 39.96 % (12) have evaluated by SIRS criteria, only 8.33 % (1) had it positive. Patient with positive SIRS have not done the needed investigations, laboratory testings and treatment by the algorithm. 96.57 % (29) had initially investigated to have average risk but after our re-evaluation 16.65 % (5) of them have low risk. After our retrospective re-evaluation of SIRS criteria it is clear that 53.33 % (16) of patients had SIRS and in further evaluation it shows that 6.66 % (2) are in high risk group and 46.62 % (14) are in average risk group. Average occupant days are 4.1 (min 0.5, max 13).

Conclusion. After summarizing results it is clear that fever management tool doctors do not apply and it results in incorrect tactics and treatment. In patients documents there are no records about risk evaluation and the further needed investigations and treatment. Children with high risk are underestimated. Average un low risk group patients have done unnecessary investigations.

CLINICAL PRESENTATION OF LYME DISEASE IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL

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Keywords. Tick, Lyme disease, children.

Introduction. Lyme disease (LD) is the most common tick borne disease in Latvia and Europe. LD clinical manifestations have wide variety, what traditionally are classified into three stages. Also Lyme disease can be highly difficult to diagnose, because reliable diagnostic tests are not yet available. Despite the fact that the number of cases are increasing, research about clinical presentation, diagnostic and treatment in a pediatric setting is relatively sparse.

Aim. The aim of the study was to evaluate Lyme disease clinical presentation, diagnostics and treatment in pediatric population.

Materials and methods. A retrospective evaluation of clinical and epidemiological data of patients hospitalized between 2000 and 2015 at the Children's Clinical University Hospital with the Lyme's disease diagnosis. Clinical registers were accurately checked. Collection of data was guided by a questionnaire related to clinical presentation, diagnostic work-up and treatment. For statistical evaluation JMP 13, statistical discovery from SAS was used.

Results. Total 79 serologically approved patients with LD were admitted to Children's Clinical University hospital during 2005–2015. Patient's age at diagnosis differs from 1 till 17 years. The average is 10.3 years. The majority were female 62 % (N = 49) compared to male 38 % (N = 30). In first stage presented 32 % of all patients (N = 25). In second stage 38 % (N = 30). In third stage 30 % (N = 24). In total 82 % (N = 67) patients were serologically tested by either IgM-ELISA IgG-ELISA or both. In 1st stage 80 % (N = 20) of patients were tested, in 2nd stage 87 % (N = 26), in 3rd stage 69.5 % (N = 16). In total 64 out of 79 patients received antibiotics (81 %). In first stage 88 % (N = 22) were treated, in second stage 83 % (N = 25) of patients and in third stage 70 % (N = 17) were treated with antibiotics.

Conclusion. Management of Lyme disease is challenging and there is no consensus between specialists. Despite Lyme disease staging, patients are always hospitalized. Antibiotic choice is variable and serological testing has no certain algorithm. That increases the risk of patient being exposed to an incorrect diagnosis and unnecessary treatment and hospitalization.

CLOTTING ARTIFACT IN BONE MARROW ASPIRATION MATERIAL OF PEDIATRIC PATIENTS

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Keywords. Bone marrow, clotting, automated hematology, children.

Introduction. Bone marrow (BM) suspension obtained by needle aspiration is routinely used for evaluating hemopoesis by cytology, flow cytometry and genetics. The procedure causes tissue damage that results in frequent clotting despite using anticoagulanted tubes; clot formation may lead to inaccurate tests and diagnostic mistakes. No systemic studies of changes in BM suspension caused by clotting could be found in literature.

Aim. The aim was to use bilateral BM aspirates of pediatric patients to analyse clotting-related changes of hematological parameters.

Materials and methods. 278 paired BM aspiration samples acquired in Hematooncology Department in 2015–2016 were analysed on hematological analyser Sysmex XN-2000 (Sysmex Inc, USA), using recommended BM protocol. Total cellularity (TOT), platelets (PLT), hemoglobin (HGB) as well as relative counts of neutrofils (NEU), lymphocytes (LYM) and nucleated red blood cells (NRBC) were evaluated. Statistics were calculated by IBM SPSS v.21.

Results. One of paired tubes displayed significant clotting in 21 pairs (7.6 % of all samples): there was either visible clot or prominent platelet clumps detected by cytology or automatic testing. When compared to tests without artifacts, pairs with a clotted tube demonstrated significantly higher difference in PLT counts (dPLT, 125 *vs.* 20 × 10⁹/L, Mann Whitney p < 0.001) and HGB (dHGB, 1.7 *vs.* 0.4 g/dL, p < 0.001) as well as difference in total cell count (dTOT, 25.25 *vs.* 14.54 × 10⁹/L, p = 0.029). For detection of clotting, AUC was 0.615 for dTOT, 0.743 for dHGB and 0.982 for dPLT. dPLT above 90 × 10⁹/L was 100 % specific in the studied group, but this cut-off missed 3 cases with thrombocytopenia. To increase sensitivity and to take dHGB into account we proposed "clotting index" (CI) that equals dPLT + [dHGB × 5]. AUC for CI was 0.994 with 100 % specificity and 95 % sensitivity at CI = 92. Differences in NEU, LYM and NRBC between pairs with a clotted tube and normal samples were not significant.

Conclusion. Substantial clotting was detected in about 8 % of BM samples; the rate is influenced by sampling technique and underlying disease and varies between institutions. Clotted samples in comparison to their paired counterparts had lower PLT count, HGB and total cellularity, but retained relative proportion of hemopoetic cells. New parameter CI that accounts for both dPLT and dHGB turned to be a reliable indicator of sample clotting. Since PLT and HGB counts are the same in BM aspirate and peripheral blood, identical approach may be used for unilateral material, substituting paired sample by blood counts.

COMPARISON OF ANTENATAL CARE OF HIV INFECTED PATIENTS DURIG TIME PERIOD OF 7 YEARS

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Keywords. HIV, pregnancy, antenatal care.

Introduction. Incidence of HIV infection in Latvia in 2016 was 15.2 cases per 100,000 habitants. Till 2016, there were 54 cases of vertical transmission (VT). In Latvia, starting prenatal care, women get screened for HIV infection, in case of positive test, antiretroviral therapy (ART) is prescribed to reduce risk of VT. Choice of delivery type is made in 34–36 weeks of gestation and is based on the amount of viral load in blood.

Aim. To compare HIV-positive pregnant women antenatal care (ANC) changes, type of delivery, pregnancy outcomes and neonatal period complications during the period from 2010–2016 year.

Materials and methods. A retrospective analysis of 281 delivery during the period 2010–2016 year were made in Riga Maternity hospital. Gathered data was divided in 2 groups by time periods: 1st (2010–2013; n = 144) and 2nd (2014–2016; n = 137). Collected data was analysed in Microsoft Excel 2013 and IBM SPSS 22.

Results. Women in the 2nd group more often received ART before pregnancy (n = 20, 26.7 % *vs.* n = 9, 11.1 %; p = 0.011). There was found significant difference in pregnancy related complications (1st *vs.* 2nd: n = 140, 97.9 % *vs.* n = 119, 86.9 %; p < 0.0005). In 2010–2013 pregnancy related hypertension (n = 6, 4.2 %; *vs.* n = 0; p = 0.03) was more common. There were difference between delivery type in different periods associated with receiving of ART (p = 0.018). The rate of elective CS (1st *vs.* 2nd group: n = 67, 68.4 % *vs.* n = 44; 50.6 %) and pathological vaginal delivery (n = 6, 6.1 % *vs.* n = 2, 2.3 %) has decreased during the past years, but rate of emergency CS (n = 18, 18.4 % *vs.* n = 30, 34.5 %) and physiologic vaginal delivery (n = 7, 7.1 % *vs.* n = 11, 12.6 %) has increased. There were not significant changes in delivery type in women without ART (p > 0.05): elective CS (Caesarian section) (1st *vs.* 2nd group: 15.6 % *vs.* 33.3 %) and emergency CS (34.4 % *vs.* 22.2 %), physiologic delivery (46.9 % *vs.* 38.9 %) and pathological vaginal delivery (3.1 % *vs.* 5.6 %). There were observed difference in mean length (1st *vs.* 2nd group: 49.64 *vs.* 50.45 cm; p = 0.029) and head circumference (33.8 *vs.* 34.1 cm; p = 0.047) of newborns. Birth asphyxia was detected more frequently in 2014–2016 (n = 16, 11.7 % *vs.* n = 2, 1.4 %; p < 0.0005). There were observed decreased rate of intrauterine growth restriction associated with receiving of ART during the time (2010–2013 *vs.* 2014–2016: n = 23, 23.5 % *vs.* n = 10, 30.3 %; p = 0.034). The most common co-morbidities of HIV infected pregnant women were virus-hepatitis C (n = 132, 43.9 %), drug abuse (n = 74, 24.6 %) and sexually transmitted infections (n = 72, 23.9 %). The research shows that during the time frequency of STS have decreased (1st *vs.* 2nd group: n = 51, 35.4 % *vs.* n = 21, 15.3 %; p < 0.0005).

Conclusion. During the past years delivery type of HIV infected pregnant women, who received ART has changed, that shows improvement of situation and more frequent following world's latest recommendations, but still these rates are not high enough, that may be related to social factors. Of course there is need to improve multidisciplinary prenatal care to reduce neonatal complications.

COMPARISON OF WOMEN'S KNOWLEDGE OF CERVICAL CANCER BEFORE AND AFTER THE COLPOSCOPY CLINIC

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Keywords. Gynaecology, colposcopy.

Introduction. Colposcopy is a diagnostic method used to determine and examine the cervical and vaginal area. Extensive and easy understandable information improves women's satisfaction with colposcopy procedure, which is important to provide compliance in further collaboration with patients.

Aim. The aim of this study was to evaluate women's knowledge about cervical cancer risk factors, prevention and diagnostic methods of cervical cancer before and after their first colposcopy visit.

Materials and methods. This was a prospective study of 92 women attending their first colposcopy visit in the Riga Eastern Clinical University Hospital Colposcopy Clinic. Study was performed from 01.08.2016. until 30.12.2016. Women attended Colposcopy Clinic because of suspected cervical precancerous disease. Before the visit they signed a written consent and completed questionnaire.

All data were analysed using MS Excel and IBM SPSS 22 analytics software.

Results. There were 583 colposcopies done during the period of this study, 112 women had their first colposcopy and 92 of them completed questionnaire.

Overall level of knowledge about diagnostics of cervical cancer improved during the visit: before examination 9 % (95 % CI 3.3–15.2) of respondents described their knowledge as sufficient, but afterwards 30 % (95 % CI 21.7–40.2).

After the visit more of participants recognized smoking as a risk factor of cervical cancer (19 % *vs.* 41 %, $p < 0.05$) and vaccination against human papillomavirus as an effective prevention of cervical cancer (28 % *vs.* 38 %, $p < 0.05$).

Overall 90 % (95 % CI 83.7–97.7) of respondents were satisfied with information they received during the colposcopy visit.

No statistical difference was found in other answers about risk factors, prevention and specific diagnostics of cervical cancer.

Conclusion. Although women's satisfaction with information they received during colposcopy visit was high, only knowledge about smoking as a possible risk factor and vaccination against HPV as an effective prevention of cervical cancer improved significantly.

It is very important to improve women's knowledge about all the risk factors, prevention and diagnostics of cervical cancer to provide patient compliance, in order to achieve better results in the future.

There must be more informative materials provided by specialists also in the public media to improve the level of women's knowledge.

DOES NOVEL, FLASH GLUCOSE MONITORING SYSTEM IMPROVES METABOLIC CONTROL IN CHILDREN WITH TYPE 1 DIABETES (T1D)?

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Keywords. Type 1 diabetes, FreeStyle Libre, SMBG.

Introduction. T1D is an autoimmunological disease affecting more and more frequently the youngest children. We observe worldwide increase incidence of T1D. Self blood glucose control is crucial element in functional insulin therapy, it's recommended minimum 6 measurements per day. In clinical practice we observed 8 to 12 measurements in most cases, making with use of blood glucose meter (BGM). Flash Glucose Monitoring is a new glucose sensing technique, accessible from 2014. System measures interstitial glucose levels for up to 14 days. Additional information is the trend of glucose seeing on the monitor. Scanning the sensor to obtain glucose values does not require lancets, which is particularly important in the youngest population.

Aim. The aim of our study was to compare Flash Glucose Monitoring System (FGMS) with conventional BGM and evaluate its impact on diabetes control in the pediatric population.

Materials and methods. The study group consisted of 75 children (42 girls) with the mean age 11.67 ± 4.21 years and mean diabetes duration 4.23 ± 3.96 years. Patients' data were collected as a reports generate in specific software. We compare the outcomes between the time of using standard BGM and FGMS. Analysed period included 2 weeks of using standard or novel device. The results are given as mean with standard deviations (SD). The Gaussian distribution was tested using D'Agostino and Pearson omnibus normality test. The differences in outcome measures between groups were made using Student's t-test (unpaired, two-tailed) or Mann-Whitney U statistic, P values < 0.05 were considered statistically significant. The analysis was performed using GraphPad Prism 7.

Results. We observe significantly more measurement per day in the time of using FGMS compared to BGM (19.3 times/day *vs.* 6.1 times/day, p < 0.0001). Frequency of hypoglycemia (< 70 mg/dl), was statistically greater during the period with FGMS than BGM (15 episodes/2 weeks *vs.* 4.5 episodes/2 weeks, p < 0.0001). FGMS showed significantly more episodes of nocturnal hypoglycemia (0 episodes/2 weeks *vs.* 2 episodes/2 weeks, p < 0.0007). There was no differences in hyperglycaemia, HbA1c, mean glycaemia, daily dose of insulin.

Conclusion. Hypoglycemia can be fatal and it is a limitation of intensive insulin therapy in diabetic children. Using of FGMS is easier than BGM and gives a possibility to reveal and prevent hypoglycemia more effectively. Longitudinal observation is needed to estimate further advantages for the patients.

EARLY ONSET NEONATAL SEPSIS: 10-YEAR RETROSPECTIVE DATA FROM NEONATAL INTENSIVE CARE UNITS IN LATVIA

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Keywords. Early-onset neonatal sepsis, neonatal morbidity, neonatal mortality.

Introduction. Early-onset neonatal sepsis (EOS) remains a common and serious problem for neonates, especially preterm infants. EOS has been variably defined based on the age at onset, with bacteraemia, pneumonia or bacterial meningitis occurring at < 72 h in preterm infants hospitalized in the neonatal intensive care unit (NICU) and < 7 days in term infants. The incidence worldwide has decreased by introduction of antibacterial intrapartum prophylaxis and universal Group B Streptococcus (GBS) screening reaching 0.24–0.5 cases on 1000 live births in developed countries.

Aim. To determine the tendencies of EOS, etiological agents and their antibiotic resistance profile in Latvia.

Materials and methods. Data regarding EOS from years 2007–2016 were collected retrospectively from five NICU at Level II and III Perinatal Care Centres and NICU at Children's Clinical University Hospital (CCUH). Cases where EOS was suspected or verified in < 72 h in preterm and < 7 days in term neonates were further analysed via SPSS 21.0.

Results. In 10 years 257 EOS cases were identified, 53.7 % of them in term neonates who mostly (79.0 %) were delivered to NICU within < 48 hours.

Pneumonia was observed in 40.0 % and meningitis in 13.2 % cases. The most frequent causative agent in term neonates was Group B Streptococcus (34.8 %), followed by other Gram-positive bacteria (33.3 %) and *Escherichia coli* (7.2 %). In 51.0 % the causative agent was found in peripheral blood. The antibiotic resistance to *Ampicillin* was found overall in 17.9 % cases.

The range of total identified cases within a year varied between 18 and 43; an increase in EOS in preterm neonates was observed. There were overall 20 death cases occurring in median 3 days (IQR 2–4 days). About one third (36.6 %) were discharged home in median 15 days (IQR 10–21 days), but 54.9 % of neonates where delivered to CCUH for further treatment and medical support.

Conclusion.

1. EOS is relatively common in Latvia with Group B Streptococcus being the most frequent etiologic agent.
2. Although universal GBS screening is introduced in Latvia since 2012, decrease in EOS cases within term neonates was not observed suggesting that measurements should be done to improve the coverage and strategy of this screening.
3. To evaluate the efficacy of GBS screening, antibacterial intrapartum prophylaxis as well as the treatment modalities in case of suspected or verified EOS, data of incidence, etiologic agents, their resistance and clinical outcome should be analysed in a regular manner.

FACTORS INFLUENCING SEXUAL FUNCTION
IN WOMEN WITH TYPE 1 DIABETES

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Keywords. Diabetes, sexual function, FSFI, HADS.

Introduction. Sexual dysfunction (SD) is a common complication in men with diabetes mellitus (DM). In this study we evaluated SD in women with type 1 DM.

Aim. To assess medical factors influencing sexual function and to evaluate correlation of SD and emotional state in women with type 1 DM.

Materials and methods. An anonymous survey of women with type 1 DM was conducted in LUHS Kauno Klinikos Department of Endocrinology and in diabetic women's Facebook chat groups during 1 February – 20 December, 2016. The questionnaire had 22 original questions on sociodemographic factors and 13 questions on medical factors. In addition, validated questionnaires – the female sexual function index (FSFI) (19 questions) and the Hospital Anxiety and Depression Scale (HADS) (14 questions) – were used. The FSFI assesses sexual function over the last 4 weeks, reflecting 6 sexual functioning areas: desire, arousal, lubrication, orgasm, satisfaction, and pain. SD is defined as the total score of the scale < 26.55. The HADS is used to evaluate a person's emotional state – symptoms of anxiety and depression. Each subscale was evaluated as follows: 0–7, 8–10, > 11 points as normal, borderline abnormal and abnormal state (symptoms of anxiety or depression) respectively. Descriptive and comparative statistical data analysis was performed with SPSS 17.0, using χ^2 Fisher's exact tests, crosstabs. The values were considered statistically significant when $p < 0.05$.

Results. The data of 95 women were analysed. Mean age was 28.9 ± 7.9 years. The total FSFI score in women with DM who had sexual intercourse within a month was 28.2 ± 5.9. The overall prevalence of SD in these women was 30.1 %. The mean FSFI scores in each domain were as follows: desire – 4.1 ± 1.1, arousal – 4.5 ± 1.2, lubrication – 5.0 ± 1.4, orgasm – 4.5 ± 1.4, satisfaction 5.0 ± 1.2, and pain – 5.1 ± 1.2. Women with a history of urinary tract infections (UTI) within 3 months had SD more often than those without such history (62.5 % and 26.2 %, respectively) ($p = 0.049$). Cardiovascular, respiratory, digestive, or gynecological diseases had no significant impact on the incidence of SD, neither did complications of DM. There was a correlation between FSFI and HADS A ($r = -0.342$, $p = 0.004$) and HADS D ($r = -0.412$, $p < 0.001$) subscales. Women with symptoms of anxiety compared with having no such symptoms more often had SD (41.7 % and 17.8 %, respectively) ($p = 0.011$).

Conclusion. The mean FSFI score did not indicate SD. UTI affected the incidence of SD, while other systemic diseases or DM complications did not. The women's sexual function and emotional state were related. A negative correlation between FSFI and HADS scores was established.

FIRST TRIMESTER PRENATAL SCREENING SENSITIVITY AND SPECIFITY FOR FETAL CHROMOSOMAL ANEUPLOIDY

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Keywords. Biochemical screening, prenatal diagnosis, trisomy, amniocentesis.

Introduction. Aneuploidies are a major cause of perinatal morbidity and mortality. Therefore, early diagnosis of fetal chromosomal pathology is important. Biochemical serum marker testing, ultrasound findings and age risk are most frequent indications for diagnostic testing. Results from biochemical screening tests or ultrasound markers cannot be used for prognostic decision making due to false positive and false negative values. Diagnosis of pathology can be confirmed after diagnostic tests (amniocentesis or chorion villus sampling) only.

Aim. The aim of study was to evaluate a correlation between biochemical/ultrasound markers and chromosomal profile of child.

Materials and methods. The research group was women (N = 309), who underwent amniocentesis or chorionic villus sampling procedure in Riga Maternity Hospital Prenatal diagnostic unit during years 2014 and 2015. The data from medical records of first trimester screening and ultrasonoscopy data was collected and analysed with Microsoft Excel 2013 and IBM SPSS 22.

Results. First trimester combined screening results had sensitivity of 85.71 % and specificity of 86.02 % for chromosome 13/18 trisomies. For 21st chromosome trisomy sensitivity was 80 % and specificity 42.80 % respectively. Comparing fetuses with chromosomal aneuploidy, significant statistical association between positive first trimester biochemical screening for 21st chromosome trisomy combined with high nuchal translucency (NT) versus positive biochemical screening combined with normal NT was found (90 %, n = 18 *vs.* 10 %, n = 2, p < 0.0005). Absence of nasal bone on 1st trimester screening had sensitivity of 44.44 % and specificity of 88.11 % for 21st chromosome trisomy. Difference in median MoM percent's value between fetuses with genetic disorder and healthy group were: PAPPA – 23 %, β-HCG – 48 % and NT – 81 %.

Conclusion. Results show that 1st trimester prenatal screening for 21st chromosome trisomy has a quite high sensitivity but low specificity; for 13/18 trisomy – both parameters are evenly high. Combined screening has higher positive predictive value for aneuploidies than biochemical screening alone. Absence of nasal bone is specific marker for 21st chromosome trisomy, but should it should be used in combined screening not as a separate marker due to low sensitivity.

FREQUENCY AND RISK FACTORS
OF DYSLIPIDEMIA AMONG CHILDREN WITH
TYPE 1 DIABETES MELLITUS

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Keywords. Diabetes, dyslipidemia, children.

Introduction. The mortality and morbidity of cardiovascular diseases (CVD) are markedly increased in diabetic individuals compared with the non-diabetic population. Moreover, type 1 diabetes mellitus (T1D) is probably independent risk factor of lipid profile disorders. Insulin deficiency leads to increased lipolysis and decreased activity of lipoprotein lipase, promoting hypertrigliceridemia and following atherogenesis. Management of lipid abnormalities plays a key role in reducing further complications of the disease.

Aim. The aim of this study was identification of risk factors and assessment of frequency of dyslipidemia in children with T1D.

Materials and methods. We identified lipids disorders in 89 diabetic children (49 boys, 4–17 years) in the mean age 11.0 ± 3.9 years, duration of T1D over a 1 year (mean time 4.52 ± 3.07 years), followed at the Pediatric Diabetes Clinical Unit. Children with co-existing metabolic disorders were excluded.

Results. 26 % of patients had abnormal concentration of at least one of the lipids fraction: LDL (15 % of patients), total cholesterol (22.5 %), triglycerides (3 %). Poorly controlled patients, expressed as HbA1c > 8 % (10.2 mmol/l), had significantly higher concentrations of triglicerides ($p = 0.0211$). Hypertriglyceridemia was statistically more frequent in children > 13 years ($p = 0.0478$) and in subjects with higher BMI ($p = 0.0357$). Additionally, girls have 16 % higher average level of LDL than boys. No correlation was found between age, diabetes duration and concentration of HDL, total cholesterol or LDL.

Conclusion. Inadequate control of diabetes, pubertal age and female sex are risk factors of hyperlipidemia. We should also pay attention to modifying factors (diet, weight) of diabetic children to prevent CVD.

IMPACT OF AORTIC CROSS-CLAMP TIME DURING VSD CORRECTIVE SURGERY ON EARLY POSTOPERATIVE PERIOD IN CHILDREN

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Keywords. Ventricular septal defect (VSD), cross-clamp, extubation, postoperative period.

Introduction. VSD is the most common congenital heart defect in children that is mainly treated surgically with open heart surgery. Use of Cardiopulmonary bypass (CBP) and aortic cross-clamping during operation inflicts an additional challenge on already abnormal circulation.

Aim. The aim of the study was is to determine if patient's preoperative condition affects the duration of aortic cross-clamp and has significant effect on postoperative period.

Materials and methods. Retrospective study was carried out using the data of 85 patients who had undergone VSD corrective open heart surgery till two years of age between the years 2011 and 2016 The data was collected from electronic database *Andromeda,* ICU database *ICIP* and medical histories. The analysis of gathered data was carried out using *IBM SPSS* 22.0.

Results. 46 male and 39 female patients with the average age of 9.5 ± 4 months were included. Average size of VSD was 8.7 ± 2.1 mm and average cross-clamp time was 62 ± 23.5 min. Preoperatively 40 % had increased CTI of 0.62 ± 0.05 and 82.3 % had increased pro-BNP of 1283 ± 1425 pg/mL. At least 1 additional chronical illness was found in 38.8 % of patients. In average 4.5 ± 2.2 days were spent in ICU. Postoperative supportive inotropic therapy was used in 86.4 % of patients – 70.3 % received Milrinone lactate and 16.1 % – Milrinone lactate with Adrenaline. Average time of Milrinone use was 2.6 ± 1.5 days, mean duration of intubation was 28 ± 24.7 h and average time of pleural drainage was 3.8 ± 1.6 days post operation. 55.3 % (47) of patients developed postoperative complications – rhythm disorders occurred in 44.6 % of patients, tricuspid valve insufficiency in 32 %, infection and atelectasis in 12.7 %, neurological complications in 4.7 % and acute kidney failure in 3.5 % of patients.

It was found that combined inotropic therapy was associated with longer cross-clamp time (p = 0.042). Analysis showed statistically significant correlation between increased cross-clamp time and the time of inotropic drug use ($\rho = 0.312$; p = 0.007), intubation time ($\rho = 0.304$; p = 0.008), time of removal of the pleural drain ($\rho = 0.299$; p = 0.007) and total days spent in ICU ($\rho = 0.370$; p = 0.001). Cross-clamp time shows significant correlation with preoperative parameters such as defect localization (p = 0.007), defect size, (r = 0.498; p < 0.0005), CTI (r = 0.429; p < 0.0005), pro-BNP (k = 0.554; p < 0.0005) and other chronical illnesses (p = 0.038).

Conclusion.
1. Longer cross-clamp time is associated with longer recovery and higher possibility of combined inotropic therapy use.
2. Cross-clamp time varies depending on the localization and size of VSD.

IMPORTANCE OF PROGNOSTIC SCALES ON THE OUTCOME IN CHILDREN WITH INVASIVE MENINGOCOCCAL INFECTION

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Keywords. Meningococcal infection, prognostic scales, children intensive care unit.

Introduction. Invasive meningococcal infection (IMI) is one of the most devastating infections with high mortality rate that remains an urgent problem due to rapid disease progression and late recognition. Incidence rate of IMI in Lithuania is constantly growing since 2010 and it reached from 1.5 cases/100,000 population to 2.4 cases/100,000 population in 2014, so Lithuania became a country with moderate endemic rates. Despite advances in diagnostic methods and lifesaving treatment, mortality rate can reach up to 10 %, in septicaemia cases – up to 40 %, and persistent sequelae including neurological defects, deafness, amputation of limbs or digits or skin scarring are diagnosed in as many as in 10–15 % of IMI survivors.

Aim. To analyse the relationship between prognostic scales of BEP (base excess and platelet) and PIM2 (pediatric index of mortality) with IMI bad prognostic parameters (BPP) in Vilnius Children's Hospital.

Materials and methods. A retrospective study, which included 122 children with IMI during 2009–2015. BPP are identified as: time between hospitalization and the manifestation of clinical features is < 12 hours; shock; GCS < 15; hemorrhagic rash; platelet < 100×10^9/L; leukocytes < 10×10^9/L. Statistical analysis was performed using Microsoft Excel, SPSS V.20 software, the data is considered to be statistically significant if $p < 0.05$.

Results. Mean age was 5.61 ± 0.51 years. BEP and PIM2 correlated with poor disease outcome ($p = 0.000$). BPP and disease outcome are related with a moderate correlation ($R = 0.377$). There is a direct correlation between BPP and PIM2, BEP ($p = 0.000$). We compared medians between BEP and 4 BPP (time, shock, GCS, hemorrhagic rash) and 3 BPP (shock, GCS, hemorrhagic rash); correlation was 0.6712 and 0.8851, respectively. Correlation between 3 BPP and BEP ($R = 0.510$) and PIM2 ($R = 0.509$) was stronger than with a 4 BPP ($R = 0.276$).

Conclusion. BEP and PIM2 are equally good at predicting outcome in children with IMI. BPP correlates with PIM2, BEP and disease outcome. The strongest correlation is found between 3 BPP, BEP and PIM2.

INFECTION AS THE CAUSE OF PERINATAL MORTALITY IN LATVIA 2013–2015

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Keywords. Perinatal mortality, infection, autopsy.

Introduction. Infection is one of the leading causes of perinatal mortality (36 %), followed by premature labor (28 %) and asphyxia during labor (23 %) (WHO, 2011). Perinatal mortality in Latvia is slowly decreasing: in year 2013 – 7.3 per 1000 live births, but in year 2015 – 6.7 per 1000 live births (Statistical Yearbook of Health Care in Latvia 2015). Intrauterine infection still is a global problem and a significant factor that affects morbidity and mortality of the mother and the child.

Aim. The aim of this study was to analyse the frequency of infection as the cause of perinatal mortality in Latvia, to find out its distribution in different parts of perinatal period and compare it to literature data.

Materials and methods. A retrospective study including data from autopsy protocols of all fetuses and neonates between 22 w/o gestation and < 7 days postpartum from year 2013 to 2015. Afterwards the data was processed with program MS Excel.

Results. Overall 417 autopsy protocols were analysed. The main three causes of perinatal mortality are as follows – antenatal fetal asphyxia in 48 % (n = 201), congenital anomalies in 17.5 % (n = 73) and multiorgan dysfunction in infants with post-asphyxial hypoxic-ischemic encephalopathy in 7.4 % (n = 31). The highest morality rate was found in $22–27^{+6}$ gestational weeks – 32.4 % (n = 135). Infection as the direct cause of death was found only in 7.2 % (n = 30). Although in 7.4 % (n = 31) infection is mentioned as a complication, but not as the main cause. The incidence of mortality caused by infection in each year: 2013 – 5.7 %, 2014 – 5.8 %, 2015 – 10.1 %. Infection caused death was more common in extremely preterm infants – 36.7 % (n = 11). In 70 % (n = 21) of the infectious cases the death was postnatal. Intrauterine pneumonia makes 67 % (n = 20) of all the infection caused deaths, meconium aspiration pneumonia 17 % (n = 5), early neonatal sepsis 10 % (n = 3) and a specific infection (like syphilis, cytomegalovirus etc.) 10 % (n = 3). Histological examination of the placenta, the placental cord and fetal membranes was made in 61 % (n = 255), and 31 % (n = 79) of them were without any pathological changes. Inflammatory processes like various stages of chorioamnionitis, umbilical arteritis, phlebitis and funisitis was found in 68.8 % of all the infection caused deaths.

Conclusion. In the time period from 2013 to 2015 infection was the cause of death in 7.2 % of all cases. It was more common in extremely preterm infants, as their ability to cope with infectious agents is low. The incidence of infection as the cause of perinatal mortality in Latvia compared to literature data is much lower. One of the explanations could be that infection causes premature labor, and frequently there is autolysis in postmortem samples. Histology of placenta should be made in all cases of perinatal death, but in Latvia the rate was very low – only 61 %. In literature data all the cases where inflammatory process was found in placenta automatically were added to perinatal death caused by infection, but in our research we included only the ones where infection was the direct cause of death.

INFLUENCE OF OVERWEIGHT AND OBESITY
ON PREGNANCY AND ITS OUTCOMES

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Keywords. Body mass index, BMI, overweight, pregnancy, obesity, foetus.

Introduction. Body mass index (BMI) of females in childbearing age increases, which is associated with higher complications risk for pregnancy and its outcomes.

Aim. To evaluate the impact of weight gain on pregnancy and labour.

Materials and methods. The cases of patients delivering from January to March in 2016 in Obstetrics and Gynecology Centre were analysed retrospectively. Study data was collected from 293 women case histories. Patients were grouped to three groups regarding BMI accordingly: I-BMI 18.5–24.99 (normal weight); II-BMI 25–29.99 (overweight); III-BMI ≥ 30 (obesity). Final results were processed with SPSS 21.0 software.

Results. Average age of patients was 30.7 ± 5.2. 211 (72.01 %) patients had obesity or were overweight and 82 (27.99 %) had normal BMI. Mean weight gain during pregnancy was recorded as 13.9 ± 5.6 kg. Out of all women in pregnancy before age of 25 19.09 % were diagnosed with gestational diabetes and 13.02 % with pregnancy-induced hypertension. 12.28 % of women with weight gain of < 15 kg were diagnosed with gestational diabetes while with weight gain of ≥ 15 kg the same diagnosis was made for 4.92 % women. Pregnancy-induced hypertension was diagnosed 4.09 % and 2.46 % respectively. Association between gestational diabetes and BMI in groups were: I – 7.32 %, II – 4.80 %, III – 17.44 %; pregnancy-induced hypertension: I – 1.22 %, II – 4.00 %, III – 4.65 %. Secondary uterine inertia frequency by BMI was I – 7.30 %, II – 10.40 %, III – 16.30 % and insufficient primary contraction: I – 13.40 %, II – 19.20 %, III – 24.40 %. Clinically narrow pelvis frequency occurred I – 0.00 %, II – 5.6 %, III – 8.10 %. BMI did not have any relations to early drainage of amniotic fluid and breech presentation. Weight gain during pregnancy has no association with complications listed above during labour. Cervix laceration frequency regarding BMI: I – 20.70 %, II – 21.60 %, III – 9.30 %. Male or female delivery was made 49.10 %/50.90 % with weight gain of < 15 kg while with weight gain of ≥ 15 kg it was 63.10 %/36.90 %. Umbilical cord pH lower than 7.3 was registered for 45.9 % of women who had weight gain ≥ 15 kg during pregnancy and 33.9 % for < 15 kg group. Data was statistically significant ($p < 0.05$).

Conclusion. BMI as well as childbearing age and weight gain during pregnancy are associated with development of gestational diabetes and pregnancy-induced hypertension. Complications during labour are linked to BMI, but do not dependent upon weight gain during pregnancy. BMI is related to cervical lacerations, but has no relation with pregnancy, duration of labour or its termination. Weight gain during pregnancy is influenced by newborn's sex and has an impact upon umbilical cord pH.

INTRAPARTUM ULTRASOUND TO PREDICT VAGINAL LABOR – A PROSPECTIVE COHORT STUDY

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Objective. To evaluate head perineum distance (HPD) and angle of progression (AOP) as predictors of vaginal delivery in the first stage of labor.

Materials and methods. This was a prospective cohort study in Riga Maternity Hospital in Latvia from May till August 2016. The study included only nulliparous women with singleton pregnancies and cephalic presentation. Ultrasound was used to measure HPD and AOP. Data was collected on demographics, labor parameters and outcome.

Results. Of 36 women enrolled, 26 (72.2 %) had a vaginal delivery.

The area under the receiver–operating characteristics curve for the prediction of vaginal delivery was 0.865 (95 % confidence interval (CI) 0.75–0.98; $P < 0.001$) using HPD as the test variable and the area under the curve (AUC) was 0.877 (95 % CI 0.77–0.99; $P < 0.001$) for AOP. HPD was ≤ 40 mm in 18 (50 %) women, of whom all delivered vaginally. HPD was > 40 mm in the other 18 (50 %) women, of whom 8 (22.2 %) delivered vaginally. AoP was $\geq 110°$ in 19 (52.8 %) of the women and, of these, 16 (44.4 %) delivered vaginally. AoP was $< 110°$ in the other 17 (47.2) women, of whom 10 (27.8 %) delivered vaginally. The women who had HPD ≤ 40 mm and AOP $\geq 110°$ had a relative risk (RR) of 3.25 (95 % CI 1.83–5.78; $P < 0.001$) for vaginal delivery compared to the group who had HPD > 40 mm and AOP $< 110°$.

Conclusion. HPD ≤ 40 mm and AOP over $\geq 110°$ is predictive of vaginal delivery in the first stage of labor.

INTRAUTERINE GROWTH RESTRICTION IN CASE OF PERINATAL MORTALITY IN LATVIA

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Keywords. Intrauterine growth restriction, autopsy.

Introduction. Intrauterine growth restriction (IUGR) is crucial because proper evaluation and management can result in a favorable outcome. IUGR is contributing factor to perinatal mortality in non-anomalous fetuses. It refers to deviation and reduction in expected fetal growth pattern. For most purposes, an estimated fetal weight at or below the 10th percentile is used to identify fetuses at risk (Ross et al., 2014).

Aim. The aim was to retrospectively analyse cases of perinatal deaths in Latvian population to identify those with IUGR as well as to compare the results by using clinically available neonatal IUGD assessment scale and means and standard deviations of weights and measurements of liveborn/still born infants used for IUGR diagnosis in Department of Pathology of Children's Clinical Hospital (Gilbert-Barnes E.et al, 2007).

Materials and methods. A retrospective study was carried out including data from autopsy protocols of all fetuses and neonates between 22 w/o gestation and < 7 days postpartum since January 2010 to December of 2014. 642 patients were included. Descriptive statistical analysis was performed by IBM SPSS v.21.

Results. The weight growth restriction was found in 19.2 % (n = 123) of perinatal mortality cases using clinical available percentile tables for assessment of IUGR. Equally the height growth restriction was found in 27.4 % (n = 176) of perinatal mortality cases. Both weight and height growth restriction was found in 12 % (n = 77) of perinatal mortality cases. The weight growth restriction was found in 4.4 % (n = 28) of perinatal mortality cases and height growth restriction was found in 5.9 % (n = 38) of cases of perinatal mortality using charts for pathological anatomical investigation. Both weight and height growth restriction was found in 2.6 % (n = 17) of perinatal mortality cases. All cases of IUGR diagnosed using charts of pathological anatomical investigation were cases of asymmetrical growth restriction. Liver growth restriction was found in 1.1 % (n = 7) of perinatal mortality cases, brain growth restriction in 6.1 % (n = 39) of perinatal mortality cases. If the diagnosis of IUGR was estimated using charts for pathological anatomical investigation it was always estimated using clinical available percentile tables for assessment of IUGR, but not vice versa.

Conclusions.
1. The number of cases of IUGR estimated by using clinical available percentile tables was higher then the number of IUGR cases estimated by using scale and means and standard deviations of weights and measurements of liveborn/still born for pathological anatomical investigation (19.2 % un 4.4 %, respectively).
2. Means and standard deviations of weights and measurements of liveborn/still born infants used for IUGR diagnosis in Department of Pathology of Children's Clinical Hospital diagnoses severe IUGR, while mild or borderline IUGR could stay undiagnosed.

MAGNETIC RESONANCE UROGRAPHY: EVALUATION OF OBTAINED DATA OF RECENTLY IMPLEMENTED METHOD OF KIDNEY FUNCTIONAL ANALYSIS IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL

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Keywords. MRU, CHOP-fMRU.

Introduction. Severe and long-lasting hydronephrosis (HN) can lead to end-stage renal disease, increasing risk of cardiovascular mortality in adulthood. Detection of HN and kidney abnormalities requires appropriate and reliable imaging method. Such methods as ultrasound, renal scintigraphy, voiding cystourethrography have disadvantages as operator-dependant, poor anatomy resolution, invasiveness and requires radiation exposure. Functional magnetic resonance is non-ionizing, non-invasive method, allowing morphologic and functional assessment of kidneys and enables timely surgical treatment thus avoiding mortality.

Aim. The aim of the study was to detect kidney morphological abnormalities and to study inter-observer variability between two evaluators in newly implemented kidney function software CHOP-fMRU in Children's Clinical University Hospital, Riga, Latvia.

Materials and methods. 29 pediatric patients with hydronephrosis who underwent MRU were included in this retrospective study. The standard protocol included intravenous (IV) hydration, furosemide administration and introduction of IV Gd contrast medium. Patient age, gender, anteroposterior renal pelvis diameter (RPD), parenchymal thickness (PT), diameter of ureters (DU), grade of hydronephrosis were recorded. Measurments of the renal transit time (RTT), calyceal transit time (CTT), Patlak differential renal function (pDRF) were performed by a board certified radiologist and the 6th year medicine student using CHOP-fMRU software. Inter-observer variability was assessed using Interclass Coefficient Correlation (ICC) with CI of 95 %, p value < 0.05 was considered statistically significant.

Results. Among all the patients, grades of hydronephrosis were assessed as I, III and IV grades, being 3.4 %, 51.7 %, 44.8 %, respectively. Bilateral HN detected in 17.2 %, unilateral on the right and left side – 24.1 %, 58.6 %, respectively. Morphological diagnoses detected: UPJ obstruction (8), UVJ obstruction (1), duplex collecting system (4), kidney rotation anomalies (2), horseshoe kidney (4), cystic anomalies (2). The mean RPD was 2.19 cm; mean dilatated DU = 1.54 cm; mean PH = 0.42 cm. Interclass Correlation (IC) for CTT was 0.95 (CI = 0.88–0.96), RTT was 0.97 (CI = 0.92–0.98), pDRF was 0.67 (CI = 0.28–0.85), p < 0.001 in all parameters.

Conclusion. MRU provides high quality morphological assessment in pediatric uroradiology without ionizing radiation, helping in perioperative planning. Interobserver variability rates were similar; CHOP-fMRU measurements can be safely performed by evaluators with various experiences in radiology.

MOST COMMON CAUSES OF FETAL GROWTH RETARDATION IN NEWBORNS IN RIGA MATERNITY HOSPITAL THE YEAR 2016

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Keywords. Fetal growth retardation.

Introduction. Intrauterine growth restriction affects about 10 % of newborn. This pathology may lead to numerous diseases of the newborn in future life, such as cardiovascular disease, hypertension, diabetes mellitus, although many of the risks are preventable.

Aim. The purpose of the research was to find out the most common causes of intrauterine growth retardation, compare them with the control group and develop prophylactic measures to avoid this condition.

Materials and methods. The retrospective study was conducted in Riga Maternity Hospital examining two groups of patients – women who gave birth to child with growth retardation (106 patients) and control group (318 patients). In both groups risk factors for acquiring the pathology were registered. Data was processed by Microsoft Excel and SPSS programs. Statistical analysis was performed by Pearson's chi-squared, Fisher's exact test, 95 % Confidence Interval of Odds ratio. Literature review was made in order to develop prophylactic measures.

Results. Our research and proceeding of data revealed that smoking ($p = 0.01$) enhances risk of the intrauterine growth retardation 2.3 times, arterial hypertension ($p = 0.02$) – 3.6, certain medications ($p = 0.012$) – 7.8, preeclampsia ($p < 0.001$) – 26 times. Hemodynamic disorders ($p < 0.001$) is a risk factor, but calculation of the risk and evaluation of its effect is impossible due to the lack of patients with this condition in the control group. Infection of the fetus ($p = 0.06$), drug abuse ($p = 0.25$), placental abruption ($p = 0.25$), fetus anomalies ($p = 0.06$), medication-dependent asthma ($p = 0.25$), umbilical cord anomalies ($p = 0.06$) and uterus anomalies ($p = 0.75$) are not considered statistically significant due to the small amount of patients or the lack of patients in the control group. Anaemia ($p = 0.28$) and gestational diabetes ($p = 0.68$) are not statistically significant due to the similar percentage of affected individuals in both groups.

Conclusion. According to our study, not all of potential risk factors of intrauterine growth restriction were statistically significant. No proper conclusions can be made about infection of the fetus, drug abuse, placental abruption, fetus anomalies, medication-dependent asthma, umbilical cord and uterine anomalies due to the small amount of patients or the lack of patients in the control group. In our study preeclampsia, arterial hypertension, medications, smoking, hemodynamic disorders appeared to be statistically significant risk factors. Prophylactic measures include smoking cessation and proper antenatal assessment of above-mentioned risk factors.

OPINIONS OF PUERPERAL WOMEN ABOUT IMPACT OF PREGNANCY AND CHILDBIRTH ON SEXUAL LIFE

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Keywords. Pregnancy, childbirth, sexual life.

Introduction. Sexual life is often a very sensitive topic, but it may be especially delicate subject for pregnant women. Most of the primiparous are worried about the impact that childbirth might have on their sexual life. They are also worried if letting partner to participate in childbirth is the right decision. Partner's opinion about sexual life is very important for women. There is a lot of studies about sexuality during pregnancy all over the world, but there is a lack of data about this topic in Latvia.

Aim. The aim of this study is to collect and analyse the information given by patients in postpartum units in the Maternity Department about their opinions of impact that pregnancy and childbirth has on sexual life.

Materials and methods. Cross-sectional study was carried out, involving 351 women in postpartum period in Riga Maternity Hospital. Data were collected from August 2016 until December 2016, using patient questionnaires. The data were analysed by MS Excel and SPSS, using Chi-square test. The statistical significance were reached when $p < 0.05$.

Results. Research included 351 women at a mean maternal age of 30 years (SD 5.1; range, 18 – 43 years). 52.1 % (n = 183) participants reported that they were primiparous, and 47.9 % (n = 168) reported that they were multiparous. Current childbirth: 73.8 % (n = 259) had vaginal childbirth, but 26.2 % (n = 92) had cesarean section. 92 % (n = 323) had coitus during pregnancy and 8 % (n = 28) did not have coitus during pregnancy. Importance of sexual life: 81.1 % (n = 285) was important; 0.9 % (n = 3) was not important; 17.9 % (n = 63) have not thought about that. 29.6 % (n = 104) of participants were worried about impact childbirth has on sexual life, but 70.4 % (n = 247) were not worried. 63.8 % (n = 224) of participants' partners participated in childbirth, 3.7 % (n = 13) an another person participated and in 32.5 % (n = 114) of cases none other than medical personnel participated. 23.6 % (n = 83) were worried to let partner participate in childbirth, 76.4 % (n = 268) were not worried about that. 35.3 % (n = 124) were worried if letting partner to participate in childbirth it would change partners opinion about their sexual life, 64.7 % (n = 227) were not worried.

Conclusion. Primiparous were more worried about childbirth's impact on sexual life than multiparous. Primiparous were more worried than mutiparous that letting partner participate in childbirth that would change partners opinion about their sexual life. The more important sexual life is for women, the more worried they are about impact childbirth might have on their sexual life.

OVERWEIGHT – A TEMPORARY OR A LONG-TERM POST-TREATMENT COMPLICATION OF ACUTE LYMPHOBLASTIC LEUKEMIA?

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Keywords. Leukemia, treatment, complications, overweight.

Background. Overweight and obesity are commonly described in literature as a relevant problem among childhood acute lymphoblastic leukemia (ALL) survivors.

Aim. Assessment of prevalence and persistence of overweight among patients after completed treatment of ALL at the Department of Pediatric Oncology and Hematology, Medical University of Bialystok.

Materials and methods. The study was carried out from October 2013 to June 2016. The group of 97 childhood ALL survivors was divided into two specific groups. First, consisting of 58 patients (mean age 11.84 years, SD = 3.75) with the therapy cessation time less than 5 years (median 1.89) before the examination and second, including 39 patients (mean age 14.20 years, SD = 2.49) who were more than 5 years (median 7.16) after the end of the treatment. Both mentioned groups were compared with the control group consisting of 45 participants (mean age 13.00 years, SD = 4.33) – patients' siblings and peers hospitalized for reasons other than neoplastic diseases.

Measurements were taken with InBody370 analyser using the method of bioelectrical impedance. Following parameters were assessed: body mass index (BMI), percentage body fat (PBF) and waist-hip ratio (WHR). The results were classified as: 0 – below average, 1 – age and gender norm, 2 – above average. The Mann-Whitney U Test was applied to define statistical significance using StatSoft Statistica. Statistical significance level was 0.05.

Results. The study revealed a statistically significant increase of all measured parameters in the first group comparing with the control group. Elevation of BMI occurred in 46.55 % patients (25.88 % in the control group, $p = 0.027$), PBF in 74.14 % (31.76 % in the control group, $p < 0.01$) and WHR in 25.86 % (12.94 % in the control group, $p = 0.047$). The comparison between the second group of survivors and the control group showed a significant increase in PBF (51.28 %, $p = 0.042$), while no significant increase was observed in BMI (35.90 %, $p = 0.48$) and WHR (23.08 %, $p = 0.26$).

Conclusion. The results of the study confirmed more frequent prevalence of overweight among childhood ALL survivors. The problem of fat deposition was present in both examined groups of survivors. Nonetheless, this tendency diminishes over the years after the cessation of the treatment. This proves that overweight is a long-term complication, yet it does not have to be a lifelong outcome.

PATCHINESS OF HEMOPOESIS IN CHILDREN MEASURED BY AUTOMATED HEMATOLOGY

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Keywords. Bone marrow, cellularity, automated hematology, children.

Introduction. Bone marrow (BM) consists mainly of hemopoesis and fat cells. Histology and radiology data suggest that hemopoesis within BM is not evenly distributed, but tends to form "hot spots" or "islands". The issue is of practical importance, since sampling artifacts from hypocellular zones could lead to diagnostic mistakes. Fat content in BM increases with age; theoretically, no significant patchiness should be seen in children, but no studies performed on BM suspension have been reported that support the notion.

Aim. The aim was to quantitatively analyse differences in hematological parameters of bilateral BM aspirates of pediatric patients.

Materials and methods. 139 pairs of bilateral iliac crest aspiration samples were acquired at Hematooncology Department in 2015–2016. 89 pairs were considered representative after excluding samples suspicious for technical artifacts in one or both tubes (hemodilution, clotting, insufficient sampling) and patients with asymmetric infiltration of aspiration sites. The samples were tested by hematological analyser Sysmex XN-2000 (Sysmex Inc, USA), using preinstalled BM protocol. Relative and absolute counts of neutrophils (NEU), immature granulocytes (IG), lymphocytes (LYM), nucleated red blood cells (NRBC) and total cellular content were evaluated. Statistics were calculated by IBM SPSS v.21.

Results. Median difference of total cellularity between paired samples was 25.6 % (10–90 % range 6.8–64.6 %), relative NF 5.9 %, absolute NF 19.9 %, relative IG 8.6 %, absolute IG 31.2 %, relative LYM 14.7 %, absolute LYM 26.3 %, relative NRBC 9.2 %, absolute NRBC 17.3 %. Differences in all absolute counts positively correlated with overall cellularity of the samples (Spearman rho, $p < 0.001$ for all parameters). Differences in relative counts significantly decreased with increasing cellularity (IG $p = 0.003$, LYM $p < 0.001$, NRBC $p = 0.005$), except NEU (no correlation with cellularity). Differences did not correlate with age, gender or the sampled side.

Conclusion. Pediatric BM aspirates demonstrated moderate patchiness, median difference in cellularity between samples was 26 %. Patchiness increased with cellularity, but differences in relative content of hemopoetic lineages decreasd, hemopoesis becoming more homogenous. Of the studied parameters, immature granulopoesis displayed the most prominent inhomogeneity. The study demonstrated that, excluding technical artifacts and asymmetrical processes in iliac bones, hemopoesis patchiness by itself does not significantly affect evaluation of BM aspirates in children.

PLACENTAL HISTOPATHOLOGICAL CHANGES IN ASSOCIATION WITH PREGNANCY INDUCED HYPERTENSION

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Keywords. Pregnancy, placenta, preeclampsia, *hypertensia gravidarum*.

Introduction. Pregnancy induced hypertension (PIH) is one of the leading causes for maternal morbidity and mortality, which contains 18 % of all maternal mortality cases worldwide [Abalos et al., 2013].

According to the latest studies, PIH is associated with increased syncytial knots formation, placental infarctions, petrification and hyalinization processes [Samani et al., 2014; Ogge et al., 2011; Weel et al., 2016].

Aim. To analyse the histopathological changes in placental tissue in PIH cases and compare them to the control group (CG).

Materials and methods. This was a retrospective cohort study of 140 histopathology records from year 2013 to year 2015, collected from the Pathology Department of Children's Clinical University Hospital. 73 cases were selected to research group (RG) and 67 to CG. Inclusion criteria for RG were cases with diagnosed *hypertensia gravidarum*, preeclampsia or eclampsia. Exclusion criteria for CG were maternal chronic diseases, acute infections, premature deliveries. Data collection and statistical analysis was performed using SPSS 22.0 and Excel 2010.

Results. The incidence of low placental weight for gestational age standarts in RG was higher than in CG (43.1 %, n = 31 *vs.* 22.1 %, n = 15), $p < 0.05$. The rate of placental infarctions was higher in RG 50.0 % (n = 36) comparing with CG 32.4 % (n = 22), $p < 0.05$. PIH was not associated with an increased rate of intervillous fibrin deposition (38.9 %, n = 28 *vs.* 29.4 %, n = 20), $p > 0.05$. Increased syncytial knot index (SMI) occurred more often in RG than in CG (81.5 %, n = 22 *vs.* 38.1 %, n = 8), $p < 0.05$. There was no statistical difference in both maternal (29.6 %, n = 21 *vs.* 23.5 %, n = 16, $p > 0.05$) and fetal (15.5 %, n = 11 *vs.* 8.8 %, n = 6, $p > 0.05$) inflammatory response between RG and CG.

Conclusion. PIH is associated with low placental weight for gestational age, increased rates of placental infarctions and with an increased SMI. No association between PIH and intervillous fibrin deposition, maternal or fetal inflammatory response was proven. Placental infarctions and SMI should be considered as a histopathological evidence of PIH.

PREVALENCE OF SELF-MEDICATION AMONG PREGNANT WOMEN IN LITHUANIA

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Keywords. Pregnancy, health disorders, self-medication, medication in pregnancy.

Introduction. Epidemiological data on self-medication during pregnancy is limited not only in Lithuania but also globally. Available data is mostly related to medication, addiction management and psychological issues during pregnancy but not self-medication.

Aim. Evaluate prevalence of self-medication among pregnant women in Lithuania and determine risk factors leading to such behavior.

Materials and methods. This retrospective study included 129 participants, who were asked to fill in a special questionnaire of 33 questions, including self-medication practice before and during pregnancy. The questionnaire was mainly distributed during prenatal courses in Vilnius University Hospital Santariskiu klinikos.

Results. 93.02 % of participants had higher education. 65.89 % of women were aged 26–33. For 68.99 % of the analysed sample this was the first pregnancy, for 79.07 % – the first birth. 12.40 % of the participants had previously experienced abortion or miscarriage. 89.92 % said this pregnancy was planned. 71.32 % first approached their doctor at 5–8 weeks of gestation. The professional was often chosen based on convenience of location. In 87.18 % of cases pregnancy was supervised by obstetrician/gynecologist. 10.25 % of women changed their doctor at least once during the course of pregnancy. 38.76 % of the sample had health issues before pregnancy, 60 % – during pregnancy. 68 % of those who had issues before, also experienced issues during pregnancy. 13.33 % of those with issues before pregnancy, took medicine not prescribed by their doctors but refused to give more detail. Most common health issue during pregnancy was iron deficiency, mostly treated with Tardyferon. 5.8 % of participants did not take the prescribed medicine. The study also shows that doctors and online sites were the main sources of information for those with health issues.

Conclusion. It seems that during pregnancy women are more willing to take the medicine prescribed by the doctor, compared to their pre-pregnancy medical history and self-medication is quite rare in general. Nevertheless, due to specific qualities of the sample (educated young women in capital city) further research is needed in order to conclude on the situation in Lithuania.

PSYCHOMOTOR DEVELOPMENT DYNAMICS IN PRETERM CHILDREN TILL ADJUSTED AGE OF 2 YEARS WITH A HISTORY OF INTRAVENTRICULAR HAEMORRHAGE

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Keywords. Premature, Intraventricular haemorrhage, Psychomotor development.

Introduction. Intraventricular haemorrhage (IVH) is a major central nervous system complication of prematurity. The condition occurs mainly in preterm infants ≤ 32 weeks of gestation. The smaller and more premature an infant is, the higher the risk for IVH.

There are four grades of IVH, based on the degree of bleeding. Severe bleeding may lead to neurological sequelae as a developmental delay, problems controlling movement, mental retardation, cerebral palsy, hydrocephalus, visual and hearing dysfunction. Further development of these children should be monitored in order to be able to promote and correct it in case of necessity. For this reason, a follow-up programme has been developed.

Until now there has been no similar study in Latvia to compare with.

Aim. To evaluate and compare extremely preterm (< 28 weeks), very preterm (28 to < 32 weeks) and mild preterm (32 to < 37 weeks) infant psychomotor development till the corrected age of two with different levels with a history of IVH (I – IV).

Materials and methods. Descriptive study with data collection and compilation from patient stationary and ambulatory cards. Target group – hospitalized preterm newborns in Children's Clinical University Hospital (CCUH) NICU with a diagnosed IVH, who were surveyed in CCUH follow-up programme during the time period from January 2015 thru February 2017. Within this programme, children's psychomotor development is evaluated according to their adjusted age, using Munich functional development diagnostics scale.

Results. The study involved 349 patients, 19 % (n = 67) of them were born extremely preterm, 47 % (n = 164) very preterm and 34 % (n = 118) mild preterm. Of all the patients 1 % (n = 5) were diagnosed with grade I of IVH, 20 % (n = 71) – II, 6 % (n = 20) both – II and III grades, 13 % (n = 46) – III, 1 % (n = 2) – IV, in 14 % (n = 48) of cases IVH was not diagnosed and almost 45 % (n = 157) of patients were missing information about their status.

Neurologic sequelae are more commonly observed in extremely preterm and very preterm infant groups, more often with a high grade IVH (III-IV) in history, but there are complications after a grade II IVH as well.

Motor development retardation and muscle tone altering are seen more often. Psychic development disorders are less common. Following a III–IV grade IVH, irreversible neurologic complications occur – cerebral palsy and hydrocephaly. Cerebral palsy cases without IVH grading are reported, probably, due to missing data.

Conclusion.
1. IVH frequency and severity correlates with the newborn's gestational age.
2. Neurologic complications are more common after IVH grade III- IV and relate to motor function disturbances.

3. Psychomotor development disorders are not always related to IVH severity, as these disorders can be seen in children with a low grade (II) IVH.
4. Complete data analysis is not possible without a unified and accurate documentation. So it is necessary to continue the study in order to get more accurate statistical results.

RARE COAGULATION FACTORS DEFICIENCIES IN CHILDREN – LABORATORY AND CLINICAL MANIFESTATIONS

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Keywords. Coagulation factors deficiencies, APTT, pediatrics.

Introduction. Coagulation factors deficiencies not classified as specific medical conditions are not a common concern of scientific research. It is widely assumed that neither are they frequently observed nor lead to severe clinical manifestations. However, they may still cause abnormalities in laboratory tests which may influence patient's therapy.

Aim. The aim of the study was to assess the frequency of VIII, IX, XI, XII and von Willebrand (vW) factors deficiencies and their relation to clinical symptoms among children diagnosed for different reasons towards coagulopathies.

Materials and methods. The study included children with unspecified coagulation defects (D68.9 according to ICD-10 classification) hospitalized from January 2015 to January 2017 in the Department of Pediatric Oncology and Hematology, Medical University of Bialystok. Exclusion criterium was diagnosis of specific coagulation disorder – von Willebrand disease, Haemophilia and other classified bleeding diathesis. The study group consisted of 172 children (mean age 9.6 ± 4.5 years). Following laboratory results were taken into consideration: Activated Partial Thromboplastin Time (APTT), VIII, IX, XI, XII and vW clotting factors activities. Data concerning clinical symptoms and reasons of diagnostics were obtained retrospectively from patients' medical histories. Statistical analysis was performed using Statistica 12 software.

Results. Out of 172 examined patients, 119 (69.2 %) manifested clinical symptoms with the most commonly occurring nose bleeding. In 84 cases (70.6 %) these problems were reported as recurrent. The symptoms themselves were a reason of 104 hospitalizations (60.5 %), followed by disqualification from a surgery (27.9 %). 40 patients had an increased APTT (23.3 %), out of whom 70.0 % had a deficiency of at least one considered clotting factor. In the group of children with normal values of APTT, 22.0 % had insufficient clotting factors concentration ($p < 0.01$). Generally, clotting factor deficiency appeared in 33.1 % children. Among those patients, 63.2 % presented clinical symptoms, compared with 72.2 % in the group without deficiencies ($p = 0.19$). Factor XII decrease was recognized as the most common isolated deficiency (33/57 cases, 57.9 %) with 48.5 % of patients presenting elevated APTT and 54.6 % showing clinical symptoms.

Conclusion. The study revealed no significant differences in frequency of observed symptoms between patients with and without considered coagulation factors deficiency.

Nevertheless, asymptomatic clotting factors insufficiency still caused APTT elongation, which resulted in e.g. postponing surgical or dental procedures in pediatric. Extending the hematological diagnostics could help avoid additional costs and organizational problems associated with postponing medical procedures. Moreover, it could also reduce the patients' stress connected with such situations and improve the treatment process.

SECONDARY HYPERTENSION TOPICALITY AND OCCURRENCE IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL 2007–2016

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Keywords. Secondary hypertension, pediatrics.

Introduction. Hypertension is known to be a major cause of morbidity and mortality in the world. Child population contains individuals who have hypertension, mostly with secondary hypertension (SH) which is caused primary by cardiovascular system, kidneys or endocrinological pathology (Gefen et al., 2015). It is important to be aware of the risk group, to diagnose in time and to treat SH because this pathology is potentially curable disease, but without any treatment hypertension can do irreversible substantial damage to child's health in the future.

Aim. This study determines how many patients are diagnosed with SH, and what genesis it is. The study also determines if systolic blood pressure (BP) correlates with Body Mass Index (BMI).

Materials and methods. Retrospective study was made, including patients which were discharged from the Children's Clinical University Hospital with diagnosis SH in period between 01.01.2007–31.10.2016. The average PB data was collected from average 24-hour BP monitoring system, from children's cardiologist or doctor on duty BP notes in child's progress histogram. The grid of normal and elevated BP depending on child's age, height and gender was use to analyse data, after which all patients were divided into the following groups: prehypertension (90th–95th percentile), stage I hypertension (95th–99th percentile), stage II hypertension (99th–100th percentile) (Rodriguez-Cruz et al., 2015). Necessary data was collected from medical documentation and analysed using Microsoft Excel and IBM SPSS Statistics 24.

Results. The study included 73 patients, 41.1 % (n = 30) were girls and 58.9 % (n = 43) were boys with age range from 1 to 17 years. The age mean standard deviation (SD) was 12.12 ± 4.78. They were divided into four groups depending on the most likely cause of SH. There were 5 (6.8 %) Cardiology profile patients, 29 (39.7 %) Nephrology profile patients, 29 (39.7 %) Endocrinology profile patients and 10 (13.7 %) that did not fit into any of the above mention profiles. From all patient's prehypertension condition was observed in 2.7 % (2) of cases, stage I hypertension was observed in 23.3 % (17) of cases, stage II hypertension was observed in 65.8 % (48) of cases, but in 8.2 % (6) of cases children diagnosed with SH average BP was below the 90th percentile. In 83.56 % (61) of cases patients received anti-hypertension

medications. The mean BMI of patients was 23.40 ± 7.61 kg/m². No statistically significant difference was found between patient's systolic BP and BMI (p > 0.05).

Conclusion.

1. The largest part of SH patients belongs to Nephrology (39.7 %) and Endocrinology (39.7 %) profiles.
2. Even though the largest part of all patients (87.56 %) receive anti-hypertension medications, most of all patients (65.8 %) have stage II hypertension.
3. In this study SH cannot be linked to obesity.

SWYER SYNDROME DATA REVIEW AT CHILDREN'S CLINICAL UNIVERSITY HOSPITAL FROM 1996 TO 2016

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Keywords. Pure gonadal dysgenesis, primary amenorrhea, gonadal tumor.

Introduction. Swyer syndrome or pure gonadal dysgenesis is a rare genetic disorder characterized by 46,XY karyotype and female phenotype with female external genitalia, normal vagina, a small or rudimentary uterus and fallopian tubes, undeveloped streak gonads, primary amenorrhea, and incomplete development of secondary sexual characteristics.

Aim. The aim of the study was obtain and analyse data of patients with Swyer syndrome at Children's Clinical University Hospital from 1996 to 2016.

Materials and methods. Forty one patient were selected from the registry of the Citogenetics laboratory, of which 37 patients were included in a retrospective study. Four women with 46, XY/45, X (mosaicism) were excluded. The clinical information of the investigation and treatment was available in 15 cases. Data was obtained from the registry of the Citogenetics laboratory, Children's Clinical University Hospital Oncohematological department registry, electronic database, medical histories and ambulatory cards. Data was analysed using MS Excel and SPSS Statistics program 22.0.

Results. The study included 37 women, in 36 cases (97.3 %) chromosome analysis confirmed 46, XY karyotype, in one case (2.7 %) patient had Down syndrome with karyotype 47, XY + 21. Five people were tested for SRY genes mutation and in all cases it was negative. The avarage age of the patients at the time of diagnosis was 15.4 ± 8.0 years.

The study included 15 cases: eight patients (53.3 %) were investigated for primary amenorrhea and incomplete development of secondary sexual characteristics, 5 patients (33.3 %) with abdominal pain and lower abdominal mass, 2 patients (13.3 %) were diagnosed at birth. Gonadectomy was performed in 12 cases (80 %). The median time between diagnosis and gonadectomy was 0.4 ± 4.3 years. In 2 cases gonadectomy was made 7.3 and 5.3 years after diagnosis. In one case karyotype analysis was performed 11 years after ovarian tumor (dysgerminoma) treatment. Hypoplastic/small size uterus was detected in 5 cases (33.3 %). In all malignant cases histology results were available. In 4 cases were found gonadoblastoma, dysgerminoma in 3, gonadoblastoma and dysgerminoma in 2, one with teratoma. There were discrepancies in histology of bilateral malignant tumors and cases with mixed histological

subtype in one gonad. In some cases laboratory data showed increased serum concentrations of alpha-fetoprotein (AFP), luteinizing hormone (LH), follicle-stimulating hormone (FSH). Hormone replacement therapy was used in 6 cases (40 %), adjuvant chemotherapy according to MAKEI protocol in 3 cases (20 %).

Conclusion. Early diagnosis of Swyer syndrome is necessary in view of the risk of malignancy that can develop at an early age. Pediatricians play a significant role in diagnostic of early signs of Swyer syndrome. In some cases diagnosis of syndrome was made only after development of malignant process. The study showed the median time between diagnosis and gonadectomy was suboptimal. Fertility securing for these patients could be a challenge in Latvia.

THE ATTITUDES AND EXPERIENCES CONCERNING NORMAL CHILDBIRTH AMONG ESTONIAN LABOUR WARD MIDWIVES

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Keywords. Normal birth, clinical guidelines, midwife, attitude, experience.

Introduction. International core documents describe midwives as the advocates of normal birth. Estonian maternity care is described by low maternal and neonatal mortality and a good ratio between vaginal birth and caesarean section.

Aim. To describe the attitudes and experiences concerning normal childbirth among Estonian labour ward midwives.

Materials and methods. This is a quantitative study that was carried out via connect.ee. Consent for this research was acquired from the head midwives in Estonian labour wards and Research Ethics Committee of the University of Tartu. The participants were midwives working in 14 labour wards across Estonia. A total sample of 90 midwives answered the questionnaire (45 % of all midwives working in labour wards). SPSS version 23 and MS Excel were used for all analyses. The results are shown using a frequency distribution table and high score table.

An original measurement tool was created based on the ICM (*International Confederation of Midwives*) document "Essential Competencies for Basic Midwifery Practice" and "Clinical guideline on care in normal childbirth" developed in 2014 in Estonia. The tool consists of VI blocks of themes containing 248 questions. Block I includes general data; block II gives the definition of normal birth; blocks III to VI consist of different statements that describe how midwives perceive their role as supporters of normal birth, attitudes, habits and practices during labour.

Results. The results show that most midwives are familiar with the clinical guideline on care in normal childbirth and in their opinion the guideline endorses normal childbirth. The attitudes of midwives towards normal birth are positive, they feel competent (different birthing positions, non-medical pain-relief) and empowered to support normal birth and use technology when indicated. Midwives reported to be less competent in water birth.

Midwives value birthing environment, the role of supporters, non-medical self-aid strategies in coping with labour. Most participants are worried about the decreasing rate of normal birth and relate medical pain management with an increased number of interventions performed during labour. Midwives reported that women lack the preparation for normal birth and coping strategies.

Conclusion. The attitudes and experiences of midwives value normal birth and it is one of the determinants that defines the good quality of Estonian midwifery care during labour.

THE EFFECTS OF ARTERIAL HYPERTENSION ON PREGNANCY OUTCOME

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Keywords. Arterial hypertension, pregnancy, complications.

Introduction. In normal pregnancy, arterial pressure should not be higher than 140/90 mmHg. Arterial hypertension (AH) is the most common complication during pregnancy, it is reported in 10 % of pregnancies, from which 1/3 is chronic hypertension and 2/3 are gestational hypertension or preeclampsia. (Goldman, Lee, "Arterial Hypertension." Goldman-Cecil Medicine. Philadelphia, PA: Elsevier Saunders, 2015). Although prognosis most frequently is good, AH can increase maternal and fetal morbidity and mortality. (Von Dadelszen, 2000) It can cause complications as intrauterine growth restriction, prematurity and placental abruption. Low birth weight is reported in 22.1 % in AH group, but only 4.5 % in control group. (Rahman "Asia-Pacific Journal Of Public Health." Sage Journals). Women with AH 9.9 % presented at gestational age (GA) < 34 weeks, 21.2 % at 34–36 weeks, 68.9 % at > 37 weeks. (Krispin, 2017).

Aim. To retrospectively collect and evaluate data about arterial hypertension and its effects on pregnancy and its outcome in Riga Maternity hospital in 2015.

Materials and methods. The research was carried out as a retrospective study. The analysed cases of patients were retrieved by archive search. The assessed parameters comprised – patient's age, number of pregnancies and deliveries, blood pressure (hypertension stages were divided using ESH/ESC guidelines 2013), gestational age, newborn's weight and complications during pregnancy and their effects on the outcome.

Results. Altogether 507 women's data were collected and evaluated. 235 women during pregnancy had normal blood pressure (control group) and 272 women were registered with elevated blood pressure during pregnancy. In AH group 85.6 % (233) were diagnosed with gestational hypertension (GH group) and 14.4 % (39) with chronic hypertension (CH group). In GH group 36.9 % (86) of the women were diagnosed with preeclampsia. 15.5 % (36) of newborns had intrauterine growth restriction, 1.3 % (3) of the women had placental abruption and 11.6 % (27) had premature labor. 5.2 % (12) delivered at gestational age < 34 weeks, 6.4 % (15) at 34–36 weeks and 88.4 % (206) at > 37 weeks. In CH group 5.1 % (2) of the women were diagnosed with preeclampsia. 12.8 % (5) of newborns had intrauterine growth restriction,

2.6 % (1) of the women had placental abruption and 12.8 % (5) had premature labor. 12.8 % (5) delivered at gestational age < 34 weeks and 87.2 % (34) at > 37 weeks. In control group 3.4 % (8) of the women were diagnosed with preeclampsia. 7.2 % (17) of newborns had intrauterine growth restriction, 0.9 % (2) of the women had placental abruption and 3.4 % (8) had premature labor. 1.7 % (4) delivered at gestational age < 34 weeks, 1.7 % (4) at 34–36 weeks and 96.6 % (227) at > 37 weeks.

Conclusion. The study revealed that women who have elevated blood pressure during pregnancy are at a higher risk for preeclampsia – 36.9 % in GH group compared with 3.4 % in control group. There is higher risk for complications regarding newborns health, such as – intrauterine growth restriction – 15.5 % in GH group and 12.8 % in CH group compared to 7.2 % in control group – and are also exposed to greater risk of premature labor – 11.6 % in GH group, 12.8 % in CH group compared to 3.4 % in control group – and risk of placental abruption is higher in CH group – 2.6 % compared to 0.9 % in control group.

THE ESTIMATION OF THE PROGNOSTIC VALUE OF INTRA-ABDOMINAL PRESSURE AND ABDOMINAL CIRCUMFERENCE IN NEONATES WITH NECROTIZING ENTEROCOLITIS

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Keywords. Necrotizing enterocolitis, intra-abdominal pressure (IAP), abdominal circumference (AC), Bell stage.

Introduction. Necrotizing enterocolitis (NEC) remains a major cause of morbidity and death in neonates. The mortality rate has not significantly diminished for the last two decades. Therefore, fast diagnosis of NEC is essential for the successful management.

Aim. The goal of the study was to determine whether there is a significant difference in intra-abdominal pressure and abdominal circumference in neonates with different stages of the disease using Bells staging system.

Materials and methods. Retrospective data analysis was performed on 24 neonates with diagnosed or suspected NEC (Bell stage 0–3). Intra-abdominal pressure and abdominal circumference was measured. As there are no accepted normal values of the AC, the analysis was performed using the specific formula, developed by Dr. Ilze Meldere et.al. It estimates normal abdominal circumference in healthy neonates depending on body weight.

Results. The average time of birth of neonates was 29 gestational weeks. The average difference from normal values in AC depending on baby's weight was +1.87 cm (min −3.6; max +9.4 cm). In 10 measurements AC was lower than expected (17 %). In 12 measurements the difference was within +1 cm (20 %), and in 32 measurements (53 %) the difference was greater than +3 cm. One way ANOVA with Post Hoc analysis showed a statistically significant difference in Bell stage groups (p = 0.046), specifically of ACD in Bell stages I and III (p = 0.039). Also, the tendency between stages II and III was identified (p = 0.138). IAP was elevated in

all measurements. Median IAP was 8 mm/Hg (min 2; max 14), intra-abdominal hypertension (IAP > 10 mm/Hg) was observed in 14 measurements (20 %). Positive pressure ventilation, which can change IAP in healthy babies up to 8 mm/Hg and was used during the treatment, was taken into account. However, in 67.6 % of cases IAP still was elevated. In Bell stage I the ratio between observed IAP and normal IAP was 1:1.3; in stage II it was 1:2.1; and in stage III to 1:3.5. There was no significant difference between abdominal hypertension and different Bell stages. Kruskal-Wallis analysis showed that the distribution of IAP is not the same across Bell stages (p = .044), specifically between stage I and III (p = .038).

Conclusion. Even though IAP and ACD are not routinely measured, they can be potentially developed into an effective tool for fast initial diagnosis of NEC and for prediction of clinical worsening. They are easy, safe and available measurements. However, more data has to be collected for deeper evaluation of their possible significance.

THE LEPTINE AND LEPTINE RECEPTOR CODING GENES VARIATIONS INFLUENCE ON PCOS DEVELOPMENT, BODY WEIGHT AND BINGE EATING IN LATVIAN ADOLESCENT FEMALE POPULATION

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Keywords. PCOS, Leptin, Leptin receptor, LEP, LEPR.

Introduction. Polycystic ovary syndrome (PCOS) is a common endocrine disorder and is characterized by hyperandrogenism, menstrual irregularity, PCO morphology and often is associated with obesity and insulin resistance. Despite the extensive research the etiology of PCOS is still unknown. There is evidence that genetic variations in the leptin and leptin receptor coding genes (*LEP* and *LEPR* genes respectively) influence leptin signaling pathway and are associated with PCOS, because amount of circulating leptin correlates strongly with obesity, which is one of the pathogenetic mechanisms of PCOS.

Aim. The aim of this study was to investigate *LEPR* gene variation K109R and *LEP* gene Class I and Class II allele (microsatellite located 3' UTR region) influence on PCOS development, body weight and binge eating in Latvian adolescent female population.

Materials and methods. The study comprised 25 adolescent patients with PCOS diagnosed according to the Rotterdam criteria and 51 self-reported healthy, non-obese adult controls. The genomic DNA was extracted from peripheral venous blood using the phenol-chloroform method. The *LEPR* gene variation K109R genotyping was conducted using allele specific PCR and *LEP* 3' UTR microsatellite – using PCR and fragment length analysis. Statistical analysis was performed using SPSS 22 software.

Results. PCOS patients mean age was 16 ± 1 years. Out of 25 patients – 44 % were obese (BMI ≥ 95 pc) and 16 % were overweight (BMI ≥ 85 pc). Evaluating patients eating habits, 64 % patients had severe binging eating problems and just one patient did not have binge eating problems.

Performing case-control study we have found that *LEPR* gene variant K109R R allele was associated with a higher risk of developing PCOS (OR = 2.4; 95 % CI = 1.16–3.07; p = 0.01). *LEP* gene 3' UTR microsatellite Class I and Class II alleles were not associated with PCOS. The *LEP* and *LEPR* gene variations were not associated with increased BMI and did not influence the binge eating severity.

Conclusion.
1. Obesity and binge eating are common among adolescent patients with PCOS.
2. *LEPR* gene variant K109R R allele is a probable risk allele for developing PCOS.
3. There were found no association between increased body weight and binge eating severity with *LEP* and *LEPR* gene variations in our study.

TREATMENT RESULTS OF CAUSTIC INJURIES OF THE EOSOPHAGUS (2005–2015) IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL

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Keywords. Acid, acetic acid, alkalic solution, children, chemical burn, esophagogastro-duodenoscopy.

Introduction. Caustic injuries of esophagus is a common condition among Latvian peiatric population occurring several times each year. The subject was chosen due to ratification of law restricting the retail sale of acetic acid in 2009[1]. The number of patients year-to-year recorded with this diagnosis is roughly constant, however, the chemicals causing the effect variates. The associated caustic injuries are usually classified as severe, hence the discussion is ongoing – new treatment methods are being considered and analysed. This provides the opportunity to improve the existing treatment guidelines.

Aim. The aim of the study is to compare treatment results of caustic injuries of the esophagus occurring in two time periods (2005–2010; 2011–2015), collect data and to conclude whether the adopted law had any effect.

Materials and methods. A retrospective evaluation of clinical and epidemiological data of patients hospitalized between 2005 and 2015 at the Children's Clinical University Hospital with the caustic injuries of the esophagus. Medical documentation were analysed. The necessary data was retrieved. The statistical analysis was conducted using MS Excel statistical tools.

Results. Total of 75 patients' medical histories were examined from Children's Clinical University hospital during 2005–2015, but only 50 cases had confirmed diagnosis and were eligible for the study. Patient's age at diagnosis differs from < 1 to 7 years. The most cases

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[1] Decree No. 334 of the Cabinet of Ministers Article 7[2] The level of acetic acid contained in acetic solutions of foods available in retail cannot exceed 10 percent of mass. (CM 28.04.2009.rule edition No.368; enforced 01.01.2010., see. item 21)

were in age group from 1–2 years. The majority were male 68 % (N = 34) compared to female 32 % (N = 16). The caustic injuries caused by acetic acid in 1st period had 19 cases, in 2nd period – 8 cases (reduction of 58 %). The caustic injuries caused by alkalic solution in 1st period had 7 cases, in 2nd period – 16 cases (increase by 128 %). Surgical procedure requirement (esophagogastroduodenoscopy with balloon dilatation) comparing caustic injuries caused by acetic acid in the 1st and 2nd period had decreased by 25 %. Surgical procedure requirement (esophagogastroduodenoscopy with balloon dilatation) comparing caustic injuries caused by alkalic solution in the 1st and 2nd period had increased by 166 %. In the first period esophagogastroduodenoscopy with balloon dilatation was applied 57 times, in the 2nd period – 182 times (an increase by 219 %). Patient recovery time in hospital for acetic acid cases was in total 748 days, with average of 27.7 days per patient. Patient recovery time in hospital for alkalic solution cases was in total 2174 days, with average of 94.5 days per patient.

Conclusion. The caustic injuries caused by acetic acid has reduced significantly after the adoption of law prohibiting the retail sale. At the same time the cases involving caustic injuries caused by alkalic solution increased significantly and occurred with more complications that prolonged patient recovery time. As a result, the cases requiring surgical procedure also increased.

UTERINE ARTERY EMBOLIZATION AS TREATMENT MODALITY FOR UTERINE FIBROIDS: THE EXPERIENCE IN RIGA EASTERN CLINICAL UNIVERSITY HOSPITAL, PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL AND LIEPAJAS REGIONAL HOSPITAL DURING TIME PERIOD FROM YEAR 2011 UNTIL 2016

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Keywords. Uterine artery embolization, uterine fibroids, treatment.

Introduction. Fibroids are the most frequently found tumors of the female reproductive system. It is estimated that between 20–50 % of women of reproductive age have fibroids. Treatment can range from no treatment to surgery. Unless fibroids are causing excessive bleeding, pain or bladder problems, treatment usually is not necessary. Uterine artery embolization (UAE) is a relatively new procedure and an alternative to open surgery for fibroids. It is estimated that serious complications occur in less than 4 % of patients.

Aim. To determine the frequency of procedures performed during year 2011 and 2016, the main complaints of patients and hemoglobin levels before the procedure and after, also the localizations of uterine fibroids and size. Efficacy evaluation by symptom resolving, incidence of gynecological operations or procedures performed after uterine artery embolization, pregnancies, and complications.

Materials and methods. The retrospective descriptive study includes women who underwent uterine artery embolization because of uterine fibroid from 3 hospitals in Latvia: Riga Eastern University Hospital, Pauls Stradins Clinical University Hospital and Liepājas Regional Hospital during year 2011 and 2016. The data were compiled in Excel tables and processed with SPSS 20.0 program.

Results. In total 171 patient histories with UAE were evaluated but only those who had uterine fibroid were included – 155 patients. The mean age of patients was 43.61 ± 0.385 years. Mean days spent in hospital 1.44 ± 0.077. The main complaints of patients were: severe bleeding during menstruations (63.9 %; n = 99), painful menstruations (22.6 %; n = 35), pain in the lower abdomen (1.9 %; n = 3). Uterine fibroid reduced in size after the procedure in 80.4 % (n = 37). Surgeries or another UAE procedure after the UAE were performed in 16 % (n = 8). In 71.4 % (n = 5) there was hysterectomy performed, 14.3 % (n = 1) myomectomy and 14.3 % (n = 1) another UAE procedure. Deliveries after the procedure: 4 % (n = 2). Uterine artery embolization induced menopause occurred in 4 % (n = 2).

Conclusion. Mostly after uterine artery embolization there is uterine fibroid reduction in size. But quite often there is a need for another treatment modality after the procedure. Although for some patients there is still the chance of getting pregnant and deliver a baby after successful procedure.

VACCUM EXTRACTION – MATERNAL AND NEONATAL COMPLICATIONS

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Keywords. Vacuum extraction. Operative vaginal delivery.

Introduction. Vacuum extraction are in use as delivery instruments. It is traction of the fetal head by a created negative pressure through a cup applied to the head. Vacuum-extraction indications: prolonged second stage of labor, maternal exhaustion, dysfunction uteri or fetal distress. Use of vacuum extraction is variable in different countries. In the world it is average 1.2–8.4 % every year, in Latvia 2014 2.2 %, 2015 3.1 %, in Riga Maternity Hospital 2014 2.77 %, 2015 3.23 %, 2016 4.18 %. As any other medical procedures, vacuum extraction also may have some complications.

Aim. The purpose of this research was to evaluate the complications for the mother and newborn, using vacuum extraction, and to compare them with spontaneous delivery.

Materials and methods. This study included group of vacuum-assisted deliveries in time period 2014–2016 (n = 726) in Riga Maternity Hospital, and it was compared to the group of spontaneous vaginal deliveries (n = 726). Data statistically processed in Microsoft Excel and SPSS Statistics 22.0. Retrospective longitudinal study.

Results. Results of the study are divided into two categories. The first category includes comparisons of the complications between two groups, and the differences are statistically significant (p < 0.005): in vacuum-assisted deliveries episiotomy was made 63.4 % more, vaginal lacerations was 36.4 % more, cervical lacerations was 9.8 % more than in group of spontaneous vaginal deliveries. But rupture of labia minora was 5.9 % less, perineal lacerations were 35.8 %

less in group with vacuum extraction. In these category also is includes neonatal complications like cephalohematoma, which was 26.9 % more, and clavicle facture was 24 % more in vacuum-assisted deliveries. The second category includes comparisons of the complications between two groups, and the differences are not statistically significant (p > 0.005) like subinovolutio uterus, superficial scalp wounds, retinal hemorrhage, facial nerve and brachial plexus damage, intraventricular haemorrhage, subgaleal hematoma. In vacuum-assisted deliveries was prolonged second stage of labor, mean 1 hour 22 minutes (ST = 3.2) in comparison with group of spontaneous vaginal deliveries, mean 40 minutes (ST = 2.71). In group with vacuum-extraction dysfunction uteri was 46.1 % (p < 0.005) more, fetal distress was 73.9 % (p < 0.005) more than in spontaneous delivery group. Vacuum extraction was used for the first delivery in 86.9 % of cases, for the second delivery 10.9 % of cases.

Conclusion. Operative vaginal delivery using vacuum extraction is associated with more adverse outcomes than spontaneous vaginal delivery. However, these complications are so infrequent that the advantages of this method of extraction argue in favor of wide use in obstetrics.

WOMEN'S KNOWLEDGE ABOUT PREVENTION
AND DIAGNOSTICS OF CERVICAL CANCER

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Keywords. Gynaecology, cervical cancer.

Introduction. Although there is an organized cervical cancer screening programme in Latvia since 2009, cervical cancer morbidity and mortality in our country is one of the highest in the Europe. Women's knowledge and attitude regarding cervical cancer is the key component of successful cervical cancer prevention programme.

Aim. The aim of this study was to evaluate women's knowledge about cervical cancer risk factors, prevention and diagnostic methods.

Materials and methods. This was a cross sectional study of 92 women attending their first colposcopy visit in the Colposcopy Clinic of Riga Eastern Clinical University Hospital. Study was performed from 01.08.2016 until 30.12.2016. Women attended Colposcopy Clinic because of suspected cervical precancerous disease. Before the visit they signed a written consent and completed questionnaire.

All data were analysed using MS Excel and IBM SPSS 22 analytics software.

Results. There were 583 colposcopies done during the period of this study, 112 women had their first colposcopy and 92 of them completed questionnaire.

Women used different resources of information about health, most common of them were gynecologists 78 % (95 % CI 68.5–85.9) and mass media 53 % (95 % CI 43.5–65.0).

42 % (95 % CI 32.6–53.3) of respondents considered that they know risk factors of cervical cancer, but only 39 % (95 % CI 28.3–48.9) knew about prevention of cervical cancer. Vaccination against human papillomavirus 28 % (95 % CI 19.6–38.0) and cervical cytology 38 % (95 % CI 27.2–47.8) were common answers regarding effective prevention of cervical cancer.

Only 48 % (95 % CI 38.0–58.7) of respondents had participated in cervical cancer screening programme. 46 % (95 % CI 34.8–55.4) of participants considered that they know which methods are used in diagnostics of cervical cancer. 48 % (95 % CI 38.0–57.6) of women thought, that cervical precancerous changes are malignant disease. 75 % (95 % CI 66.3–83.7) of respondents could answer correctly what colposcopy method is.

Conclusion. Although current study presented specific population of women attending colposcopy clinic because of suspected cervical precancerous disease, less than half of a women knew the risk factors, prevention and diagnostics of cervical cancer.

Not only gynecologists should explain the natural history of cervical precancerous changes, but also family doctors have to inform their patients about this disease. Since mass media is one of the most important information resource among women, it is crucial for professionals to provide relevant information in public media.

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YOGA DURING PREGNANCY – HABITS AND POTENTIONAL BENEFITS

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Keywords. Yoga, physical activity, pregnancy, labor outcome.

Introduction. A regular moderate intensity physical activity during pregnancy is recommended by international guidelines. Health benefits of physical activity during pregnancy include reduced risk of excessive gestational weight gain and conditions such as gestational diabetes, preeclampsia, and preterm birth. There is some evidence that physical activity during pregnancy is associated with a reduced length of labor and delivery complications. Psychological benefits to physical activity during pregnancy include reduced fatigue and stress, as well as improved well-being and satisfaction with the childbirth experience. Prenatal yoga classes are one of options, which provide moderate intensity physical activity and are available for pregnant women in Latvia.

Aim. To find out how yoga practice affects the course of pregnancy and childbirth outcomes compared pregnant women who attend yoga with a control group – pregnant women who do not attend yoga.

Materials and methods. Study was conducted in 3 yoga studios in Riga from January 2016 to January 2017. Women who attended "Prenatal yoga" were surveyed. The second part of survey was carried out after the childbirth. The control group consisted of women in postpartum period, who do not attended yoga during pregnancy. The data were analysed by MS Excel 2010 and SPSS 20.0. The research was accepted by RSU Ethics Committee.

Results. A total of 58 women (29 in yoga group and 29 in control group) participated in a study. Mean age ± standard deviation was 31.59 ± 4.14 in yoga group and 29.83 (SD ± 5.31) in control group, the mean body mass index (BMI) – 20.93 (SD ± 1.51) *vs.* 23.16 (SD ± 2.62).

Women in yoga group had less weight gain than control group – mean 14.55 (SD ± 2.68) kg *vs.* 17.03 (SD ± 3.61) kg. Following data about labor outcome had compared: the rate of Cesarean section was 6.9 % (n = 2) in yoga group and 20.7 % (n = 6) in control group, using

of epidural anesthesia – 34.5 % (n = 10) *vs.* 20.7 % (n = 6), stimulation with oxytocin – 10.3 % (n = 3) *vs.* 37.9 % (n = 11), labor complications – perineal tears – 20.7 % (n = 6) *vs.* 37.9 % (n = 11). The newborn's weight (median (IQR)): 3.595 (3.360–3.920) kg *vs.* 3.573 (3.131–4.025) kg, height 53.52 (53–54) cm *vs.* 53.24 (52–54.5) cm. Also psychological aspects were compared. Satisfaction with the childbirth experience, which was rated from 1–5, shows mean 4.45 (SD ± 0.87) *vs.* 4.03 (SD ± 0.94). Rating about how labor proceeded according to expectations shows mean 3.97 (SD ± 1.05) *vs.* 3.38 (SD ± 1.35).

Conclusion. Prenatal yoga has positive role on pregnancy course and labor. Women, who practiced yoga, had better results in psychological aspects, physical conditions and partly in perinatal outcomes.

RISK SCORE OF POST-PARTUM DIABETES IN WOMEN WITH GESTATIONAL DIABETES MELLITUS: THE PROSPECTIVE STUDY WITH 15-YEARS FOLLOW-UP PROGRAMME

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Keywords. Gestational diabetes, post-partum diabetes, risk score, follow-up.

Introduction. One in six live births (16.8 %) are to women with some form of hyperglycemia in pregnancy; the majority (84 %) is related to gestational diabetes mellitus (GDM) (IDF, 2013). GDM diagnosis is linked to an increased risk of maternal diabetes post-partum, resulting in devastating medical, psychosocial and economic consequences (FIGO, 2015). In 2016 M. Kohler et al. developed the risk score to predict the long-term risk of post-partum diabetes in women with GDM using four variables.

Aim. The prospective study with 15-years follow-up programme was designed to verify the risk score in the study population.

Materials and methods. All pregnant women with GDM (n = 26) who received antenatal care at one of the Gynecology Clinic in Latvia January 2014 − June 2016 have been included in the study. Women with GDM will be prospectively followed up for GDM-related pregnancy outcomes, and the data will be used to verify the risk score. The diagnosis of GDM was made using a single-step 75 g oral glucose tolerance test (OGTT) during routine testing between weeks 24−28 of pregnancy according to the WHO criteria (WHO, 2013). The computed risk score variables were: 5 × body mass index at the first antenatal visit (per kg/m^2) + 132 if GDM was treated with insulin (otherwise 0) + 44 if the woman had a family history of diabetes (otherwise 0) − 35 if the woman lactated (otherwise 0).

Results. 11.5 % (n = 3) of women was primiparous. 39.1 % (n = 9) of women had had GDM in the previous pregnancy. The mean risk score for maternal diabetes post-partum ranges from 46.5 to 306.5 points. 38.5 % (n = 10) of expectant women were consulted by endocrinologist during pregnancy. Nutrition counseling and physical activity as primary tools in the management of GDM was used in 69.2 % (n = 18) and 80.8 % (n = 21) of cases, respectively. Oral antidiabetic agents were used in 3.8 % (n = 1) of cases. Insulin as treatment options for

GDM was used in 7.7 % (n = 2) of cases. Daily maternal glycemic control was performed by 73.1 % (n = 19) of patients. Post-partum maternal glycemic status re-evaluation with a 75 g OGTT at 6–12 weeks after delivery received 19.2 % (n = 5) of patients. 34.6 % (n = 9) of women considered having one more offspring in the future.

Conclusion. During the study, health care issues in women with GDM were identified, and it is therefore considered that continuation of the study would be beneficial. The risk score is easy to calculate, it could become a useful risk assessment tool for clinicians and may thus provide an opportunity to improve care of women with GDM and GDM-related long-term complications.

IX. OTORHINOLARYNGOLOGY, ORAL CAVITY PATHOLOGY, OPHTHALMOLOGY

AGE RELATED MACULAR DEGENERATION
AND PATIENTS EDUCATION

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Keywords. Age related macular degeneration, education.

Introduction. The third cause of blindness globally, age-related macular degeneration is one of the major causes of visual deficiency after cataract and glaucoma. Macular degeneration is caused when part of the retina deteriorates. Wet macular degeneration affects only about 15 % of people, but accounts for two-thirds of the people who have significant visual loss. However, the patients sometimes don't fully understand the diagnosis and this may affect further treatment and results.

Aim. The aim of this research is to identify the knowledge of the patients about age related macular degeneration progression and need of treatment as well as to identify the reasons for quitting the treatment.

Materials and methods. The study was conducted in Paul Stradins Clinical University Hospital from November 2016 till February 2017 by the participants of student scientific interest group of ophthalmology. Twenty four patients (17 women, 7 men) mostly from 65 to 85 years old were interviewed by using our validated questionnaire. Obtained data was analysed by Statistical Package for the Social Sciences (SPSS) program.

Results. The survey was completed by 24 patients (70 % women and 30 % men). Group I < 55 years old (4.2 %), group II 56–65 years old (4.2 %), group III – 66–75 (45.8 %), group IV 76–85 (45.8 %) and group V – 86 > (0 %). Majority of the patients (70.8 %) have regular checkups with an ophthalmologist instead of those (29.2 %), whose visits are rare. Intravitreal injections were made in 70.8 % of cases and 29.3 % of patients did not have the intravitreal injections. 62 % of the patients new, that the injections can reduce the progression. 79.3 % knew that it is required to do several injections. 58 % did not know the mechanism of the disease. 43.3 % or participant selected vitamins as a prophylaxis against macular degeneration, 20 % choose lutein, while 36.7 % did not know the right answer. Three patient's refusal of treatment reason was the financial difficulties. There is a strong statistical correlation between women education about the treatment compared to men ($p < 0.05$). At the same time, the correlation between correctly answered questions and disease type, frequency of visiting the ophthalmologist and age groups was not statistically significant.

Conclusion.
1. Women are better informed about treatment options and necessity of age related macular degeneration than men.
2. The majority of the patients are informed that the only method of treatment is receiving the intravitreal injections.
3. The financial difficulties are the main reason of the treatment refusal.

APICAL ROOT RESORPTION OF UPPER INCISORS DURING ORTHODONTIC TREATMENT IN CLASS III ORTHOGNATHIC SURGERY PATIENTS – CONE BEAM COMPUTER TOMOGRAPHY STUDY

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Keywords. Root resorption, Le Fort I, orthognathic surgery, orthodontics.

Introduction. Although severe root resorption is rare, it is a side effect of orthodontic treatment that affects the prognosis of the tooth. For patients with severe dentofacial deformations, to whom orthodontic treatment is planned at the age of 18 and later, long orthodontic treatment and orthognathic surgery is planned and root resorption risk factors are at a greater extent. Subject of the impact of orthognathic surgery on root resorption lacks evidence in literature, therefore is an interesting topic to research.

Aim. to identify risk factors for apical root resorption of maxillary incisors as a result of orthodontic and surgical treatment of Class III malocclusion involving LeFort I osteotomy.

Materials and methods. The root lengths of upper central and lateral incisors were measured on CBCT scans obtained from a database of orthognathic surgery patients. The measurements were performed on the scans taken before orthodontic treatment (T1), before surgery (T2) and after treatment (T3) for 28 subjects, age 20.5 ± 3.1 with the mean pre-surgery treatment time 19.9 ± 8.8 and post-surgery time 7.1 ± 3.1 months. Changes in root lengths at different time spans were correlated with the initial crown/root ratio and the severity of malocclusion (Wits appraisal, ANB angle, overjet).

Results. during T1T2 the roots of lateral incisors shortened by 0.78 ± 0.83 mm (p < 0.001), and the roots of the central incisors – by 0.62 ± 0.64 (p < 0.001), with the rate of 0.04 mm per month and 0.03 mm per month, respectively. During T2T3 the lengths of central incisor roots decreased by 0.49 ± 0.52 (p < 0.001) and of the lateral incisors – by 0.42 ± 0.48 (p < 0.001), with the rate of 0.07 mm per month and 0.06 mm per month, respectively. There were statistically significant correlations between the crown/root length and decrease of the root length during treatment for lateral (r = 0.319) and central incisors (r = 303). The associations among the decrease in the root length in different time spans for different teeth and the severity of malocclusion were inconsistent.

Conclusion. Overall the decrease in the root length of the upper incisors during combined orthodontic and surgical treatment was 1.1 mm and 1.2 mm for central and lateral incisors, respectively, what clinically might not be significant. After surgery the rate of decrease of the root length per month increased. The teeth with initially shorter roots showed more resorption during treatment.

A RETROSPECTIVE ANALYSIS OF PERITONSILLAR ABSCESS PATHOGENS AND LABORATORY TESTING WITH CORRELATION TO DIAGNOSIS BACKROUND

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Keywords. Otorhinolaryngology, peritonsillar abscess.

Introduction. Peritonsillar abscess is the most frequent children's head and neck deep space infection. The most common explanation is that peritonsillar abscess develops from inadequately treated bacterial tonsillitis. Infection mostly is polymicrobial. Peritonsillar abscess is mainly unilateral, but sometimes it can be bilateral as well. It can occur in all age groups, but more often in adolescents and young adults.

Aim. To find out the most common infectious agents of the peritonsillar abscess, to investigate the correlation between laboratory testing and clinical presentation, and also to establish the most common symptoms of this diagnosis.

Materials and methods. The research work includes retrospective data of forty patients in the group of age one to seventeen admitted to Children's Clinical University Hospital in period of time from 01.01.2016 to 01.01.2017.

Results. Forty patients were included in this study. There were 20 (50 %) female and 20 (50 %) male participants. 11.48 was the average age of patients. Only unilateral peritonsillar abscess was found. There were 17 (42.5 %) patients with abscess on the left side and 23 (57.5 %) had it on the right side. 13 (32.5 %) of all patients had had previous tonsillitis in the anamnesis, other 27 (67.5 %) had never had any tonsillar disease. Before consulting the ear-nose-throat (ENT) specialist, 15 (37.5 %) patients had first turned to the general practitioner for help and had received antibiotics that were not effective. The highest incidence rate was during the winter and summer. "Hot potato voice" or muffled voice was diagnosed in 17 (42.5 %) patients. Anterior displacement of the soft palate in the infected side was seen in 28 (70 %) patients. Limited ability to open the mouth was registered in 34 (85 %) patients, swollen submandibular lymph nodes in 11 (27.5 %) patients. Tested subculture samples from infected peritonsillar abscess side indicates that 9 (22.5 %) patients had tested positive for Streptococcus viridans, alpha – hemolytic, which is the most common pathogen, 7 (17.5 %) cases had tested positive for Streptococcus pyogenes. Nesseria spp. Sicca/Cinerea was found in 6 (15 %) patients. Subculture samples were tested positive for beta – hemolytic streptococcal infection C group for 2 (5 %), Staphylococcus aureus 2 (5 %), Streptococcus oralis 2 (5 %), and Streptococcus intermedius 1 (2.5 %), Streptococcus constellatus ABV 1 (2.5 %), Streptococcus anginosus 1 (2.5 %), Leuconostoc pseudomesenteroides 1 (2.5 %) and Streptococcus mitis 1 (2.5 %). Normal upper respiratory flora was found in 4 (10 %) cases. In 3 (7.5 %) cases tests were performed also for Corynebacterium diphtheria and beta – hemolytic streptococcal infection, but were tested negative. Laboratory testing results in patients at the start of the hospitalization was as follows: Leucocytes mean count was $16.65 \times 10^9/L$ (N = 39), SD = ± 5.89, CRO mean quantity was 54.62 mg/l (N = 39), SD = ± 39.129. After antibacterial therapy, needle aspiration or tonsillectomy leucocytes mean count decreased to 9.15 (N = 17), SD = ± 4.202, CRO also

decreased and the mean amount was 24.70 mg/l (N = 15), SD = ± 26.271. Open abscess drainage was performed for 24 patients and 6 of those patients had tonsillectomy. Re-hospitalization was assigned for 8 patients and 4 (50 %) of them had not had the subculture testing during their first hospitalization. 5 (62.5 %) patients had had the bilateral tonsillectomy at the second time of hospitalization.

Conclusion. In this study important correlation between laboratory testing, clinical symptoms and subculture testing was not found. Tonsils have a significant immunological role, especially in children. Therefore it is very important to determine which microorganisms have caused the inflammation in order to start the most suitable treatment and possibly lessen the necessity for tonsillectomy. It might be helpful to take samples for subculture in the correct method from peritonsillar abscess side exudation, which would lead to more accurate evaluation of microorganism and its sensitivity to the antibiotic therapy. The objective of this study which was established at the beginning was not completed in a full scale. The main reason for that is not having subculture testing performed for all of the 40 patients. It is possible that the cases of relapse would decrease if the subculture testing of peritonsillar abscess were performed in the beginning of the treatment process.

CHARACTERISTICS OF CATARACT PATIENTS DEPENDING ON THE LOSS OF VISUAL ACUITY

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Keywords. Cataract, visual acuity, vision loss, characteristics of patients.

Introduction. According to World Health organization, cataract is the most common cause of blindness worldwide with about 22 million patients all over the world. In each case vision loss progresses differently and it has various impact on the everyday life of every patient by restricting daily activities in some earlier than in others.

Aim. To identify the most common risk factors, impaired activities and symptoms of cataract patients and to analyse the possible association between these characteristics and visual acuity of patients.

Materials and methods. Study has been executed within Student scientific interest group. In this cross-sectional study patients (N 41) that had come to Pauls Stradins Clinical University Hospital for cataract operation were questionnaired, visual acuity was determined by using Snellen chart and intraocular pressure was measured by contact tonometer (iCare). Statistical analysis was done by using IBM SPSS software.

Results. Mean age of patients was 75 (SD = 7) years old, 71 % were women, 29 % – men. Duration of cataract was 4.91 (SD = 3.23) years on average, mean visual acuity in the worse-seeing eye (WSE) was 0.13 (SD = 0.14), while in the better-seeing eye (BSE) – 0.47 (SD = 0.28). At least 3 out of 11 risk factors for cataract were identified in 87 % of the patients and the most common were being overweight (68 %), having history of eye trauma, inflammation or operation (39 %) and positive family history (37 %). Mean count of restricted daily activities was only 3.0 (SD = 1.7) out of 11, and the most commonly impaired activities due to vision loss was

reading small print (76 %), watching TV (56 %) and reading a book or newspaper (49 %). On average patients had 2.7 (SD = 1.4) out of 5 symptoms, the most prevalent being blurry vision (80 %). The statistical analysis showed statistically significant (p < 0.05) association between visual acuity in the WSE and risk factor sum, count of restricted activities, the visual acuity of the BSE and the patients' level of satisfaction, but no statistically significant association between visual acuity in the WSE and symptoms present.

Conclusion. The most common risk factor among patients was being overweight, most common symptom – blurred vision and the loss of visual acuity mainly affected patients' ability to read small print. This study also showed statistically significant association between visual acuity in the WSE and the total of risk factors, count of restricted daily activities, the visual acuity of the BSE and the total patients' satisfaction with sight, but no statistically significant association between visual acuity in the WSE and the total of symptoms.

CONFORMITY OF SUBJECTIVE AND OBJECTIVE VISUAL ACUITY RESULTS IN CASE OF CATARACT SURGERY

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Keywords. Cataract surgery, visual acuity, vision.

Introduction. About 50 million blind people are estimated to be alive worldwide, and half of these cases are because of cataracts (Haschek et al., 2014). The most common sign of cataract is decreased visual acuity that is why it has been the standard measure of the visual effect of this disease (Yanoff et al., 2014). After cataract surgery vision can be successfully restored although it also depends on comorbidities.

Aim. To evaluate the patients' objective results of visual acuity and compare them to subjective assessment.

Materials and methods. In a prospective study 48 patients (48 eyes) who underwent uneventful cataract surgery in a single university hospital were selected. A questionnaire was conducted which included questions about participants' life quality assessment associated with vision. Objective visual acuity was determined on follow-up visits. Collected data were analysed with programs MS Excel and SPSS using descriptive statistical methods with confidence interval (CI) of 95 %. The study took place in Rīga Stradiņš University ophthalmology students' scientific circle.

Results. 48 patients from which 29 [95 % confidence interval = 0.46–0.73] were female 60.4 %, 19 male [0.27–0.54] (39.6 %). Mean age was 75.67, median age 77.

After cataract surgery 47 patients had improvements in visual acuity without correction and 1 patient showed no changes. Mean difference between vision acuity before and after surgery was 0.5 [0.42–0.58].

Mean mark for subjective vision assessment from 1 to 5 (1 is poor vision, 5 – very good) before surgery was 2.06 and after 4.25, average improvement is 2.19. 44 patients rated their vision after surgery as better than before, 4 had no changes.

By evaluating subjective vision impact on daily activity 30 patients [0.48–0.75] (62.5 %) claimed increased ability to read, 13 [0.16–0.41] (27.1 %) had no changes, decreased capability was in 5 cases [0.04–0.23] (10.4 %). 42 patients [0.75–0.95] (87.5 %) had improvements in watching television, 5 [0.04–0.23] (10.4 %) results were the same, 1 [0–0.12] (2.1 %) had worse. Generally, 6 patients [0.05–0.25] (12.5 %) stated that surgery had no impact on their daily activity, 13 [0.16–0.41] (27.1 %) showed minor changes, 29 [0.46–0.73] (60.4 %) had significant improvements.

There was not found significant correlation (p > 0.05) by using Spearman's test between subjective assessment of vision difference before and after surgery and difference of objective visual acuity before un after surgery.

Conclusion.
1. Subjective and objective vision acuity highly improved after cataract surgery although there was no significant correlation between these difference measures.
2. 87.5 % of patients had improvements in daily activity associated with vision after surgery, only 12.5 % had no changes.

CORRELATION BETWEEN CLEFT LIP AND PALATE AND CHRONIC SEROUS OTITIS MEDIA

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Keywords. Otorhinolaryngology, cleft lip and palate, chronic serous otitis media.

Introduction. Orofacial clefts are among most common congenital abnormalities. In the world approximately 1 case of orofacial cleft occurs in every 500–550 births. Cleft complications depend on its type and severity. Complications like feeding and weight gaining difficulties, speech difficulties, social and emotional problems, teeth development problems can be present. Besides the above mentioned complications chronic serous otitis media is common in patients with cleft lip and palate. It leads to hearing problems in children. So, before uranoplasty or veloplasty all children should have an ear nose throat (ENT) specialist consultation in the Children's hearing center of Latvia to check if they have chronic serous otitis.

Aim. Retrospectively collect and analyse medical records of patients who had a consultation in the Children's hearing center of Latvia with diagnosis "chronic serous otitis media" H65.2.

Materials and methods. This was a survey of clinical records of all 93 patients who had undergone ENT specialist consultation in the Children's hearing center of Latvia before uranoplasty or velanoplasty during the time period of 2010–2016. Patients younger than 1 year of age were excluded. Statistical analysis of data was performed using IBM SPSS software.

Results. Analysis of 93 (50 female patients, 43 male patients) records showed, that there is correlation between cleft lip and palate and chronic serous otitis. 67 patients (72 %) had otitis. All patients were older than 1 year of age. The overall ratio of males to females is 1:1.2. Pearson Chi-Square 0.206 (1) P = 0.650 which means there are no correlations between chronic serous otitis media in patients with cleft lip and palate and gender.

Conclusion. This study showed that there is a correlation between cleft lip and palate and chronic serous otitis media. There is no significant difference between male and female patients.

EFFECT OF ANTIHYPERTENSIVE THERAPY
ON DRY EYE DISEASE

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Keywords. Dry eye disease, tear film osmolarity, antihypertensive therapy.

Introduction. In 2015 1.3 billion of adults worldwide were affected by arterial hypertension (NCD Risk Factor Collaboration, 2017). Antihypertensive (antiHT) medication is the most common reason for use of prescription drugs (Jarari et al., 2015). There is a suggestive evidence that antiHT medication is associated with development of dry eye disease (DED) *(Report of the International Dry Eye WorkShop, 2007).*

Aim. To evaluate the tear film osmolarity (TFO), reflex tear flow (RTF) and symptoms of DED in patients on antiHT therapy.

Materials and methods. A prospective case-control study was done in Pauls Stradins Clinical University Hospital from November 2016 to February 2017. 46 patients were included, interviewed and divided into 2 groups: 18 (39 %) patients with no medical history of antiHT therapy in the control group and 28 (61 %) patients on antiHT medication in the research group. Bilateral TFO was measured using *TearLab Osmolarity System* (TearLab Corporation, San Diego, CA, USA), the highest measurement, comparing both eyes, was used for further analysis. RTF was measured with Schirmer I test. All selected data were analysed by applying Microsoft Office Excel 2010 and IBM SPSS 22.0.

Results. The study was composed of 46 eyes of 46 patients, among them 28 (61 %) were females and 18 (39 %) were males. The mean age of patients was 73.4 ± 9.0 years ($\pm$ SD). The mean TFO in the control group and the research group was 298.67 ± 9.18 mOsm/L and 309.86 ± 14.87 mOsm/L, respectively. Increased TFO, above generally accepted threshold value > 308 mOsm/L, was observed in 3 (17 %) patients of the control group and in 17 (61 %) patients of the research group (p = 0.006, Fisher's Exact Test).

RTF (threshold value < 10 mm per 5 minutes) was almost equal in both groups averaging 11.33 ± 9.05 mm in the control group and 11.21 ± 9.78 mm in the research group. There was no statistically significant difference in RTF between both groups (p = 0.758, Fisher's Exact Test). There was no correlation between TFO and RTF results ($r_s = 0.074$, p = 0.624, Spearman's Rank Correlation Test).

Subjective symptoms of DED correlated poorly with TFO and RTF, there was no significant difference in both groups (p > 0.05).

Patients of the research group were 2.0 times more likely to develop DED [95 % confidence interval (CI) = 1.24–3.26].

Conclusion. In the research group patients had higher TFO than patients in the control group. There was no difference in RTF in both groups. There was no correlation between TFO and Schirmer test I, and no correlation between subjective symptoms and both test results. AntiHT therapy is a risk factor for DED.

EVALUATION OF SUBJECTIVE COMPLAINTS
IN CONNECTION WITH VISUAL ACUITY
AFTER CATARACT SURGERY

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Keywords. Cataract surgery, refraction, complaints.

Introduction. Cataract surgery is one of the most effective and safest operations not only in ophthalmology, but also in medicine. According to literature it has a very low rate (2–5 %) of complications that result in permanent impairment of vision. However, it is important to evaluate patient complaints and objective parameters to ensure successful postoperative period.

Aim. The aim of this study was to evaluate patients subjective complaints and its association with visual acuity 1 week after cataract surgery.

Materials and methods. A prospective study was done in a single university hospital from December 2016 – February 2017. We interviewed and examined 48 patients 1 week after they had undergone phacoemulsification with IOL implantation. Informed consent was obtained in all cases. All data were analysed by SPSS 20.0. The study was done within Rīga Stradiņš University student interest group.

Results. From 48 patients there were 33 (68.75 %) females and 15 (31.25 %) males. Mean age of patients was 75.33 ± 7.94. The average improvement of visual acuity one week after cataract surgery was 0.59 ± 0.28. 60.42 % (95 % CI = 46.58–74.25 %) of patients had sandy, gritty sensation in the operated eye during first week after surgery. Watery tearing and stringy mucus in the eye experienced 20.83 % (95 % CI = 9.34–32.32 %) and 12.5 % (95 % CI = 3.14–21.86 %) of patients respectively. In 41.67 % (95 % CI = 27.72 – 55.61 %) of cases there were complaints about redness in the eye. Blurry vision in the eye had 27.08 % (95 % CI = 14.51–39.65 %) of patients and bright light caused eye discomfort in 37.5 % (95 % CI = 23.80–51.20 %) of cases. In 10.42 % (95 % CI = 3.47–22.66 %) of cases patients had no complaints at all. On average, every patient had 2.08 ± 1.44 number of complaints. Correlations between change in visual acuity before and after cataract surgery (ΔVA) and number of complaints (C) were calculated and tested for statistical reliability. Using Spearman statistical test, it was found that the correlation between ΔVA and C does not exist: correlation coefficient ΔVA/C = −0.104, p = 0.482.

Conclusion.
1. Sandy, gritty sensation in the operated eye is the most common complaint during the first week after cataract surgery.
2. There is no statistical reliability to prove that number of complaints in the 1st week after cataract surgery is associated with the change in visual acuity.

EXTRAORAL TECHNIQUE OF COMPUTER AXIOGRAPHY

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Keywords. Computer axiography, diagnostics, mandible movements.

Introduction. Pathological processes connected with teeth correlation disorders, temporomandibular joint and masticatory muscles dysfunctions are widely spread in dental patients. So the development of modern techniques providing graphic registration of mandible movements is considered to be a prospective direction of dental research. Versatile intraoral and extraoral techniques of mandible movement registration are known nowadays. However, intraoral registration causes the irritation of the tissues around the patient's oral cavity and is rather complicated in terms of the setting and adjustment of the registering pins. While extraoral techniques with the use of existing constructions prevent free mandible movements and permanent preserving of antagonist contact.

Aim. So our research was aimed at the development of extraoral technique of mandible movement registration due to the design of the gumshield (to register mandible movements) and the portable wireless device (to transmit the received data to the PC) and testing them in vivo.

Materials and methods. Extraoral technique of mandible movement registration with the help of face bows was first suggested by Gisy and is represented by "Protar", "Stratos-200", "Bio-Art" systems. However, similar but simple techniques for ambulance practice are not available. So the suggested gumshield consists of vestibular and oral composite plates linked with metal separation strip placed between the patient's frontal teeth. It provides completely free movement of the teeth occlusive surface with the free shifting of mandible dentition along the antagonist one. Photocomposite uses simplify its adaptation on the model and further fitting in the oral cavity. The device consists of retentive occulars, a stand that moves in vertical and sagital dimensions and a computer mouse regulating horizontal dimension. The gumshield is placed on the patient's mandible dentition. The person participating in the test puts on the retentive occulars with the device, adjustable in three dimensions according to the gumshield moving table position. Bluetooth signal is transmitted to the PC. Its mouse cursor movements reproduce the direction and range of mandible movements. Standard software Paint (Windows10) saves the image into a file.

Results. In vivo testing of the designed diagnostic technique proved its informativeness, convenience and economic benefit for both scientific research and ambulance practice.

Conclusion. The suggested gumshield with the open occlusive surface can be considered as an independent unit and used for the design of other diagnostic devices as well as the idea of Bluetooth signal transmission.

FEEDING DISORDERS IN CHILDREN WITH OROFACIAL CLEFTS

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Keywords. Orofacial clefts, feeding, parent knowledge.

Introduction. Cleft lip and/or palate are the most common form of craniofacial defects and may occur isolated or in association with other anomalies. It is estimated that these defects affect approximately 1 in every 600 newborn babies worldwide. Each year in Latvia, about 30–40 babies are born with an orofacial clefts (OFCs). Children with OFCs often require multiple surgeries, procedures, and follow-up care after their initial surgical repair due to potential feeding problems, speech and language development. The feeding process is complicated due to nasal regurgitation of food, excessive air intake that results in frequent burping and choking. Feeding time is significantly longer and fatigues both baby as well as mother.

Aim. The purpose of this study was to identify and analyse the prevalence of feeding problems faced by parents of children with OFCs.

Materials and methods. Total of 93 parents were surveyed in Riga Cleft Lip and Palate Centre during November 2015 to December 2016. The questionnaire consisted of 29 questions asking parents about child's feeding problems, complications and concomitant diseases. Parents were also asked about the accessibility of information. Data was statistically analysed with Microsoft Excel, IBM SPSS 22.0.

Results. In total, 93 questionnaires were included in this study. Fifty-nine percent of the parents reported that the presents of cleft influenced the choice of type of infant feeding. The expressed breast milk using a bottle was the most common choice of first infants feeding (46 %). Nasogastric feeding is often necessary (11 %), and breastfeeding was infrequently given (21 %). After the first feeding 53 % of the parents have changed the way of feeding their child.

Despite the problems with feeding 68 % of parents noted that the weight gains in the first year was within normal limits. When fed 58 % babies experienced nasal regurgitation of food, 46 % food leakage around the mouth, 41 % excessive air intake, 40 % chocking, 24 % fatigue and 20 % coughing.

Only 45 % of parents have received sufficient information in hospital about the child care and feeding. Parents reported that the staff knew little about clefts and could not answer the parents' questions.

Conclusion. Study results showed that children with OFCs are at high risk of developing feeding difficulties. In many cases, the presence of OFCs affects the choice of feeding method. Bottles with extracted milk, nasogastric feeding and breastfeeding are the most common choice.

Our survey revealed that many parents were unsatisfied with the initial information received at the hospital.

FOLLOW-UP OF 10 UVEAL MELANOMA PATIENTS IN LATVIA

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Keywords. Uveal melanoma, brachytherapy.

Introduction. Uveal melanoma highly aggressive and the most common primary intraocular malignancy in adults. It affects about six to ten per million Caucasians in the United States and Europe. Melanoma manifests as a unifocal, variably pigmented mass arising from melanocytes in the uveal tract. It can invade into the orbita, it metastases primarily to the liver, lungs or skin.

Aim. The purpose of this study was to describe uveal melanoma patients in Latvia, analyse the appearance of this disease, quantify patients' complaints, make objective findings and evaluate therapies effectivity.

Materials and methods. Retrospective data collection of medical records from patients diagnosed with uveal melanoma, who have received brachytherapy and been to ophthalmologic control at P. Stradiņa University hospital, Eye clinic's in year 2015 and 2016. Categorical data were analysed in MS Exel.

Results. All together 10 patient's medical histories were analysed. Mean age of the study population was 68.14 (SD ± 6.33) years, 70 % (n = 7) were male and 30 % (n = 3) were female. All patients had posterior uveal melanoma – choroidal melanoma. Major complaints ranged from discomfort, tearing, blurred vision, floaters, line deviation, pressure, sharp pain to sudden vision loss. For ophthalmologist consultation 20 % (n = 2) of patients sought one month, 20 % (n = 2) two months, 30 % (n = 3) more than four months after their first complaints.

By *the American Joint Committee of Cancer (AJCC) Tumour – Node – Metastasis (TNM) classification, 7th edition*, based on eye ultrasonography data, 40 % (n = 4) of patients had T1a, 20 % (n = 2) had T2a, 40 % (n = 4) had T3a and 0 % (n = 0) had T4 local tumour size category. 80 % (n = 8) of patients had melanoma complication – secondary retinal detachment.

For treatment, all patients received brachytherapy (performed in Tallinn). 80 % (n = 8) had one procedure, 20 % (n = 2) patients needed to perform two manipulations. Before treatment patients' visual acuity (*Visus*) without correction ranged from seeing the light to 0.9 and afterwards – form total blindness to 0.8. There were no physical eye complains (pain, discomfort) after brachytherapy.

Conclusion. Although Uveal melanoma is a rare disease, it always needs to be excluded by ophthalmologist. Especially, if there are any risk factors. Ophthalmologist's need to inform people of the necessity to ask for consultations when any vision problems occurs and to stress the importance of the annual prophylactic eye consultations. Brachytherapy is an effective treatment option for melanoma, since it can stop the malignant process and at the same time preserve patients' visual acuity. These patients need to perform screening procedures for the avoidance of metastases.

HERBAL MEDICATIONS ANTIMICROBIAL CHARACTERISTICS

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Higher State Institution of Ukraine "Ukrainian Medical Stomatological Academy", Ukraine

Keywords. Herbal medications, antimicrobial action.

Introduction. Herbal drugs are widely used in domestic and foreign medicine, due to their natural composition, complementary action, high safety, possibility of using in children from 5 years old and in women during pregnancy and lactation.

Aim. To study the sensitivity of museum strains of microorganisms to the medications that are based on extracts of medicinal plants.

Materials and methods. Antimicrobial activity of timsal and panavir in comparison with similar effect of plant antiseptics rotokan, pectolvan, phytodent, maraslavin and chlorophylipt was studied. 70 % ethanol and 0.05 % chlorhexidine solutions were in control. *S. aureus* ATCC25923, *S. epidermidis* ATCC 14990, *E. faecalis* ATCC 29212, *E. coli* ATCC 25922 and *C. albicans* ATCC 10231 were test strains. The sensitivity of standard strains of microorganisms to the drugs was studied by serial dilution and indicator discs methods according to the MH of Ukraine №167 order dated 05.04.2007 "On approval of methodical instructions "Determination of sensitivity of microorganisms to antibiotics"". Statistical processing of the obtained results was carried out by Microsoft Excel 2010 using.

Results. We were found that rotokan, phytodent and panavir showed bacteriostatic effect against *E. coli* at a concentration of 12.5 %. A similar effect had the drug control chlorhexidine. The most active antibacterial effects had timsal. Bacteriostatic action against a museum strain of *E. coli* had a 6.25 % solution of the preparation. Widely known herbal medicines maraslavin, rotokan, pectolvan and phytodent did not show bacteriostatic effect to staphylococci. Antibacterial activity of timsal was higher compared with the chlorhexidine control at 2 times ($p < 0.05$). Enterococci were the most sensitive to panavir (MBD 1:16), rotokan (MBD 1:8) and chlorhexidine (MBD 1:8). The same medications in dilution 1:2 had fungicidal action. *C. albicans* was the most sensitive to rotokan (MBD 1:4). It was higher than chlorhexidine in 1.44 times ($p < 0.05$). Undiluted timsal also was the most active against *E. coli* and staphylococci in comparison to other plant resources, chlorhexidine and 70 % ethyl alcohol. Panavir was the most effective against *Enterococcus*, antibacterial effect was 2.1 times ($p < 0.05$) exceeded the activity of chlorhexidine.

Conclusion. The results showed that the most effective herbal antiseptic drug was timsal and the high antibacterial activity against a museum strain of enterococci has antiviral drug panavir. So timsal and panavir are useful for the treatment of the oral cavity mucous membrane diseases and lesions of the periodontal tissues in the form of applications, irrigations, gargles and mouth trays. Fungicidal activity was the best in medication rotokan that can be recommended for local application in treatment of fungal lesions of the oral cavity mucous membrane.

HOW TO SPEED UP ORTODONTIC TREATMENT WITHOUT COMPLICATION FOR THE PATIENT

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Keywords. Orthodontics anomalies acceleration treatment.

Introduction. The most common treatment of orthodontic anomalies is removable orthodontic technique in different modification. Each year, an increasing number of orthodontic patients are interested in not only restore of normal chewing and correct the aesthetic defect, but the process and duration of treatment.

Aim. We want to show, that ever practicing orthodontist regardless of equipment, expert level and financial support can accelerate the treatment process if used simple methods without compromising for patient.

Materials and methods. 40 patients with different orthodontic anomalies, 30 of whom were treated using the methods of speeding up treatment, 10 – a control group, that was treated by conventional rules. We used mathematics statistics relative to the average treatment duration 1.5 years.

Results. In 100 % of cases (30 patients) of speeding up the treatment time was able by more than 25 % without compromising for patient in comparison with the control group (10 patients). Side effects such as abnormal mobility of teeth, pain symptoms or inflammation of the oral cavity were not found.

Conclusion. Application of photo protocol by fixation, individualization of brackets shape and buccal tubes, using a dosage forces, and cooperation patient with the doctor allow to speed up the treatment for 25 % and more. Using edgewise technology in treatment of orthodontic anomalies can achieve good results without harm to the patient and additional costs in case of using these methods.

OTOLARYNGOLOGICAL SYMPTOMS IN PATIENTS WITH RHEUMATIC DISEASES

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Keywords. Rheumatic diseases, otolaryngological symptoms.

Introduction. According to EULAR data (2016) more than 120 million people in Europe are affected by rheumatic diseases. Those diseases are leading cause of morbidity and disability.

Analysis of literature shows that such rheumatic diseases as Wegener's granulomatosis, systemic lupus erythematosus, etc. may appear with different otolaryngological symptoms. Early recognition and treatment of rheumatic diseases play important role in maintaining patients' good quality of life.

Prior to this study statistical analysis of such data was not conducted in Latvia.

Aim. To analyse patient's records from Pauls Stradins Clinical University Hospital (PSCUH), who were hospitalized based on following diagnoses: Wegener's granulomatosis, systemic lupus erythematosus, relapsing polychondritis, systemic sclerosis, polymyalgia rheumatica, dermatomyositis, polymyositis, Churg-Strauss syndrome. To find the most common ENT (ear, nose, and throat) symptoms in patients with rheumatic disorders. To find rheumatic diseases, which began with otolaryngological symptoms.

Materials and methods. Retrospective study was conducted using records of patients with previously mentioned rheumatic diagnoses who were hospitalized in PSCUH during the period from 1 January 2014 to 31 October 2016. The data obtained was statistically processed using SPSS 22.0 software.

Results. Otolaryngological symptoms are found more often among patients with Wegener's granulomatosis: chronic rhinitis, bilateral otomastoiditis, deviated nasal septum and sinusitis. The most common ENT complications among these patients are mixed hearing loss and septal cartilage defect.

Other common rheumatic diseases that may have ENT symptoms are relapsing polychondritis and systemic sclerosis. Patients with relapsing polychondritis had such otolaryngological diagnoses as destruction of laryngeal cartilages, laryngeal edema and bilateral sensorineural deafness. In patients with systemic sclerosis most common ENT problems were xerostomia, swallowing difficulty and chronic rhinopharyngitis.

Among analysed rheumatic diseases some cases of Wegener's granulomatosis and all cases of relapsing polychondritis started with otolaryngological symptoms.

Conclusion. The most common rheumatic diagnoses with possible ENT symptoms are Wegener's granulomatosis, relapsing polychondritis and systemic sclerosis. Due to possibility of developing serious complications (such as hearing loss) among patients with rheumatic diseases, early recognition and proper treatment of ENT disorders is crucial. For rheumatologists and ENT specialists it is necessary to know possible otolaryngological symptoms of rheumatic diseases.

PATIENT PROFILE AND COMPLICATIONS IN PEDIATRIC COCHLEAR IMPLANTATION

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Keywords. Cochlear implantation, hearing loss, pediatric, complications.

Introduction. Sensorineural hearing loss (SNHL) is due to dysfunction of inner ear or auditory nerve, it can be acquired or congenital, > 60 % of cases are attributed to genetic causes and can either be syndromic or non-syndromic. Patients with SNHL can benefit from cochlear implants – auditory prostheses designed to translate acoustic signal into electrical stimulation. Cochlear implantation (CI) can be unilateral or bilateral. Patients can be selected for CI if they are ≥ 1 year old. Early and late onset complications are possible, e.g. seroma, hematoma, mastoiditis.

Aim. To obtain count of CI performed in Children's Clinical University Hospital (CCUH) during 2012–2016, both unilateral and bilateral, evaluate characteristics of patients, determine frequency of complications.

Materials and methods. Retrospective descriptive study of patients who underwent CI in CCUH during 2012–2016 using CI register and database Andromeda. Patients > 17 years were excluded. IBM SPSS 23.0 software (Descriptive statistics) was used for statistical analysis.

Results. In 5 years 65 CI for 55 patients were performed. In 2012 – 11 CI, 2013 – 9, 2014 – 12, 2015 – 15, 2016 – 18. Unilateral CI was performed on 43 patients, 9 patients underwent bilateral CI and 2 patients who underwent CI before 2012 received their second implant. 2 CI were reimplantations due to complications – 1 of CI performed during 2012–2016, 1 – before 2012. 34 patients (52.3 %) were men, 31 (47.7 %) – women. The mean age was 3.7 years, mode – 2 years, median – 3 years (range 1–14 years). In 54 CI (83.1 %) hearing loss was congenital, 5 (7.7 %) – acquired, data could not be obtained in 6 (9.2 %) CI. GJB2 gene analysis was performed in 9 cases (13.8 %), mutation was found in 5 cases (55.6 %). In 32 cases (49.2 %) patients had no comorbidities. The most frequently associated conditions were mental and behavioral disorders (38.5 %), preterm labor (15.4 %), infections in perinatal period (12.3 %), hypoxic ischemic encephalopathy of newborn (9.2 %), as well as respiratory system, circulatory system and eye disorders and paralytic syndromes. 45 (69.2 %) CI were done in right ear, 18 (27.7 %) in left, in 2 (3.1 %) CI side was not stated. Complications occurred in 3 cases (4.6 %) – 1 early onset complication – hematoma, 2 late onset complications – device defect and mastoiditis.

Conclusion. Number of CI performed tends to rise, perhaps due to state-funded bilateral CI since 2015. It is not always possible to determine a specific etiological factor for hearing loss. Surgeons should keep in mind, that their patients may have associated disorders. The frequency of complications was found to be low, indicating that CI surgery is relatively safe.

PROGRESSION OF GEOGRAPHIC ATROPHY IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION DEPENDING ON ANTIVASCULAR ENDOTHELIAL GROWTH FACTOR INJECTION COUNT

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Keywords. Geographic atrophy, age-related macular degeneration, anti-VEGF injections.

Introduction. Age-related macular degeneration (AMD) is a progressive disease leading to substantial visual loss. (Schutze et al., 2015) Geographic atrophy (GA) is a late stage of AMD. Approximately 10 % of AMD patients will develop GA. It is gradual and irreversible process of disease and visual loss progression. (Holz et al., 2013) The trials how to get slower GA progression are intravitreal anti-VEGF injections.

Aim. To research the correlation of intravitreal anti-VEGF injection count and GA progression area after 24 months treatment period in Pauls Stradins Clinical University Hospital (PSCUH) for the patients with diagnosis of AMD.

Materials and methods. Retrospective research included patients with diagnosis AMD GA who received at least 24 month long intravitreal anti-VEGF injection treatment. Using patient ambulatory cards in PSCUH Department of Ophthalmology for age and injection count collection, Heidelberg Spectralis Optical Coherence Tomography (OCT) for GA area measured. To collect and analyse all data Excel 2013 and SPSS 22.0 was used.

Results. The research included 33 eyes of 33 patients. Right eyes were 18 (54.5 %), left eyes – 15 (45.5 %). There were 24 (72.7 %) women and 9 (27.3 %) men with the mean age ± standard deviation (SD) 81.9 ± 6.6.

The mean injection count in 24 month treatment period was 9.1 ± 4.6. The GA area was measured before the therapy, after 12 and 24 months of anti-VEGF injections. Mean baseline GA area was $0.736 \pm 0.73\ \mu m^2$, after 12 month treatment GA area was $1.064 \pm 0.81\ \mu m^2$ (mean enlargement of $0.33 \pm 0.292\ \mu m^2$), but after 24 month treatment it was $1.445 \pm 0.91\ \mu m^2$ (mean enlargement $0.71 \pm 0.38\ \mu m^2$).

There were weakly correlation between injection count and the GA area enlargement ($r = 0.123$; $p = 0.49$).

Conclusion. For all patients with diagnosis AMD GA, atrophy area enlarged in 24 month treatment period. But there is no statistical reliability that the result of intravitreal injection count would be associated with or without AMD GA area enlargement.

TEAR FILM FUNCTION IN DIABETIC PATIENTS AND CHANGES AFTER CATARACT SURGERY

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Keywords. Tear film, diabetes mellitus, cataract surgery.

Introduction. Global prevalence of diabetes is rising every year. One of the complications connected with diabetes is cataract, as well as dry eye syndrome (Zhang et al., 2016). Cataract surgery could worsen or provoke symptoms of the ocular surface (Sutu et al., 2016).

Aim. To evaluate tear film function in diabetic and non-diabetic patients by measuring the reflex tear flow with Schirmer's I test (SIT) and tear film osmolarity with TearLab osmolarity system (TLOS).

Materials and methods. In this prospective, case-control, single-center study 46 patients were enrolled and 46 eyes analysed. Patients were divided in study group (8- diabetes) and control group (38- diabetes not diagnosed). All patients underwent cataract surgery. The TLOS and SIT were performed to evaluate tear film state before the cataract surgery and 1 week after. Also, data about past medical history and subjective symptoms were collected. All data were analysed with SPSS 22.0.

Results. The mean patient age ± standard deviation (SD) was 70.13 ± 10.33 years in study group and 74.57 ± 9.32 years in control group. The mean tear film osmolarity (TFO) in the study group before surgery was 293.88 ± 15.68 mOsm/l and 301.42 ± 13.94 mOsm/l in the control group, however, there was no significant difference in TFO between these groups (independent t-test, p = 0.18). The mean SIT value in the study group before surgery was 8.75 ± 4.30 mm and 12.57 ± 9.93 mm in the control group, no statistically significant difference was found (independent t-test, p = 0.10). After cataract surgery the mean TFO in the study group was 304.50 (18.49) mOsm/l and 296.57 (12.40) mOsm/l in the control group, which shows no significant difference (independent t-test, p = 0.18). The average SIT value in the study group after surgery was 16.50 ± 7.91 mm and 13.83 ± 9.34 mm in the control group, no significant difference was observed (independent t-test, p = 0.476). Paired Samples T-test was performed to analyse cataract surgery effect on tear film function. It showed that in study group SIT values significantly increased after surgery (p = 0.01), however, increase in TFO was not significant (p = 0.318). In control group TFO significantly decreased after the surgery (p = 0.01), nevertheless, the decrease in SIT values was not significant (p = 0.45). There was no statistically significant difference regarding subjective symptoms connected with ocular surface dysfunction and their frequency (Fisher's Exact test, p > 0.05).

Conclusion. There is no difference in TFO and secretion between diabetic and non-diabetic patients either before cataract surgery, nor 1 week after. After cataract surgery non-diabetic patients are prone to have lower osmolarity values, but diabetic patients – higher reflex tear flow than before.

THE ASSOCIATION BETWEEN TEAR OSMOLARITY, REFLEX TEAR FLOW AND SUBJECTICE SYMPTOMS OF THE DRY EYE DISEASE IN PATIENTS AFTER CATARACT SURGERY

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Keywords. Dry eye syndrome, cataract surgery, tear film osmolarity.

Introduction. There is an evidence that patients after cataract surgery in postoperative period are associated with development of dry eye disease (DED) (Report of the International Dry Eye WorkShop, 2007). As symptoms alone are insufficient for the diagnosis of DED (Sullivan et al., 2014) and tear film osmolarity (TFO) has been offered as a "gold standard" in DED diagnosis (Stahl et al., 2012) there is a lack of information about association between subjective and objective signs of DED after cataract surgery.

Aim. To compare the TFO, reflex tear flow (RTF) and subjective symptoms of DED after cataract surgery.

Materials and methods. A prospective, non-randomized case series study was done in Pauls Stradins Clinical University Hospital from November 2016 to February 2017. 20 patients were included and interviewed one week after cataract surgery. TFO in the operated eye was measured using TearLab Osmolarity System. RTF in the operated eye was measured with Schirmer test I. Collected data was analysed using Microsoft Excel 2010 and IBM SPSS 24.0. This study was done within the Students scientific group of Ophthalmology.

Results. The study included 20 eyes of 20 patients, 13 (65 %) of them were females, 7 (35 %) were males. The mean age ± standard deviation (± SD) was 72.5 ± 10.2 years. Mean TFO among patients (n = 20) was 302.00 ± 14.65 mOsm/L. Mean RTF was 14.45 ± 8.91 mm.

From all patients, there were 4 (20 %) with TFO results above generally accepted threshold value > 308 mOsm/L. The mean TFO among them (n = 4) was 321.75 ± 14.59 mOsm/L. There were 7 (35 %) patients with decreased RTF (recommended threshold value < 10 mm per 5 minutes) with the mean RTF 6.57 ± 1.90 mm. There was no statistically significant connection (p = 1.000, Fisher's Exact Test) and no statistically significant correlation (r = −0.105, p = 0.662, Pearson's Correlation Coefficient) between TFO and RTF.

15 (75 %) patients had at least 1 to 6 subjective symptoms of DED. Among them (n = 15) were 11 (73 %) patients with TFO < 308 mOsm/L and 10 (67 %) patients with RTF > 10 mm. There was no statistically significant connection between subjective symptoms and TFO (p = 0.530, Fisher's Exact Test) and between subjective symptoms and RTF (p = 1.000, Fisher's Exact Test).

Conclusion. The results demonstrate that there was no statistically significant association between symptoms of the DED and objective data as TFO and RTF in patients after cataract surgery. Also, there was no statistically significant association and correlation between TFO and RTF.

THE ROLE OF DIET IN THE DEVELOPMENT OF PERIODONTAL DISEASE IN OVERWEIGHT PATIENTS – A SYSTEMATIC REVIEW AND META-ANALYSIS

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Keywords. Periodontitis, diet, obesity.

Introduction. Obesity is the fifth most common cause of death worldwide. Fatty tissue is an active endocrine organ which ensures the secretion of bioactive substances that are involved in the inflammatory processes thus could be related to periodontitis as well as other inflammation-related diseases. However, it is not known if some type of diet is related to periodontitis in overweight patients.

Aim. To find if a specific type of food is related to higher risk of periodontitis in overweight individuals.

Materials and methods. We searched the following electronic databases: PubMed, Science Direct, Web of Science, Proquest, EBSCO, Wiley Online Library and Scienceresearch. com (up to October 2016) to find relevant cohort or case control studies in adult population. We analysed included studies by GRADE. Data concerning diet and periodontal disease was extracted and analysed with the R statistical software and the tydiverse package. For continuous outcome, we used the meta package with the function metacont.

Results. We included 3 studies in qualitative and 2 – in quantitative analysis. Acquired evidence showed to be very low quality. Meta-analysis results revealed that patients with an increased consumption of sugar (> 10 % of the daily calorie intake) are approximately 2.5 (95 % CI = 1.44–4.39) times more likely to bleed while probing or exhibit loss of alveolar bone attachment, whereas patients who consume animal-based fat are approximately 3.75 (95 % CI = 2.43–5.78) times more susceptible to the condition. We revealed that decreasing the sugar consumption to less than 10 % of the daily calorie intake, the bleeding index is on average decreased by 4.6 % (95 % CI = 5.03–4.17), whereas avoiding the consumption of animal-based fat decreases this index by 6.3 % (95 % CI = 7.1–5.5) on average.

Conclusion. Weak, very low quality evidence shows that sugar and meat consumption could be related to higher risk of periodontal diseases. Qualitative longitudinal research is needed to investigate more impact of different diet on periodontal diseases in overweight individuals.

ULTRAMICROSCOPIC STRUCTURAL FEATURES OF PHARYNGEAL TONSIL DEPENDING ON COMORBIDITY OF NOSE AND PARANASAL SINUSES IN ADULTS

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Keywords. Ultramicroscopy, pharyngeal tonsil, adenoids.

Introduction. There are no data on the incidence of pharyngeal tonsil (PT) hypertrophy and its impact on the ENT organs in adults in literature. It is well known, that nasopharynx review is not always available. Even within posterior rhinoscopy, diagnostic of PT hypertrophy and adenoiditis remains an urgent problem of adult otorhinolaryngology.

Aim. To explore activity of PT in adult patients depending on the comorbidity of nose and paranasal sinuses.

Materials and methods. 111 PT biopsies of adult patients of different age groups operated on inflammatory (58 persons, PTI 1–3 (palatine tonsile inflammation)) and noninflammatory (53 persons, PTD 1–3 (palatine tonsile deviation)) diseases of nose and paranasal sinuses were studied. For control group (CG) were taken autopsies of PT of adults who suddenly died from severe gastrointestinal bleeding. Ultramicroscopic study was made on 1 mm3 piece of material using transmission electron microscope PEM-125 with digital video camera (SELMI, Sumy).

Results. In PTI 1–3 groups increasing in the percentage of B-lymphocytes (BL) compared to CG was found. The ultrastructure of cells characterized by a reduction of heterochromatin and expansion of perynuclear space. On the surface of kariolema clusters of ribosomes were observed. It may indicate an increase of velocity of protein synthesis. Some mitochondria were swollen, with enlightened grained matrix, which can be classified as intensity of energy metabolism in cell. Number of activated BL was also increased. Number of T-lymphocytes (TL) was correspond to CG. In PTD 1–3 groups ultrastructure of PT was mainly presented with BL of normal structure. Unlike CG in PTD 1–3 groups slight increase of the number of TL and their intracellular activity was observed. Ultrastructure of PT in PTD 1–3 groups was characterized by increasing of number of heterochromatin in BL nuclei, that indicated a decrease of activity of cells. TL of PT of PTD 1–3 contained more heterochromatin than in PTI 1–3 groups.

With age in all groups significant reduction in number and activity of BL and significant increase of collagen fibers and fibroblasts in the intercellular matrix were observed. Decrease of nuclei area and increase of heterochromatin were registered. Activated BL were not practically observed. All changes listed above are responsible for sclerotic changes in PT.

Conclusion. Value of TL and BL depended on the genesis of comorbidity: in PTI 1–3 groups an increase of number and activity of BL were observed, whereas in the PTD 1–3 groups TL number and activity were increased. With age in both groups involutive changes, such as sclerosing of tonsil tissue and decrease of number and activity of immune cells, were observed.

CORNEAL TOPOGRAPHY AND VISUAL ACUITY CHANGES IN PATIENTS WITH KERATOCONUS AFTER CORNEAL CROSS-LINKING AND CORNEAL SEGMENT IMPLANTATION

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Keywords. Keratoconus, cross-linking, corneal segment.

Introduction. Keratoconus is a progressive, non-inflammatory, degenerative disorder of the cornea, which results in the corneal tissue structural changes – the cornea becomes thin and conical. There are various therapeutic options in the treatment of keratoconus in Latvia, most common are corneal cross-linking and corneal segment implantation.

Aim. Through the retrospective data analysis, examine visual acuity and corneal topographic changes after corneal cross-linking and corneal segment implantation.

Materials and methods. The study was conducted at the Dr. Solomatin Eye rehabilitation and vision correction center. The study included 34 patients (42 eyes) (76 % men, 24 % women) in corneal segment implantation group and 23 patients (25 eyes) (65 % men, 35 % women) in cross-linking group. The average age of all the patients was $29.6 \pm 3, 5$.

34 patient's with keratoconus in corneal stroma were implanted one or two segments, which changes the front irregular corneal surface, but other group of 23 patients had collagen cross-linking, which is a procedure that uses UV light and a photosensitizer (riboflavin) to strengthen bonds in the cornea. Patients were kept under control the next day after surgery and then after 6 months. Corneal surveyor *"Pentacam"* and *"Atlas"* were used to assess corneal topography changes in dynamics. Research was analyzed using statistical methods – descriptive statistics, two pair test, p value.

Results. Comparing corrected near visual acuity (CNVA) before segment implantation and 6 months after, the average visual acuity improved by 0.22 units ($p < 0.001$), as well as the average value of corrected distance visual acuity (CDVA) improved by 0.12 units ($p < 0.001$). Comparing corneal topography examination before and after surgery concluded that flattest curvature powers decreased by 2.06 D ($p < 0.001$), steepest curvature powers by 1.65 D ($p < 0.001$).

Comparing CNVA before cross-linking and 6 months after, the average visual acuity improved by 0.15 units ($p < 0.05$), and the average value of CDVA improved by 0.18 units ($p < 0.05$). Corneal topography examination before and after surgery concluded that flattest curvature powers decreased by 2.3 D ($p < 0.001$), steepest curvature powers by 2.08 D ($p < 0.001$).

Conclusion. Corneal segment implantation and corneal cross-linking for patients with keratoconus statistically significantly improves patient's uncorrected and corrected visual acuity, as well as corneal topography- corneal curvature decreases. The results confirms the given aim.

X. ANAESTHESIOLOGY, REANIMATOLOGY, EMERGENCY MEDICINE, TRAUMATOLOGY, ORTHOPAEDICS, RADIOLOGY

ACCURACY OF THE NEW ESPEN CRITERIA IN DEFINING EARLY STAGES OF MALNUTRITION IN CARDIAC SURGERY

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Keywords. Malnutrition criteria, cardiac surgery, phase angle, bioelectrical impedance analysis.

Introduction. Malnutrition (MN) in cardiac surgery is a present and a well-established condition. Consensus on the definition of malnutrition has not been reached until 2015. The new definition of malnutrition in adults was proposed by The European Society for Clinical Nutrition and Metabolism (ESPEN) in 2015.

Aim. The aim of this study is to evaluate the incidence of malnutrition in cardiac surgery patients by implementing the new ESPEN diagnostic criteria and to determine whether these criteria are accurate in predicting the bioelectrical impedance analysis (BIA) provided phase angle (PA).

Materials and methods. A prospective study was conducted in a tertiary hospital. The nutritional state of the cardiac surgery patients was evaluated one day prior cardiac surgery using malnutrition screening tools the Nutritional Risk Screening-2002 (NRS-2002), Malnutrition Universal Screening Tool (MUST) and the Short Form-Mini Nutritional Assessment (SF-MNA) and bioelectrical impedance analysis. Patients at risk of malnutrition were further studied in accordance to the ESPEN malnutrition diagnostic criteria. A low value of BIA provided phase angle was set as a standard of malnutrition. ROC AUC analysis and other concordance parameters were calculated to determine the accuracy of the new ESPEN malnutrition diagnostic criteria and a low fat-free mass index (FFMI) to predict a low PA.

Results. 549 cardiac surgery patients were enrolled in the study. MN or risk of MN in accordance with at least one nutritional status assessment tool was diagnosed to 372 (67.75 %) patients. MN according to the new ESPEN malnutrition diagnostic criteria was diagnosed only to 31 (5.6 %) patients and low FFMI was diagnosed to 37 (6.7 %) patients. Low PA was detected in 124 patients (22.6 %), providing the highest MN rate. The ROC analysis and other concordance parameters showed that neither low FFMI (AUC 0.581, p = 0.006, sensitivity 19.4 %, specificity 96.9 %, positive predictive value 3.1 %, negative predictive value 80.6 %) or the new ESPEN diagnostic criteria (AUC 0.560, p = 0.042, sensitivity 15.3 %, specificity 96.7 %, positive predictive value 3.3 %, negative predictive value 84.7 %) can accurately predict a low PA.

Conclusion. Early stages of MN are poorly diagnosed using new ESPEN criteria. Fewer patients are classified as malnourished by the new ESPEN definition as those identified by the BIA provided PA. The ESPEN diagnostic criteria may lack sensitivity in diagnosing early stages of MN in cardiac surgery field.

ACUTE POST-OPERATIVE PAIN IMPACT ON OUTCOME
OF PATIENTS AFTER HEART SURGERY

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Keywords. Acute pain, post-operative period, heart surgery, visual analogue scale.

Introduction. A number of studies suggest that ineffective management of acute post-operative pain leads to various complications, for example, reduction in vital capacity and alveolar ventilation, which may result in prolonged mechanical ventilation, ICU and hospital length of stay (LOS). These complications may be prevented by an effective post-operative pain control system. Detailed post-operative assessment of pain level should be a component of effective postoperative management.

Aim. To determine the impact of pain levels on the early post-operative period in patients with sternotomic approach.

Materials and methods. A prospective observational study of 52 patients after heart surgery that required a sternotomic approach and post-operative intensive care from August until December 2016. Patient pain level was assessed according to visual analogue scale (VAS), cognitive function was assessed with Richmond Agitation-Sedation Scale (RAS) and mini mental state examination (MMSE), taking in account their vital sign trends and pain management. Assessment was performed within 24 hours after extubation. For statistical analysis SPSS 22.0 was used.

Results. 46 of 52 patients were included in observation. The gender distribution was equal (n = 23). Within the observational group, 37 % (n = 17) of patients had valve replacement surgery, 41.3 % (n = 19) had coronary artery bypass surgery, and 21.7 % (n = 10) of patients underwent both of them. Multi-modal approach of post-operative pain management with phentanyl, paracetamol intravenously, as well as various non- opioid analgesics within 24 hours after extubation was used, 74 % (n = 34) of patients received two non-opioid analgesics and 26 % (n = 12) received more than two non-opioid analgesics. Mean VAS scores 2, 4, 6 and 24 hours after extubation were 4.94, 4.48, 4.41 and 3.98 respectively. There was a significant decrease in pain levels within the observed time frame (p = 0.006). The pain intensity 2 hours after extubation was significantly higher than 24 hours after extubation (p = 0.013). A significant increase in diastolic blood pressure (p = 0.02) and decrease in respiratory rate (p = 0.018) was noted.

Conclusion. Patients after open heart surgery experience moderate intensity pain that affects their respiratory function and hemodynamics. Multi-modal approach to pain management improves patient analgesia. A detailed, frequent post-operative pain assessment aids the multi-modal approach to pain management and improves patient outcome.

QUALITY OF LIFE EVALUATION IN PATIENTS RECEIVING SURGICAL TREATMENT FOR ROTATOR CUFF TEARS: ARTHROSCOPIC VERSUS OPEN REPAIR

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Keywords. Rotator cuff tears, arthroscopic versus open repair, quality of life assessment.

Introduction. Shoulder joint has the highest movement amplitude in the human organism, which is ensured by complex of muscles and tendons forming the rotator cuff (RC). Prevalence of the RC tears is 20.7 %, with an upward trend. As a result of trauma or degenerative processes RC tears can occur, causing pain, reduced range of motion, stability and strength, which results as disablement and condition affecting the quality of life that can limit the daily activities of a patient. RC tears can be treated using two different methods – open or arthroscopic, however the aim of the both methods is identical – to restore the lost function, prevent the pain and improve patient's quality of life.

Aim. To evaluate and compare the results of patient quality of life after arthroscopic or open rotator cuff repair.

Materials and methods. Study design is retrospectively-prospective. The medical documentation of patients who underwent rotator cuff repair in Hospital of Traumatology and Orthopaedics during year 2015 was analysed. Patient quality of life was assessed by using Western Ontario Rotator Cuff (WORC) index and 12-item Short Form Survey (SF-12) physical health composite score. Patients were divided in 2 groups: patients who underwent open surgical repair- Group A, patients who underwent arthroscopic tear repair – Group B. Data were summarised and analysed using IBM SPSS v22.

Results. Medical documentation of 260 patients with rotator cuff reattachment was evaluated and 88 patients were enroled according to study criteria. Mean age of the study population was 57.6 ± 9.6 years and 55.7 % were male. Majority of patients (83.0 %) had isolated *m.supraspinatus* tendon tear and 17 % had combined *m.supraspinatus* and *m.infraspinatus* tendon tears. Open surgical tendon reattachment was performed in 73.9 % of cases and arthroscopic repair in 26.1 %. The mean WORC index for Group A was 84.9 % and for Group B 91.3 % with statistically significant difference ($p = 0.023$, Mann-Whitney U Test). There was also statistically significant difference ($p = 0.007$, Mann-Whitney U Test) between the mean SF-12 physical health composite scores for group A (45.1 %) and group B (50.2 %). Statistically significant correlation ($p < 0.001$, Spearman's rho Test) was found between WORC index and SF-12 physical health composite score.

Conclusion. Patients who underwent arthroscopic repair have better postopearative outcomes and quality of life. Furthermore, statistically significant correlation between WORC index and SF-12 physical composite scores suggests that RC tears decrease patients overall quality of life.

ASPECTS OF DIABETIC KETOACIDOSIS TREATMENT
WITH INSULIN AND SODIUM BIKARBONATE

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Keywords. Diabetic ketoacidosis, insulin, sodium bicarbonate.

Introduction. Diabetic ketoacidosis (DKA) is an acute metabolic complication of diabetes. Hyperglycaemia and ketoacidosis is controlled by insulin, so use of sodium bicarbonate for treatment of metabolic acidosis is not suppose to be indicated, especially if hemodynamic is stable.

Aim. To evaluate aspects of use of insulin and sodium bicarbonate for DKA treatment.

Materials and methods. An analysis of data of retrospective cohort study of 67 patients (pt) treated for DKA at ICU of Hospital of Lithuanian University of Health Sciences during 2012–2016 (Bioethic's licence Nr. BEC – MF – 492) has been performed. Cases of interruption of insulin use also use of sodium bicarbonate were analysed. SPSS 23.0 was used for statistic calculations.

Results. Insulin use was interrupted in 23/67 (34.3 %) pt, in case of hypoglycaemia in 7/67 (10.4 %), normoglycaemia 15/67 (22.4 %), hyperglycaemia 1/67 (1.5 %) pt during use of insulin for DKA treatment. Insulin was interrupted in case of persisting ketonuria in 18/67 (26.8 %) pt, with hypoglycaemia in 5/18 (27.8 %), normoglycaemia 12/18 (66.7 %), hyperglycaemia 1/18 (5.6 %) pt. In case of hypoglycaemia insulin use was remained in 3/67 (4.5 %) pt, ketonuria was present only in 1/67 (1.5 %) of them, insulin dosage was reduced and glucose solutions used i/v.

Sodium bicarbonate was given to 15/67 (22.4 %) pt, when pH was 6.8–7.28 (6.96 ± 0.1), BE (−34.6) – (−17.7) (−27.3 ± 4.8), HCO_3^- 1.1–11.5 mmol/l (4.5 ± 3.5 mmol/l). 166.7 ± 61.0 mmol/l of sodium bicarbonate was infused during first 10 h for symptomatic treatment of metabolic acidosis in 15/67 (22.4 %) pt with stabile hemodynamic. Level of HCO_3^- has increased from 4.5 ± 3.5 mmol/l till 9.1 ± 4.9 mmol/l, but it did not correct ketoacidosis in all of 15 mentioned cases.

Conclusion. Insulin use was interrupted during treatment of DKA in 1/3 of cases for hypo-, normo- or hyperglycaemia but in 1/4 it was incorrect because of still persisting ketonuria. Only in one case of hypoglycaemia insulin further use was correct because of ketonuria, and insulin dosage was decreased also glucose infusion started. Sodium bicarbonate was used in treatment of DKA for metabolic acidosis reduction in almost 1/4 of pt, all of them being hemodynamically stable. Despite of it DKA has remained uncontrolled in all cases although restoration of HCO_3^- buffer has been over.

ASSESSMENT OF PAIN AND ITS RELIEF IN THE STAGE OF PRE-HOSPITALISATION

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Keywords. Pain treatment, pain assessment scales.

Introduction. In the stage of pre-hospitalisation, proper anaesthesia is very important, as moderate or severe pain accounts for a third of all diagnoses.

Aim. To investigate and evaluate the pain assessment scales commonly used in practice by the staff of the Kaunas Ambulance Service and the Emergency Department (ED) of the Hospital of LUHS KK in the stage of pre-hospitalisation, and reveal how an appropriate use of pain assessment scales in practice helps to relieve pain.

Methodology. A survey of the staff of the KK ED of the Hospital of LUHS KK and Kaunas Ambulance Service was performed as well as the retrospective study of Form 110/A of the patients (pts) treated due to pain in the extremities in 2015–2016. The staff survey included the data about their age, work experience, gender, position, the most commonly used pain assessment scales. Forms 110/A provided information about the changes in patients' pain scores and its treatment in the stage of pre-hospitalisation. Data analysis was performed using the statistical program SPSS 23.0. The data were considered statistically reliable at $p < 0.05$.

Results. 32 employees of the KK ED, whose average age was 34.81 ± 8.25; and 62 employees of the Kaunas Ambulance Service, whose average age was 46.70 ± 12.88, were surveyed. The average work experience of the staff of the Ambulance Service was 20.95 ± 13.41 years, and that of the ED was 11.30 ± 10.19 years. 100 Forms 110/A of the pts who complained about pain in extremities were selected, 52 female and 48 male. Their average age was 52.77 ± 0.2. The most frequent method to evaluate the pain score in practice used by both the Kaunas Ambulance Service staff (58.1 per cent) and the KK ED staff (68.8 per cent) is the digital pain assessment scale. The odds ratio model revealed that in case the pain is evaluated by the KK ED staff, it is almost 10 times more likely that opioids will be prescribed at a higher pain score as compared to the Kaunas Ambulance Service staff ($p < 0.05$). Besides, the KK ED staff are 27 times more likely to prescribe analgesics at higher pain scores than the Ambulance Service staff ($p < 0.05$).

Conclusion. To evaluate pain scale, both the Kaunas Ambulance Service and the KK ED staff mainly use the digital pain assessment scale. A statistically significant correlation between different staffs has been observed: in case the pain is evaluated by the staff of the KK ED, there is a 10 times greater probability that opioids will be prescribed at a higher pain score, and 27 times higher probability analgesic will be prescribed at higher pain scores.

BLOOD CIRCULATORY VOLUME EVALUATION
BY ULTRASONOSCOPIC METHOD

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Keywords. *Vena cava inferior (VCI), VCI caval index, VCI collapsibility index*, ultrasonography, circulatory volume, *central venous pressure.*

Introduction.

In Intensive care units, central venous pressure is widely used to evaluate patient hemodynamics and decide on fluid therapy. However, change in CVP is not an accurate indicator of fluid balance and does not reflect exhaustion of compensatory mechanisms. In comparison, direct visualisation of *vena cava inferior* can be measured and evaluated in real time.

Aim. Evaluate the efficacy of ultrasonography as a diagnostic tool of blood circulatory volume in patients after heart operations by detecting VCI *caval index.*

Materials and methods. A prospective study took place in Pauls Stradins Clinical University Hospital Department of Cardioanaesthesiology and Intensive care during 2016 September and 2017 January. Patients after coronary artery bypass surgery were evaluated at the time of arrival in department, three and six hours postoperative. Ultrasonoscopy was used to measure VCI during inspiratory and expiratory phases, measurements were performed by a single operator.

Results. In the research 39 patients were included – 22 men, 14 women (61.1 % and 38.9 % respectively). Mean age was 66.7 (SD 6.8), BMI 28.5 (SD 3.3), 82.05 % were above normal BMI, EF 52 % (SD 11.0). 20 % of patients received inotrope support during the first 6 hours after surgery. 7.7 % declined the evaluation because of pain. There is no significant correlation between fluid balance and *caval index* – Spearman's rho was −0.86 (p = 0.391), −0.78 (p = 0.439), 0.00 (p = 1.000) at arrival, 3 hours and 6 hours postop respectively. There is no correlation between CVP and *caval index* at arrival, 3 hours and 6 hours postop – Spearman's rho was −0.33 (p = 0.278), −0.21 (p = 0.587), and −0.18 (p = 0.644) respectively. No significant correlation is seen between CVP and fluid balance – 0.32 (p = 0.054), 0.24 (p = 0.166), 0.26 (p = 0.121).

Conclusion. In conclusion, VCI *caval index* and CVP has no significant correlation with fluid balance and VCI *caval index* has no correlation with CVP.

In patients with BMI > 24.9 kg/m² or low affixed patch, detecting VCI is complicated. Patients after coronary artery bypass surgery are experiencing pain, that results in patients withdrawing consent. The ultrasonoscopic method is limited by operator specificity as mentioned in literature.

More patients should be included in this research in order to increase the statistical credibility of the method assessment.

CEREBRAL OXYGENATION IN PATIENTS UNDERGOING SHOULDER ARTHROSCOPY IN BEACH CHAIR POSITION: COMPARISON OF TWO DIFFERENT ANAESTHESIA TYPES

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Keywords. Cerebral oxygenation, shoulder arthroscopy, beach chair position, neurocognitive outcome.

Introduction. Patients undergoing shoulder arthroscopy in beach chair position under moderate hypotension (mean arterial pressure (MAP) = 65–75 mmHg) for bleeding reduce, have increased risk of cerebral hypoperfusion and manifestation of neurocognitive disorders. Comparing different anaesthesia regimens has been poorly described in this type of operations.

Aim. To compare cerebral oxygenation (CO) and neurocognitive outcomes between different anaesthesia types: mixed (general and regional) *vs.* regional in patient undergoing shoulder arthroscopy in beach chair position.

Materials and methods. 28 patients undergoing shoulder arthroscopy in regional (group I; N = 14) or mixed (group II; N = 14) anaesthesia were enrolled in this prospective observational study. Noninvasive near – infrared spectroscopy method was used to measure cerebral oxygenation in both hemispheres. Heart rate, cerebral oxygenation, peripheral oxygen saturation, noninvasive MAP were registered every 5 minutes during operation. Before surgery and day after surgery mini – mental state examination (MMSE) and 10-point numerical rating pain score were evaluated. Statystical analysis was done using SPSS v.22.

Results. Mentioned groups were similar demographically (no significant differences between age, gender, body mass index, ASA classification, aspirin or nonsteroidal anti-inflammatory drugs use and physical capacity). Total CO was higher in II group (76.7 ± 8.1 % *vs.* 84.1 ± 8.4 %; P = 0.025), also in left (77.2 ± 8.7 % *vs.* 83.8 ± 9.0 %; P = 0.062) and right (76.2 ± 8.9 % *vs.* 84.5 ± 8.3 %; P = 0.018) hemispheres separately. Cerebral desaturation was higher in I group (−1.8 ± 2.4 % *vs.* −0.5 ± 0.6 %; P = 0.045). MAP was higher in I group (83.8 ± 7.5 mmHg *vs.* 68.9 ± 3.7 mmHg; P = < 0.001), but there was no significant correlation between MAP and CO in both groups. MMSE increased next day after surgery in both groups (27.3 ± 2.2 and 29.1 ± 0.7; P = 0.461 *vs.* 25.8 ± 2.8 and 27.7 ± 1.9; P = 0.028), but there were no significant differences between groups in MMSE evaluations. Pain level did not differ between groups before operation (7.2 ± 2.0 *vs.* 5.8 ± 1.7; P = 0.098), but it decreased in I group after operation (3.9 ± 1.7 *vs.* 6.1 ± 2.2; P = 0.034).

Conclusion. Patients undergoing mixed anaesthesia had significantly higher CO comparing with regional anaesthesia, but it did not influence neurocognitive differences between groups. Both anaesthesia types are safe and reduce perioperative stress.

CHILDREN METASTATIC BONE DISEASE: COMPARATIVE EVALUATION OF FULL-BODY MAGNETIC RESONANCE IMAGING (DWIBS) AND STATIC SCINTIGRAPHY METHODS

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Keywords. Whole body MRI, whole body DWIBS, bone scintigraphy, oncologic imaging.

Introduction. Diagnosis of malignacy in children is rather atyphical, representing only 2 % of all cancer cases in the population. Despite the fact, cancer is the second most common cause of death in children aged 1 to 14 years. Early identification of skeletal metastases (MTS) is essential for determining the stage of cancer and the subsequent effective choice of therapy. For this purpose the static scintigraphy (SC) is still widely used. However, the radiation of this examination is a commonly known carcinogen which is particularly harmful for children. MRI yet remains an alternative examination, which allows to evaluate the metastatic spread to the bone marrow and surrounding structures.

Aim. Retrospective evaluation of patients aged 0–18, diagnosed with malignant cancer of bones and examined by both static bone scintigraphy and whole body MRI (DWIBS). Comparison of informativity of MRI DWIBS and SC methods regarding bone MTS identification in children with malignant tumors.

Materials and methods. The study was conducted based on data from clinical history and radiology reports of Children Clinical University Hospital, Riga, in time space between January 2013 and September 2016.

Results. The total of 61 patients under the age of 18 with histologically confirmed cancer were identified. Only patients who underwent both SC and MRI DWIBS radiological examinations were studied. Out of all cases, the metastases in bones were found in 12 cases. Of them: 5 cases included multiple bone MTS in both SC and MRI DWIBS, 2 cases included multiple MTS in SC whereas MRI DWIBS did not show MTS, in 4 cases MTS were detected in MRI DWIBS whereas SC did not show MTS, in 1 case MRI DWIBS revealed multiple MTS whereas SC showed only 1 metastasis.

Conclusion. The results of both investigative methods coincided in less than 50 %. When the results differed, the MRI DWIBS was more accurate in diagnosing bone MTS. The sensitivity of both radiological investigation methods presumably depends on the histological type of cancer. Unfortunately, MR DWIBS is not fully capable of replacing SC in finding metastases in bones. A further cohort study with increased number of participants is necessary.

CLINICAL CHARACTERISTICS AND WELLS CRITERIA IN DIAGNOSIS OF PULMONARY EMBOLISM

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Keywords. Pulmonary embolism, Wells criteria.

Introduction. A theoretical unstructured approach with unclear pre-test probability is still popular for diagnosis of acute pulmonary embolism (PE). Such approach may lead to excessive examinations, especially computer tomography pulmonary angiography (CTA) at low risk patients.

Aim. This study aims to evaluate the possible benefits of Wells criteria pre-test probability tool and its implementation on a structured protocol for PE.

Materials and methods. Data from 220 patients admitted to the Emergency department of Riga Eastern Clinical University hospital from January to September of 2014 were retrospectively included in the study. CTA to confirm the diagnosis of PE were performed for all patients. According to CTA findings all cases were categorized into positive and negative PE groups. Prognostic significance of clinical characteristics routinely used to perform CTA were compared with standard Wells criteria in both groups.

Results. From all patients 120 (54.5 %) were female and 100 (45.5 %) were male.

Positive PE was present in 71 (32.3 %) cases. Median age of positive PE was 78.50 years for females, and 71.50 years for males, with statistical significance, $p < 0.001$.

Most frequent clinical characteristics, and their relative frequencies (RF) with: dyspnoea present in 90.1 % of positive PE patients (OR = 5.21, CI 2.23–12.19, $p < 0.001$); non-specific chest pain RF of 45.7 % (OR = 1.89, CI 1.05–3.40, $p = 0.032$); and breathing related chest pain RF of 18.3 % (OR = 2.81, CI 1.19–6.64, $p = 0.02$).

For the Wells criteria, the best predictors were: "PE is 1st diagnosis, or equally likely" with a RF for positive PE of 95.8 % (OR = 5.02, CI 1.47–17.15, $p = 0.005$); "Previous, objectively diagnosed PE/DVT" with RF for positive PE of 31.0 % (OR = 4.01, CI 1.93–8.35, $p < 0.001$) and "Clinical findings of deep vein thrombosis (DVT)" with a RF for positive PE of 50.7 % (OR = 3.48, CI 1.91–6.35, $p < 0.001$).

Wells score risk levels were calculated and the prevalence of a positive PE was present in 4.5 % (1/22) in low risk, 25.9 % (36/139) in intermedium risk, and 57.6 % (34/59) in high risk, the likelihood ratio with statistical significance, $p < 0.001$.

Conclusion. Dyspnoea, chest pain, Wells criteria "PE is 1st diagnosis, or equally likely"; "signs for DVT" and "previous DVT/PE" were the best predictors in Wells criteria for a positive PE finding in CTA. Wells score showed increased likelihood of a positive result as risk level increases, with low frequency of a positive result in low risk group. Routine use of wells criteria in protocol may result in reduction of CTA at low risk patients.

COAGULATION TESTS AND THEIR CORRELATION WITH POST-OPERATIVE BLEEDING THAT REQUIRES A REOPERATION IN CARDIAC SURGERY

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Keywords. Cardiac surgery, cardiopulmonary bypass, reoperation, INR, APTT, PT.

Introduction. Bleeding is one of the most common causes for early reoperation (ReOP) in cardiac surgery with cardiopulmonary bypass (CPB) and is associated with increased morbidity.

Aim. The aim of the study was to retrospectively analyse patient histories and identify if there is a correlation between blood loss before early ReOP and platelet count (PLT), activated partial thromboplastin time (APTT), fibrinogen (Fb), prothrombin time (PT), antithrombin III (AIII), activated clotting time (ACT) before or after cardiac surgery with CPB.

Materials and methods. Histories of fifty-five patients in a clinical university hospital from 2015–2016 were analysed. All patients had open heart surgery using CPB after which there was increased postoperative bleeding, that was treated with a ReOP within 24 hours of the first surgery. The data collected was patient sex, age, length and type of surgery, CPB time, post-surgical blood loss and time until the second surgery. PLT, APTT, Fb, PT, AIII values before and after the first surgery and ACT numbers were assessed before and after CPB. All data was analysed using Statistical Package for the Social Sciences (SPSS) 22.

Results. Seven of the patients had a heart tamponade and were excluded from further calculations. 48 patients of which were 33 males and 15 females age 70 ± 13. Length of time in min for the first surgery, CPB and time until ReOP was 195 ± 83 and 101 ± 48 and 390 ± 271 respectively. The operations were 19 valve, 15 shunt, 14 including multiple procedure, 8 of the surgeries were described as acute and 6 were involving the aorta and two were redo operations. The postoperative blood loss was 1008 ± 308 ml or 158 ± 144 ml/h. The coagulation test values before and after surgery were accordingly PLT 198 ± 87 and 132 ± 60, APTT 34 ± 5.5 and 35 ± 7, Fb 3 ± 0.98 and 2.5 ± 0.6, PT 91 ± 24 and 84 ± 18, INR 1 ± 0.1 and 1.1 ± 0.2, AIII 105 ± 23 and 77 ± 12, ACT 137 ± 38 and 129 ± 13. The coagulation test that correlated with blood loss per hour were before surgery APTT ($p = 0.037$) and post-surgery INR ($p = 0.019$), PT ($p = 0.01$), APTT ($p = 0.001$).

Conclusion. The coagulation tests that correlate with postoperative blood-loss, that is great enough to warrant a ReOP were APTT before and after the first surgery, and postsurgical INR and PT.

COMPARISON BETWEEN WHOLE-BODY MRI AND PET/CT IN PEDIATRIC ONCOLOGY

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Keywords. MRI, PET/CT, pediatric oncology.

Introduction. Positron Emission Tomography – Computed Tomography (PET/CT) is the main diagnostic imaging tests for exact diagnosis establishment, staging and monitoring of response to therapy in pediatric oncology nowadays. However, PET/CT scanning is associated with the risk of ionizing radiation. Whole-body MRI (WB-MRI) allows exact evaluation of malignant tumor without the radiation exposure.

Aim. The aim of this study was to compare WB-MRI and PET/CT imaging methods informativity of metastases detection in children with malignant disease.

Materials and methods. This retrospective study that included all consecutive cases of PET/CT imaging examinations in children performed between June 2016 and January 2017 in Latvia. Inclusion criteria were: age under 18 years, histological confirmation of malignant disease and WB-MRI imaging method was done in addition to PET/CT diagnostic test. The study included 10 patients (7 males, 3 females), mean age 11 years 7 months [95 % CI: 9.15–12.99]. Two patients underwent both examinations 3 times. Overall this resulted in 14 cases.

Results. Three types of tumor were identified: Hodgkin's lymphoma (n = 12), non-Hodgkin's lymphoma (n = 1), rhabdomyosarcoma (n = 1). Indications for PET/CT examination were evaluation of response to therapy (n = 12), staging (n = 1) and recidive exclusion (n = 1). Thirteen PET/CT scans were performed after therapeutic management: 7 after chemotherapy, 5 after chemotherapy and radiotherapy, 1 after surgical intervention. One PET/CT scan was done before any treatment. PET/CT mean radiation exposure was 263.2 [95 % CI: 202.27–324.12] mGy.cm, mean radiotracer dosage was 143.5 [95 % CI: 114–172.52] MBq.

Thirty four lesions were identified: 24 (70 %) lymph nodes, 5 (15 %) bone lesions, 5 (15 %) soft tissue lesions. 21 malignant lesions were detected by PET/CT. WB-MRI found 27 lesions. Out of 34 lesions, eighteen were identified by both imaging methods. Both examinations found absence of residual disease in 2 cases. WB-MRI detected also 11 lesions (7 lymphnodes, 1 bone lesions and 3 soft tissue lesions), that PET/CT has no identified. WB-MRI did not found 5 lesions (2 lymphnodes, 1 bone lesions and 2 soft tissue lesions), that were detected by PET/CT imaging method. WB-MRI sensitivity is 76 %, but specificity 15 %. PET/CT sensitivity is 60 %, but specificity only 30 %.

Conclusion. No of this diagnostic tests is superior because of low specificity of WB-MRI and low sensitivity of PET/CT. Both examinations should be used in pediatric oncology. Further research with bigger number of patients is needed to validate this finding.

COMPLICATIONS AND ENDOPROSTHESIS SURVIVAL RATE STUDY AFTER TOTAL HIP ARTHROPLASTY IN DYSPLASTIC OSTEOARTHRITIS PATIENTS

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Keywords. Hip, Dysplastic osteoarthritis, Total hip arthroplasty (THA), complications, survival rates.

Introduction. Total hip arthroplasty for patients with dysplastic osteoarthritis has been known as challenging reconstructive surgery because of distorted anatomy, high complication and revision rates. It affects younger people so acute and delayed complications are especially important to identify. To determine the true value of total hip arthroplasty in dysplastic osteoarthritis, it is important to evaluate patients at mid-term and long-term follow-up.

Aim. The goal was to study the results and complication rates of total hip arthroplasty after at least 5 years after operation and to investigate survival rates of hip endoprosthesis.

Materials and methods. This study included 88 patients (aged 20 to 78 years old, mean 44.38 ± 10.88 (SD), 71 women and 17 men). 106 THA operations were performed in Hospital of Traumatology and Orthopedics, Riga, Latvia during the period from 2008 to 2011. Statistical analysis with SPSS 20.0 program was used to evaluate complication risk according to the placement of acetabular component. Patients were divided in two groups – 80 operations in group 1 (acetabular placement in primary socket) and 26 operations in group 2 (acetabular placement in secondary socket). Groups were compared using Chi-square tests for categorical variables. Kaplan-Meier method was used for survival analysis.

Results. Kaplan-Meier analysis showed that 94.8 % of the endoprosthesis survived 105.9 months $\pm$ 1.3 (SD). Patients mean age who needed revision operation were 48.8 years $\pm$ 1.04 (SD).

Study detected 8 early complications ($\leq$ 6 weeks after operation) and 6 delayed complications ($\geq$ 6 weeks after operation). 5 revision operations were performed. 3 mid-term complications were after aseptic loosening of acetabular component, 2 complications after aseptic femoral component loosening and 1 complication after septic loosening.

All complications were detected after the placement in the acetabular component in primary socket compared to no complications in placement in secondary socket (17.5 % *vs.* 0 %) (p = 0.020).

Study found that more complications were associated with male gender (p = 0.025, effect study using phi v = 0.239 (small effect), p = 0.014).

Conclusion. Aseptic loosening is one of the main mid-term complications after THR in dysplastic osteoarthritis patients. Placement of endoprosthetic acetabular component in primary socket in patients with severe dysplasia is associated with high complication rate.

Survival rate 94.8 % is acceptable and total hip arthroplasty is an effective method in treatment of dysplastic osteoarthritis patients.

DETERMINATION OF FLUID OVERLOAD IN SMALL CHILDREN BY CALCULATING FLUID BALANCE AND WEIGHING IN INTENSIVE CARE UNIT

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Keywords. Fluid balance, pediatrics, 'insensible' water loss.

Introduction. Fluid balance represents the input and output of fluids in the human body. Fluid intake mainly consists of water from beverages and water from solid food, IV medications and fluids. Whereas fluid loss is formed from urine, insensible losses from skin and lungs and faeces. The IntelliVue Clinical Information Portfolio, Philips (ICIP) is an electronic charting program that is used to follow vital signs, medications, fluid balance changes among other variables. But this program ignores insensible fluid and faeces losses; as a result it can make final balance higher than it actually is.

Aim. To compare fluid balance as calculated by ICIP to serial weighting of patients. To quantify the influence of body temperature, mechanical ventilation, bowel movements on calculated fluid balance.

Materials and methods. A retrospective study (2011–2015) included pediatric intensive care unit (PICU) patients with different diagnoses. We included patients up to 15 kg in weight who have been weighed at least 2 times during the ICU stay. Fluid balance and temperature changes, mechanical ventilation, number of vomiting and defecation episodes were extracted from the ICIP software. The extracted data was sorted and analysed in MS Excel and SPSS programs.

Results. 136 PICU patients met in inclusion criteria; 332 weighting measurements were made and were registered in ICIP software. An average age was 8 months; an average weight was 6.69 kg. An average daily fluid balance was +253.6 ml. An average amount of fluid growth per kilogram was +37.9 ml/kg/day. No significant difference was found in fluid balance growth at a temperature 36.6–37.6 °C. But reaching temperature more than 37.6 °C, an average of fluid balance was doubled and reached +734.5 ml per day. An average of fluid balance reached +308.5 ml/day in patients with mechanical ventilation. There is also a negative correlation between time being hospitalized in ICU and fluid balance in patients with mechanical ventilation.

Conclusion. According to results, we derived a formula that is capable to display 'insensible' water loss and loss from faeces that is ignored by ICIP program. Also we could include different parameters for more accurate results. Calculated positive fluid balance should be correctly interpreted, because highly positive fluid balance is associated with more complications.

DIAGNOSIS OF PULMONARY EMBOLISM ON COMPUTED TOMOGRAPHY ANGIOGRAPHY, ECHOCARDIOGRAPHY AND PLAIN CHEST RADIOGRAPHY

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Keywords. Pulmonary embolism, echocardiography, plain chest radiography.

Introduction. Pulmonary embolism (PE) is a common and potentially lethal condition. It is the third most common cause of death from cardiovascular disease. Correctly chosen diagnostic method can help to diagnose the emergent condition and to evaluate the severity of complications of PE. Computed tomography angiography (CTA) remains the first imaging study; however, other visual diagnostics methods such as echocardiography and plain chest radiography can also be used. Indirect findings of PE such as atelectasis or parenchymal density, pleural effusion, pleural based opacity, elevated diaphragm, prominent central pulmonary artery, Westermark's sign (oligemia of lung), cardiomegaly or pulmonary edema can be demonstrated with the help of plain chest radiography. Echocardiographic features of PE include right ventricle (RV) dilatation, hypo-kinesis of RV and D-shaped left ventricle (LV).

Aim. Comparison of diagnostic effectiveness of echocardiography and plain chest radiography for diagnosing PE and its complications, comparing with CTA during year 2014 and 2015 in Riga Eastern University Hospital.

Materials and methods. This research is a retrospective data analysis from medical case reports from the archive of Riga Eastern University Hospital. Study included 160 patients who were hospitalized in period of 01.01.2014–31.12.2015 (61 men and 99 women, in age 21 to 96, average age – 70.4 years). Research included patients who underwent CTA because of suspected PE. CTA findings were analysed in all cases, echocardiography or conventional radiography findings were analysed if they were done. All data was analysed by SPSS 20.0.

Results. Plain chest radiography was conducted in 76 (47.5 %) patients and it was not conducted in 84 (52.5 %) patients. In 76 tested cases, when chest conventional radiography was done, 52 (88.4 %) occasions showed no pathology. In remaining 21 (27.6 %) patients, the chest radiography found some non-specific changes – prominent central pulmonary artery, pleural effusion, atelectasis or parenchymal density.

Echocardiography was performed on 46 (28.9 %) patients and was not used on 113 (71.1 %) patients. From 46 examinations 23 (50 %) cases showed echocardiographic features of pulmonary embolus, but remaining 23 (50 %) did not display any changes which would lead to conclusions about pulmonary embolism.

Conclusion. As diagnostic tools, plain chest radiology and echocardiography was not highly sensitive and too specific to prove pulmonary embolism – it is computed more accurately by tomography angiography which still remains the first imaging study.

DIFFERENCES IN OVERALL OUTCOMES AFTER TOTAL HIP REPLACEMENT FROM DIFFERENT APPROACHES

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Keywords. THR, Watson-Jones, Orthopedics, Approaches.

Background. Less invasive surgical techniques have evolved over the last decade in the field of joint replacements. Existing mini invasive techniques are based on variations of traditional direct anterior, anterolateral, direct lateral, and posterior surgical approaches. For surgeons, the benefits of a shorter incision must outweigh the added technical difficulty from reduced visualization. There are many publications which compare effectiveness of conventional Watson-Jones (WJ) and mini invasive Anterior Supine Intermuscular (ASI) approach, but unfortunately it is still not clear which one of these two have better impact on postoperative functional results. Therefore, we decided to perform our own studies based on patients from Infant Jesus Orthopedic Clinic.

Materials and methods. We examined 534 patients after Total Hip Replacement performed with two different approaches: Anterior Supine Intermuscular (N = 250) and anterolateral Watson-Jones (N = 284) in our Clinic. The average follow-up was 2.57 years. To compare treatment results we evaluated: X-ray, phsical examination results, The Harris Hip Score, Patient Satisfaction Scale for Primary Hip and Knee Arthroplasty and Visual Analog Scale of pain.

Results. We observed statistically significant ($p > 0.05$) better results in ASI *vs.* WJ in Patient Satisfaction Scale for Primary Hip and Knee Arthroplasty – HKASS (1.1), The Harris Hip Score – HHS (1.1) and Visual Analog Scale of pain – VAS(1.6).

Conclusion. Minimally invasive anterior approach although muscle preserving, is more challenging for surgeon than Watson-Jones. Due to adventages and disadvantages, both approaches should be considered as good treatment method. Our study shows better functional results in the group of Anterior Supine Intermuscular *vs.* Watson-Johnes approach. Furthermore the level of pain is significantly lower in ASI group. The difference between groups may result from operational technique as well as other factors, that have not been taken into account.

EFFICIENCY OF THE TRUST AND TRACK PERIOPERATIVE BLOOD TRANSFUSION PREDICTING SCALE IN PATIENTS UNDERGOING OPEN HEART SURGERY

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Keywords. Allogeneic blood transfusion, predicting scale, TRUST, TRACK.

Introduction. The main task of anesthesiologist is to maintain patients homeostasis in perioperative period. Patient evaluation and risks assessment is main tool of physician to predict and avoid serious complications associated with allogeneic blood transfusion.

Aim. The aim is to evaluate predictive strength of TRUST and TRACK scales in patients undergoing elective open heart surgery.

Materials and methods. Medical history data of 172 adult patients undergoing elective open heart surgery in Paula Stradin's Clinical University Hospital were enrolled into a retrospective study. Exclusion criteria: cardiopulmonary bypass time > 120 minutes; reoperation; thrombocytopenia and/or coagulopathy; off-pump cardiac surgery. Preoperative data were collected: Age, gender, body weight, haemoglobin (Hb) g/dl and haemotocrit (Ht) % level, type of surgery, creatinin level. For each patient TRUST and TRACK score was calculated. Descriptive statistics for analysis of baseline demographics and clinical data were used. We evaluated the sensitivity and specificity of both scales to predict allogeneic blood transfusions by using receiver operating characteristic (ROC) curve analysis. We defined $P < 0.05$ as statistically significant. As an outcome allogeneic blood transfusions during the perioperative period, the length of stay in ICU and hospital were determined.

Results. 47 patients were excluded. Of the 125 (females 68) remaining patients 54 (43.2 %) had aortocoronary bypass grafting, 47 (37.6 %) valve replacement, 11 (8.8 %) combined and 13 (10.4 %) other type of surgery.

Totally 30 patients (24 %) received haemotransfusions, presenting preoperatively older age (p = 0.005), lower body weight, Hb, Ht levels (p < 0.001), lower red blood cell (p = 0.001) and platelet count (p = 0.016). Age < 67 years (AUC = 0.7; p = 0.01), body weight < 75 kg (AUC = 0.8; p < 0.001), Hb < 133.5 g/dL (AUC = 0.8; p < 0.001) and female sex (AUC = 0.7; p < 0.001) were independently associated with postoperative haemotransfusions. Creatinin showed AUC = 0.56 without reaching statistical significance (p = 0.3) in predicting haemotransfusions.

Maximal TRUST score reached was 6 out of 8. The highest rate of hemotransfusions was detected in patients with 4 and 5 TRUST score points, (24/14) 56 % and (7/5) 71 % received allogenic blood transfusions, respectively.

Maximal TRACK score reached was 24 out of 32. The highest rate of hemotransfusion was detected in patients with 20–24 TRACK score points, (4/4) 100 % received allogenic blood transfusions.

The transfusion rate of red blood cells (RBC) correlated with TRUST and TRACK score rate, r = 0.446, p < 0.001 and r = 0.376, p < 0.001 respectively. Higher TRUST score were not associated with longer stay in ICU r = 0.17 p > 0.1, but associated with longer hospital stay

r = 0.182 p < 0.05. In it turn TRACK score associated with both, longer ICU and hospital stay, r = 0.189, p < 0.05 and r = 0.319, p < 0.001 respectively.

Conclusion. Both predictive scores could be a helpful tool in assessment of elective open heart surgery patients. Age, body weight and preoperative Hb levels may be the most informative values.

ENDOVASCULAR APPROACHES TO POSTERIOR CIRCULATION STROKES

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Keywords. Endovascular Thrombectomy (ET), Intravenous Thrombolysis (IVT), Posterior Circulation Strokes (PCS).

Introduction. Acute ischemic stroke is the leading cause of both disability and mortality worldwide (Khandelwal et al. 2016). The main aim in stroke treatment is reperfusion of the ischemic tissue and with early recanalization of the occluded artery fewer neurological deficits are seen. Intravenous thrombolysis (IVT) has shown to be effective but still have limitations. The different ET methods have revealed higher recanalization rates, (Nogueira et al., 2009). Using clinical presentations and radiological findings we can divide cerebral strokes into anterior circulation strokes and posterior circulation strokes (PCS). There have been many trials to identify the best treatment method for anterior circulation strokes but only a few studies have explored PCS characteristics and treatment methods (Sarnowski et al., 2017).

Aim. This study will evaluate endovascular treatment methods for PCS – combination of intravenous thrombolysis with ET and only ET – comparing them to a control group.

Materials and methods. 61 patients with acute occlusions in the posterior circulation were analysed, retrospective from 2013–2015 in Pauls Stradins Clinical University Hospital. Two different scales – the National Institutes of Health Stroke Scale (NIHSS) and the modified Rankin Scale (mRS), was used to objectively quantify neurological deficits in stroke patients.

Results. The patients were divided into three groups, 21 patients treated by intravenous thrombolysis and ET, 20 patients treated with only ET and the control group of 20 patients treated only by conservative care. Using the mRS after 90 days, a score of 0–2 was obtained in 45 % of patients treated by the IVT and ET and 30 % of patients treated with ET and the control group only 5 %. The score of 3–5 points mRS showed 32 % in the group treated with IVT and ET, 35 % in the ET group, 25 % in the control group. Upon discharge the NIHSS median of the IVT and ET group was 4 (1–7), in the ET group 5 (1–10) and in the control group the median score was 12 (5–22), p < 0.0001. The mortality rate in the control group was the highest with 70 %, followed by the ET group with 35 %. IVT and ET group have the lowest rate of 25 %. Majority of the patients had successful recanalization (83 %) and complications caused by the procedure between the two active therapy groups showed no statically significant difference, p = 0.105.

Conclusion. This study shows that both selected treatment methods succeeded in high recanalization rates with similar risks of complications. Best results show combined therapy group of IVT and ET.

EPIDURAL ANALGESIA COMPARED TO FEMORAL NERVE BLOCKADE AFTER TOTAL KNEE JOINT REPLACEMENT

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Background. Total knee joint replacement (TKJR) is associated with significant postoperative pain.

Both femoral nerve blockade (FNB) and epidural analgesia (EA) have been described for postoperative pain control. The goal was to compare safety and efficiency between techniques after total knee joint replacement surgery.

Materials and methods. A retrospective analysis was done enrolling 57 patients undergoing TKJR surgery from 2015 to 2017 January at the ORTO Clinic, Riga, Latvia. Two groups of patients were compared – EA group (n = 32) and FNB group (n = 25). EA or FNB was administered each 8 hours or when the patient complained about the pain – VAS > 4. For EA solution of Marcaine 0.25 % – 20 ml and Morphine 2 mg was used in a dose from 5 to 10 ml. For FNB solution of Marcaine 0.25 % – 20 ml was administered. Pain intensity assessed by Visual Analogue Scale (VAS) was analysed as a primary outcome. Secondary outcomes included incidence of complications such as hypotension, nausea and vomiting, dizziness, pruritis, head and back pain. Moreover, motor block and urinary retention was secondary reported outcome parameters as well.

Results. Median age differed between the analysed groups, in FNB group (n = 25) it was 66.20 ± 10.41 in EA (n = 32) 59.16 ± 10 years, respectively, MD 0.7; 95 % CL 0.15–1.24; P = 0.012. Median weight in FNB was 91.16 kg ± 14.56 in EA group 86.44 kg ± 19.69. From 36 women- 24 (66.7 %) have EA (p = 0.034). Other demographic parameters were similar between both groups. Pain intensity by VAS score was similar in both groups at the rest position 0–12 h and 12–24 h after surgery (p = 0.12; p = 0.1). In contrast at the movement, VAS score was higher 12–24 h after surgery in EA group 4 *vs.* 3, p = 0.049. There was not difference in association with higher risk of postoperative nausea and vomiting between both groups. Hypotension (SBP < 20 % from MAP) occurred more frequently among patients who received EA 8 (25 %) *vs.* 0 (0 %) FNB group (MD 0.51 95 % CL 0.15–0.87; p = 0.007). Although, higher incidence of head and back pain was found in EA group (p = 0.03; p = 0.046), correlation between head pain and hypotension was not detected. Dizziness was more frequntely obeserved in EA group compared to FNB group, respectively, 13 patients (40.6 %) *vs.* 1 (4 %), p = 0.002. Moreover, also pruritis was significantly more often seen in EA group 6 *vs.* 0, p = 0.03. Motor block, urinary retention, failure of catheter insertion were constant in both groups.

Conclusion. FNB and EA is equally effective analgesia techniques for postoperative pain management after TKJR. In comparison to EA, FNB is associated with significant lower complications rates. Such aspects as age, gender and patients weight may affect the selection for best postoperative pain management technique.

FACTORS AFFECTING DIAMETER OF VENA JUGULARIS INTERNA DEXTRA DURING GENERAL ANAESTHESIA

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Keywords. Central venous catheterization, jugular vein, ultrasound.

Introduction. During complicated surgery it can be necessary to obtain central venous access. The most common choice for this procedure is right internal jugular vein (RIJV) because this location is easily accessible and it does not interfere with the operation. Complications during cannulation can arise, but their incidence is less if puncture of the vein succeeds on first attempt. The larger the diameter of the vein during the puncture, the easier it is to puncture it on first attempt. Several methods are known to obtain better filling of central veins and accordingly expand their diameter, such as Trendelenburg position, changing the extent of patient's head rotation, positive end expiratory pressure, placing a cushion between patient's scapulas, though not all these methods are studied in patients undergoing general anaesthesia (GA).

Aim. The aim of the study was to evaluate and specify which of already known maneuvers for cannulation of RIJV provides the largest diameter of it during GA.

Materials and methods. Between 1 October 2016 and 23 January 2017, we conducted prospective observational study, 30 patients (18 female (60 %), 12 male (40 %)) undergoing GA were enrolled. All patients were over 18 years (56.5 ± 16.6), BMI 28.1 ± 4.9 kg/m^2, without neoplasms, wounds or scar tissue in the area of the neck, without known right carotid artery stenosis above 70 % and known right subclavian vein thrombosis. We visualised RIJV at level of cricoid cartilage with high-resolution ultrasound using linear probe and minimal pressure on the neck. We measured the diameter (0.84 ± 0.32 cm) and area (1.03 ± 0.64 cm^2) of the vein before induction of GA and during following maneuvers after GA: head in neutral position, head rotation 30° to the left, elevation of patient's head using 5 cm high cushion, using pressure on the contralateral jugular vein and using PEEP 5 cm H2O.

Results. There was no difference in the area of RIJV before and after GA in the neutral position (1.22 ± 0.82 cm^2). After GA the area of RIJV while using PEEP 5 cm H$_2$O is significantly larger than while using pressure on the contralateral vein (1.29 ± 0.91 cm^2 *vs.* 0.98 ± 0.72 cm^2; mean difference 0.31 cm^2 (CI 0.03–0.59); p = 0.02). There was a tendency to a larger area of the vein while using PEEP 5 cm H$_2$O when compared before induction of GA (mean difference 0.25 cm^2 (CI 0.03–0.54); p = 0.10). The anterioposterior diameter of RIJV was not affected by positioning.

Conclusion. In patients under GA the best maneuver of patient positioning for RIJV cannulation is application of PEEP 5 cm H$_2$O, whereas application of contralateral neck pressure tends to reduce its area. None of the maneuvers affected anterioposterior diameter of the vein predictably.

FLUORESCENCE EMISSION COMPUTED TOMOGRAPHY IMAGING OF MOUSE TRAUMATIC BRAIN INJURY IN A WEIGHT DROP MODEL

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Keywords. Traumatic brain injury, mouse, in vivo imaging, skull thickness, neuroinflammation.

Introduction. Traumatic brain injury (TBI) is one of the leading causes of mortality and morbidity in people under the age of 45 years. TBI can result in temporal or long-term, even life-long, physical, cognitive and behavioral problems. Anatomical and molecular imaging could be used to design clinically relevant preclinical TBI model for searching of novel post-injury treatment strategies. Recently a tomography system InSyte FLECT/CT has been developed for in vivo small animal imaging.

Aim. The aim of this study was to evaluate a true 360° fluorescence/X-ray tomography imaging approach for monitoring skull thickness, calvarial fractures and neuroinflammation in the mouse closed head injury induced by a weight drop model.

Materials and methods. Male *SW* mice were used to characterize optimal parameters to impact brain without skull fracture and validate TBI weight drop model. To ensure exact anatomical reference and correlate skull thickness and respective force required to induce sufficient mild TBI, CT scans were performed (30 keV, 0.95 mA, 250 ms at 720 projections). Inflammation-activatable probes were injected to *SW* mice after TBI and to hairless *SKH1* male mice after intracerebroventricular (i.c.v.) administration of different doses of lipopolysaccharide (LPS). In vivo fluorescence imaging was performed 24 h later. For excitation of probes, a 705 nm laser and corresponding 803 nm (wide) filter set were used. FLECT images were reconstructed using maximum available 116 source points for each slice of 1 mm thickness. Image analysis was performed using VivoQuant software.

Results. The average *SW* mice parietal bone thickness varied from 0.22 to 0.30 mm. The skull thickness increased proportionally with the age and weight of the animal. Decreased parietal bone thickness was associated with an increased risk of fractures. InSyte FLECT/CT precisely quantified the location and volume of the tissues with inflammation. Volume of brain tissues with inflammation in *SKH1* mice was LPS dose-dependent, ranging from 29 mm^3 to 42 mm^3, after administration of 1 or 2 μg of LPS, respectively.

Conclusion. FLECT/CT system gives accurate in vivo measurements of *SW* mice parietal bone thickness and can be used to evaluate skulls propensity for fracture and to determine force required to induce sufficient TBI without skull fracture for preclinical studies of mild TBI. True 360° fluorescence tomography system is able to localize and quantify the neuroinflammation-related molecular signals and it provides a non-invasive tool for assessing therapeutic efficiency.

HAEMODYNAMIC EFFECTS OF INTRAVENOUS PARACETAMOL IN PATIENTS AFTER HIP AND KNEE REPLACEMENT SURGERY

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Keywords. Paracetamol, blood pressure, post-operative analgesia.

Introduction. Intravenous paracetamol is widely used analgesic drug in Latvia. It is administered in Hospital of Traumatology and Orthopaedics (Riga) for nearly all patients in first postoperative day after knee and hip replacement surgeries. However, in medical literature there are some studies about haemodynamic effects associated with intravenous paracetamol infusion suggesting it causes significant iatrogenic hypotension. Nonetheless, we lack data about paracetamol effects after major orthopaedic surgery when administered intravenously. It could be relevant for patients with additional cardiovascular risk factors for whom hypotension could be dangerous.

Aim. To describe changes in blood pressure and heart rate during intravenous paracetamol infusion and one hour after it in patients within 24 hours of hip and knee replacement surgery.

Materials and methods. Observational study of 96 patients (male 32 (33 %), age 64.9 ± 9.7 years, BMI 31.2 ± 7.2 kg/m^2) that have undergone knee or hip replacement surgery in the previous 24 hours and received intravenous paracetamol infusion for analgesia was performed from November 2016 to February 2017. The following patient characteristics was collected from medical documentation: age, gender, height/weight, type of surgery, ASA class, blood loss during surgery, intravenous paracetamol dose and infusion time. Haemodynamic values (systolic/diastolic/mean blood pressure and heart rate) were measured at predetermined time points – every 5 minutes during infusion and every 15 minutes for an hour after it and obtained from patient monitor saved data. Data were analysed to identify trends in haemodynamics during observation period using linear mixed effects model and obtain number of patients with change in haemodynamic parameters of 15 % or more.

Results. Time after start of infusion of paracetamol significantly influenced systolic blood pressure (log likelihood 17.9, p = 0.007). Post hoc tests indicated that systolic blood pressure was significantly reduced from baseline 30 minutes after end of infusion (difference 3.9 mm Hg (CI −7.3–0.6); p = 0.01). Mean blood pressure dropped from baseline by 2.5 mm Hg (CI −5.2–0.2 mm Hg; p = 0.02) after 30 minutes after the end of infusion. Heart rate did not significantly change during or after infusion of paracetamol. 5 of 96 patients had 15 % or more decrease in systolic blood pressure from baseline.

Conclusion. Intravenous infusion of paracetamol causes statistically significant decrease of systolic blood pressure 30 minutes after end of infusion but its extent is not clinically relevant.

HOW DO ELDERLY RATE THEIR SATISFACTION AFTER TOTAL HIP REPLACEMENT, AND WHAT HASAN IMPACT ON IT?

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Keywords. Hip replacement, Orthopedics, Trauma, THA.

Introduction. Total hip arthroplasty (THA) is one of the most commonly performed surgery in orthopaedics. There are many indications for that including coxoarthrosis, aseptic necrosis of femoral head or developmental hip dysplasia. Those diseases often make even young adults disabled.

Aim. We design our study to compare self-assesed satisfaction and functional outcomes between different age groups to find out how important is the age factor and what is the main reason for that.

Materials and methods. We examined 72 patients after THA performed in our clinic, devided into two groups: A under 55 y.o. and B over 55 y.o. The follow-up varied between 1.01 year to 7.17 years with average follow-up 5.25 years. In addition to physical examination patients were asked to fill in few questionnaires including WOMAC, HKASS and HHS.

Results. We observed statictically important differencies in our age groups ($p < 0.05$) in HKASS questionnaries, what indicates more satisfactory results in elder group. No other statistically important differencies were seen.

Conclusion. There are many factors that have an impact on overall results after total hip replacement. Not only good operation results and well performed rehabilitation decides on overall result of treatment. We should always take into account psychological effects of operative treatment.

HYPOGLYCAEMIA AS A COMPLICATION OF TREATMENT OF DIABETIC KETOACIDOSIS

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Keywords. Diabetic ketoacidosis, hypoglycaemia, predisposing factors.

Introduction. Diabetic ketoacidosis (DKA) is an acute metabolic complication of diabetes which presents as hyperglycaemia, ketonemia and metabolic acidosis. Too large insulin doses used to start the DKA treatment and missing of early infusions of glucose solutions to prevent hypoglycaemia when glycaemia is 11–14 mmol/l are suppose to be the major causes of hypoglycaemia.

Aim. To determine the predisposing factors of hypoglycaemia during DKA treatment.

Materials and methods. An analysis of data of retrospective cohort study of 67 patients treated for DKA at ICU of Hospital of Lithuanian University of Health Sciences (HLUHS) during 2012–2016 (Bioethic's licence Nr. BEC – MF – 492) has been performed. Glucose level in blood, hypoglycaemia episodes, insulin dosage, infusion therapy with glucose solutions have been analysed. SPSS 23.0 has been used for statistic calculations. For statistic data analysis χ^2 trait dependency test and calculation of data numerical characteristics have been used. Traits evaluated as significant as $p < 0.05$.

Results. 15 episodes of hypoglycaemia in 11/67 (16.4 %) cases were found during the insulin treatment of DKA. Glucose level in the blood has varied in range of 1.2–3.3 mmol/l (2.5 ± 0.7 mmol/l). Treatment of DKA with larger 3–8 U/h (4.5 ± 1.2 U/h) insulin doses was initiated in 42/67 (62.7 %) patients (pts), of which hypoglycaemia occured in 9/42 (21.4 %) cases. Statistically significant dependency has been found between treatment with larger doses of insulin and development of hypoglycaemia ($p < 0.05$). Excessive 3–6 U/h dosage (3.7 ± 0.8 U/h) of insulin when glycaemia level was ≤ 11 mmol/l has been continued in 24/42 (57.1 %) pts, in 7/24 (29.2 %) of them hypoglycaemia has developed. Statistically significant dependency has been found between treatment with larger doses of insulin, when glycaemia level was ≤11 mmol/l, and development of hypoglycaemia ($p < 0.05$). When glycaemia level was ≤11 mmol/l, prevention of hypoglycaemia with glucose solutions according to recommendations was missed in 24/67 (35.8 %) cases, hypoglycaemia occurred in 4/24 (16.7 %) of them, but it was not found to be statistically significant ($p > 0.05$).

Conclusion. Episodes of hypoglycaemia have occurred in 1/6 of all cases of insulin treatment in diabetic ketoacidosis. Treatment with larger insulin doses was initiated in 2/3 of all patients, hypoglycaemia occurred in 1/5 of them. Treatment with larger insulin doses has been continued in about 2/3 of patients, hypoglycaemia has developed in 1/3 of them. The larger dose of insulin, the higher risk of hypoglycaemia was found. 1/3 of patients have missed prevention of hypoglycaemia with glucose solutions, and hypoglycaemia developed in 1/6 part of them.

KNEE REVISION ARTHROPLASTY –
ANALYSIS OF RESULTS IN RIGA 2nd HOSPITAL

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Keywords. Knee revision, Knee society score, KOOS.

Introduction. The amount of primary knee joint endoprosthetic surgeries grows each year, so does the frequency of required knee revision arthroplasties. Knee revision arthroplasty is required within the next 5 years for 2–6 % of all primary total knee arthoplasty cases. Results after recurrent surgeries are worse in compare with primary cases with a huge burden for the patients and the health care system.

Aim. To evaluate the post-surgery results of knee revision arthroplasty in period 2013–2015 in Riga 2nd Hospital.

Materials and methods. Patients were retrospectively identified form hospital documents. Selected patients were interviewed and exanimated by using *Knee Society Score (KSS), Knee injury and Osteoarthritis Outcome Score (KOOS).*

Results. We analysed ten knee revision arthroplasty patients. Surgeries were performed by five surgeons. There were six (60 %) women and four (40 %) men with the mean age 71.5 years. Average *KSS* for selected patient group were 81.6 and *KOOS* subscales in pain section 85, symptoms – 87, activities of daily living – 86, knee-related quality of life – 66.

Conclusion. Mean result after knee revision arthroplasty measured with *KSS* is excellent according to reference of grading. Results of *KOOS* are similar to literature data. More patients are planned to evaluate to increase significance of collected data.

KNEE OSTEOARTHRITIS TREATMENT USING PLATELET RICH PLASMA MIX WITH HYALURONIC ACID. 6 MONTHS FOLLOW-UP

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Keywords. Platelet rich plasma, hyaluronic acid, knee osteoarthritis.

Introduction. The hyaluronic acid (HA) has been used for OA treatment for more than 20 years, its clinical effect is well known, however its combination with the platelet rich plasma (PRP) has been marginally studied. Platelets contain alfa granules which in turn contain various growth factors like vascular endothelial growth factor, fibroblast growth factor, insulin-like growth factor and others.

Aim. Primary: to evaluate whether the platelet rich plasma mixed with the hyaluronic acid provides better improvement than the hyaluronic acid only in knee OA treatment.

Secondary: to evaluate whether the platelet rich plasma mixed with the hyaluronic acid can reach more than 10 points improvement in "Knee osteoarthritis and outcome score" (KOOS) score.

Materials and methods. This is a prospective controlled randomised study done in Riga Hospital of Traumatology and Orthopedics. The main inclusion criteria: Kellgren Lawrence grade I-III knee OA, patient age 18–65 years. Included patients were randomly assigned to therapy (PRP + HA) and control groups (HA) with ratio 1:2. In the therapy group patients received 1 injection in 0, 2 and 6 months. In the control group in 0, 1, 2 weeks. Injections were performed by orthopaedic surgeon Dr. Valdis Goncars. The clinical evaluation using KOOS was performed before and 8, 12, 26 weeks after. Statistical analysis was performed with IBM SPSS 22.0.

Results. 43 patients, 16 in the therapy group (Mean age = 58.8, SD = 12) and 27 in the control group (Mean age = 66.7, SD = 10.1) participated in the study.

The therapy and control group mean improvement from baseline after 6 months is: in KOOS symptoms 12.7 (SD = 13.3, p = 0.003) and 16.4 (SD = 18.1, p = 0.003), KOOS pain 10.2 (SD = 12, p = 0.008) and 23.1 (SD = 24.37, p = 0.0001), KOOS activity an daily living 10.4 (SD = 12.9, p = 0.011) and 21.8 (SD = 22.5, p = 0.0001), KOOS quality of life 10.4 (SD = 19.7, p = 0.05) and 18 (SD = 24.8, p = 0.002).

At 2 months, statistically significant superiority of HA group was in KOOS Symptoms +13.2 (p = 0.048), KOOS Pain +17.45 (p = 0.029), KOOS Activity and daily living + 19.3 (p = 0.008) and KOOS Quality of life +18 (p = 0.12) subscales, however at 6 months only statistically significant superiority is in KOOS Pain subscale +12.9 (p = 0.049).

Conclusion. 1 injection of PRP + HA provides less improvement than 3 injections of HA at 2 months follow-up period.

The clinical improvement of PRP+HA has continuously increased until 6 months, whereas HA effect is already deteriorating at this time point.

PRP + HA provides clinically and statistically significant improvement in early and moderate knee OA patients which is considered at least 10 points improvement in the KOOS score at 6 months.

PRP + HA is safe method for relieving knee OA symptoms.

Controlled studies with higher patient count and longer follow-up are necessary to better evaluate the effect of addition of PRP to HA.

LATE RADIOLOGICAL OUTCOMES AFTER ARTHROSCOPICALLY ASSISTED AND TRADITIONAL SURGICAL TREATMENT OF COMPLETE ARTICULAR DISTAL RADIUS FRACTURES

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Keywords. Distal radius fracture, arthroscopy, radiological outcomes.

Introduction. Distal radius fractures (DRF) is the second most common bone fracture worldwide with more than 600,000 cases annually in US (Nellans et al., 2012). In twenty first century traditional surgical treatment of complete articular DRF is combined with intraoperative arthroscopical management of the entire articular surface and structures to provide the best functional outcomes. Postoperative radiological assessment of the joint is mandatory in evaluation of surgical outcomes.

Aim. To compare late radiological outcomes between traditional surgical (TS) and arthroscopically assisted (AA) approach of complete articular DRF.

Materials and methods. In this retrospective study we included 37 patients from 2009–2014 with DRF (AO 23-C) who were treated with either TS or AA approach. Data included patients sex, age, injured and dominant hand, high or low velocity trauma, presence of styloid fracture, days from trauma till surgical intervention, operating time, surgical approach and technique and late radiological outcomes $\geq$1 year after surgery (radial inclination (RI), radial height (RH), volar tilt, ulnar variance, articular surface). Collected statistical data were analysed with SPSS v.20.0 software.

Results. Research included 25 women, 12 men, average age of both groups was 48 ± 2.6 yrs. Left hand injuries were in 22 cases, right hand – 15, 18 patients had trauma in their dominant hand, 30 patients were with low velocity trauma, 7 – high. There were 23 patients with AA and 14 with TS treatment. Distribution of AO classification was in AA: C1 = 6, C2 = 6, C3 = 2; TS: C1 = 13, C2 = 4, C3 = 6. In AA, 64 % had styloid fracture, in TS – 78 %. Volar locking plate was used in 85 % AA and 52 % TS patients, K-wires and external fixation devices were used in 25 % and 48 %, respectively. Smooth articular surface was present in 64 % AA and 57 % TS patients. Analyzing independent sample test, RI was significantly smaller in AA group (AA = 19.5 ± 0.7 *vs.* TS = 24.0 ± 0.9, P = 0.02), RH also was smaller in AA group (AA = 10.7 ± 0.7 *vs.* TS = 12.4 ± 0.5, P = 0.042). Although visual analog scale showed AA = 1 point, TS = 2 points, it was not significant.

Conclusion. Late radiological outcomes after complete articular DRF have better outcomes in TS group than in AA group. However, further longitudinal research for evaluation of functional and radiological outcomes of AA is needed.

MEDICAL ULTRASOUND IN THE DIAGNOSIS OF ACUTE APPENDICITIS, CORRELATION WITH SURGICAL FINDINGS

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Keywords. Medical ultrasound, appendicitis, *appendix vermiformis.*

Introduction. One of the methods used for confirmation of appendicitis is an abdominal ultrasound. An abdominal ultrasound is performed in nearly every appendicitis case with rare exceptions. It is possible that an abdominal ultrasound may not confirm the presence of symptoms associated with appendicitis, this however does not fully exclude the possibility of an inflammatory process in *appendix vermiformis.*

Aim. To statistically determine the diagnostic effectiveness of the abdominal ultrasound in appendicitis cases.

Materials and methods. Patient medical history analysis. Abdominal ultrasound was performed on all patients and appendicitis was conformed surgically in all cases. Patients were grouped in two groups, depending on whether or not any detectable changes within the abdominal cavity were detected using an abdominal ultrasound. For the patient group with detectable abdominal changes during the ultrasound examination, the appendix diameter and the pathological type of the appendicitis were identified and their correlation analysed. Microsoft Excel software was used to perform the data analysis. Analysis was performed using parametric and non-parametric methods. The P-value of statistical significance was chosen as $p < 0.05$.

Results. 455 patient medical histories were assembled. In 49 % cases pathological changes were detected by abdominal ultrasound, in 51 % cases no changed were detected by ultrasound. Upon analysis of the correlation between appendicitis pathological type and the *appendix vermiformis* diameter a statistically significant size differences were identified between phlegmonous and gangrenous types ($p = 0.019$), and between phlegmonous and perforative types ($p = 0.018$). No statistically significant size differences were detected between gangrenous and perforative types ($p = 0.258$). Catarrhal type was not included in the analysis due to insufficient number of patients.

Conclusion. Abdominal ultrasound allowed detection of pathological changes in only 49 % of appendicitis cases, indicating a limited usefulness of this diagnostic method. It should be noted that this is only one in a range of diagnostic tools applicable in appendicitis detection. Clinical manifestation, computed tomography and blood test results should be combined for full diagnosis. The analysis of the *appendix vermiformis* diameter differences and the appendicitis pathological types show a statistically significant size differential between phlegmonous and gangrenous appendicitis types and between phlegmonous and perforative, but no statistically

significant size differences between gangrenous and perforative types. These results indicate that future work may allow us to develop classification methodology that would allow prediction of the pathological type of appendicitis based on *appendix vermiformis* diameter measurement during a pre-operative abdominal ultrasound.

MOST COMMON CAUSES OF SMALL BOWEL BLEEDING AND THEIR CORRELATION WITH VASCULAR PATHOLOGIES (PSEUDOANEURYSM, AVM, AVF), ENDOSCOPIC AND RADIOLOGICAL FINDINGS

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Keywords. Bleeding, angiography, endoscopy, interventional radiology.

Introduction. Despite the fact that small bowel is less common source of gastrointestinal bleeding than stomach and large bowel, it's more often associated with diagnostic and treatment problems, leads to anaemia, may be obscure, require multiple hospitalizations and blood transfusions, but may be overt and life-threatening.

Aim. To evaluate the most common causes of small intestine bleeding in patients that underwent the procedure of visceral angiography in the Department of Interventional Radiology in Riga Eastern Clinical University Hospital and to compare it with endoscopic and radiological findings.

Materials and methods. The retrospective study included evaluation of medical history of patients with small bowel bleeding, in whom the angiography was performed in three-year period between January 2014 and December 2016. Angiographic, endoscopic and radiological findings were evaluated and compared. Data analysed by SPSS.

Results. A total of 32 patients were included. 59.4 % men (n = 19) and 40.6 % women (n = 13). The age of patients ranged from 33 to 91 years with mean age 65.9. The most common site of hemorrhage was duodenum, in 75 % (n = 24) of cases, followed by jejunum in 15.6 % (n = 5) and ileum 6.3 % (n = 2). In one case (3.1 %) the precise source of bleeding hasn't been diagnosed after endoscopic, radiological and angiographic evaluation.

In majority of cases bleeding occured because of ulcers (in 62.5 %), all of them found in duodenum. In 12.5 % AVM were diagnosed (n = 4). Dieulafoy lesion was the source of bleeding in 6.3 % (n = 2). Postoperative bleeding occured in 6.3 % (n = 2). Tumor found in 1 case (3.1 %). One case of diffuse angiopathy and coagulopathy in patient with lymphoma was found during the study. In two cases the exact cause of bleeding has not been documented.

In 84 % of cases the endoscopic and angiographic findings were similar: detected presence of bleeding and it's location. In other 16 % of cases the results of endoscopy were different from angiography. Endoscopy showed negative results in 22.6 % of all cases, but more often when bleeding was located in jejunum (66 %) and ileum (33 %), but all of duodenum lesions were seen during endoscopy. Angiography was non-informative in 2 patients (6.3 %).

Conclusion. Recognizing small bowel bleeding remains a diagnostic challenge, especially if it is present in distal parts of intestine. Most common source of bleeding, duodenum ulcers, are diagnosed by endoscopy. But it is less useful in visualising processes in ileum and jejunum.

Vascular pathology is relatively frequent cause of bleeding.

OPEN *VS.* PERCUTANEOUS BUNNELL TECHNIQUE FOR ACUTE ACHILLES TENDON RUPTURE REPAIR: RESULTS OF FIRST 6 MONTHS FOLLOW-UP

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Keywords. Achilles tendon, rupture, open surgery, percutaneous surgery, complications.

Background. The purpose of this prospective randomized study was to compare and analyse the clinical outcomes and complications of a novel open crown type *vs.* percutaneous Bunnell technique for acute Achilles tendon rupture.

Materials and methods. 100 patients between 2013 and 2015 were enrolled in prospective randomised study. Two surgical methods of repair were compared. Method I: a novel "crown" type open repair. Method II: percutaneous method. Three pairs of absorbable #1 suture for both repair techniques were used. Postoperative rehabilitation was the same for both groups. The short term results of first 6 months are reported. Short term functional results using Achilles Total Rupture Score (ATRS) and complications were analysed.

Results. There were two study groups of 50 patients each. Mean patient age was 37.16 years, 89 being males, 11 females. 31 patients were physical workers, 5 professional athletes and 64 office workers.

Mean operation time for open surgery – 61 min, was significantly longer compared to percutaneous – 34.80 min ($P < 0.00$). During first 6 postoperative months open surgery group had two skin necrosis, two superficial infections, one re-rupture, one stiff ankle and six keloid scars. Percutaneous group had three sural nerve injuries, 2 superficial infections and one case of tendinitis. Cosmetics was better in percutaneous group 8.96/10 *vs.* 7.8/10 ($P < 0.00001$).

Average leg circumference: open group operated limb 394.94 mm *vs.* non-operated 406.56 mm, mean difference 11.62 mm. Percutaneous: operated 391.04 mm *vs.* non-operated 404.1 mm, mean difference 13.06 mm. Ankle range of motion, ATRS results and pain were not statistically different.

Conclusion. Both methods resulted in high patient satisfaction and low complication rate. Novel open "crown" type technique shows to be as safe as minimally invasive percutaneous repair technique for infection and safer for sural nerve iatrogenic damage, however, it is associated with more frequent formation of keloid scar. Cosmetic appearance is superior among percutaneously treated patients. Other parameters did not differ significantly.

PERFORMANCE OF TRACHEOTOMY
AND ITS COMPLICATIONS

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Keywords. Intensive care, tracheotomy.

Introduction. Tracheotomy is an often performed procedure to patients, who are suspected to be treated with prolonged MV. There is an ongoing debate on optimal timing of tracheotomy and advantages associated with it.

Aim. To analyse the impact of time of tracheotomy's performance to treatment results.

Materials and methods. A retrospective study was conducted in Republican Vilnius University Hospital. Data of all 155 patients who had tracheotomy performed during 2014 was analysed. Surgical tracheotomies were performed by both intensive care specialists and surgeons. Data of patients' condition during time of arrival to intensive care unit (ICU), duration of mechanical ventilation (MV), stay in ICU and hospital, time of tracheotomy's performance, complications and its impact on development of pneumonia, duration of MV, further care and outcome was collected.

Results. Average age of patients – 64 (22–109) years, of them – 95 (61 %) were male, 60 (39 %) – women, MV duration – 14 ± 12 (up to 63) days, duration of stay in ICU – 18 ± 12 (up to 66) days, from arrival to ICU to tracheotomy – 9 ± 6 (up to 40) days. Complications after tracheotomy: bleeding happened to 2 patients, infection of wound – to 6. 87 (56 %) patients were diagnosed with pneumonia, 70 of them – before tracheotomy. Pneumonia caused by bacteria with multiple drug resistance (*Acinetobacter baumannii, Klebsiella pneumoniae, Pseudomonas aeruginosa* and *Staphylococcus aureus*) was more likelier to patients with longer stay in ICU ($p < 0.001$). Tracheotomy was performed earlier to patients, treated from neurological and neurosurgical disorders than from other (appropriately 8 ± 4 and 11 ± 8 days since the start of MV, $p < 0.05$), those in a coma (7 ± 3 and 11 ± 8, $p < 0.05$) but did not vary between surgical and therapeutical patients. Time of performance of tracheotomy correlated with longer duration of MV ($p < 0.05$), but did not influence duration of stay in ICU, occurrence of pneumonia, outcome of treatment.

Conclusion. Earlier tracheotomy is influenced by condition of patient and determines shorter duration of MV. Time of tracheotomy performance does not influence occurrence of pneumonia and other complications, duration of stay in ICU and general outcome.

POSTREPERFUSION SYNDROME DURING ORTHOTOPIC LIVER TRANSPLANTATION

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Keywords. Postreperfusion syndrome, orthotopic liver transplantation, incidence, transfusion, outcomes.

Introduction. Severe hypotension during liver graft reperfusion was initially described as a postreperfusion syndrome (PRS). PRS is defined as a decrease in systolic pressure greater than 30 % in the first 5 minutes after graft reperfusion that lasts at least 1 minute. Most recently, the incidence of PRS is reported to be approximately 50 %.

Aim. This study aimed to investigate the incidence and clinical outcomes of PRS in Lithuanian patients following orthotopic liver transplantation (OLT) in Vilnius University Hospital Santariskiu Clinics.

Materials and methods. Intra- and peri-operative data was retrospectively recorded for 41 adult donors and recipients who received OLT during a period from 2007 to 2015. OLT in all cases was performed using Belghiti standard technique. All patients had undergone a balanced general anaesthesia (remifentanil, propofol, sevoflurane). Patients were divided into 2 groups according to the development of PRS: group 1 (patients with PRS) and group 2 (patients without PRS). Demographic characteristics, data of donors and recipients, operative and postoperative course, transfusion data and outcomes of the patients were analysed using SPSS version 22.0.

Results. PRS occurred in 30 (73.2 %) of the 41 evaluated patients. There were no significant differences in demographic and pre-operative data between groups. Duration of the surgery was longer in PRS group 480 (404–556) min *vs.* 440 (370–460) min (p = 0.09). Intraoperative blood loss was significantly higher in PRS group: 3000 (1500–6000) ml *vs.* 1000 (700–2000) ml (p = 0.01). PRS group received statistically significantly more overall noradrenaline than non-PRS group: 7800 (4000–23600) μg *vs.* 4000 (2000–7000) μg (p = 0.01). Statistically significantly more packed red blood cells were administered to the PRS group: 1055 (547–1930) ml *vs.* 425 (248–822) ml (p = 0.02). PRS incidence was higher in those recipients who received liver from older donors: 46.9 ± 11.5 years *vs.* 38.3 ± 14.3 years (p = 0.05). Immediate and subsequent graft survival rates were similar in both groups.

Conclusion. Postreperfusion syndrome is a frequent event following OLT, but it does not affect recovery and survival rates of the patients. On the other hand, higher demand for blood products' transfusion, longer duration of the surgery and patients' hospitalization time are associated with increase of medical expenses. Moreover, risk factors associated with PRS are not fully understood. Nevertheless, older donors' age may contribute to the higher incidence of PRS.

REASONS OF CALLING EMERGENCY MEDICAL SERVICE IN PATIENTS WITH PRE-HOSPITAL DIAGNOSIS OF ACUTE CEREBROVASCULAR INCIDENT

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Keywords. Cerebrovascular, stroke, pre-hospital, emergency.

Introduction. Acute cerebrovascular incidents (stroke, particularly) is one of the leading causes of death in the world and a leading cause of disability. First information about patients with suspected acute cerebrovascular incidents is received from the reasons why they are calling Emergency Care Service (EMS). Emergency care professionals have a crucial role in pre-hospital selection of patients and transportation to Stroke Unit.

Aim. To evaluate the most frequent reasons of calling EMS in patients with acute cerebrovascular incident diagnosis during pre-hospital stage. To evaluate most frequent reasons of calling EMS by age, sex and pre-hospital diagnosis.

Materials and methods. Retrospective quantitative analytic study of all adult (> 18 years) patients transported to Stroke Units with pre-hospital diagnosis of acute cerebrovascular incidents (G45, I60–I64 by ICD-10) in a one year (2015) period. Study included all seven Stroke Units in Latvia. Data were collected from State Emergency Medicine Service (Latvia) database.

Results. In the identified cases (n = 14809) there were 114 different reasons of calling EMS. 24 different reasons (forming 94.5 % of all cases) were mentioned more than 50 times. "Paralysed" (23.8 %) and "Became ill, unable to explain the reason" (18.7 %) and "Became ill, dizziness" (11.5 %) go to a majority of the reasons of calling EMS.

Patiens with the reason "Paralysed" had highest rate (76.4 %) having pre-hospital diagnosis "Stroke, without specifying whether it is a heart attack or stroke" (I64 by ICD-10). "Headache, vomiting" had a highest rate (85.1 %) to be diagnosed as Transient ischemic attack (G45 by ICD-10).

Pre-hospital diagnosis of I60, I61, I62 (ICD-10) were made in 268 (1.8 %) cases.

Adult patients (18–59 years old) account for 23.3 % of all cases; geriatric patients (aged > 60) account for 76.7 %. 62.7 % of all cases were related to female patients.

Conclusion. There are many (114) different reasons of calling EMS. Most patients are females and older than 60 years of age. Most frequent reason of calling EMS are "Paralysed", "Became ill, unable to explain the reason", "Became ill, dizziness". This study can help to understand the typical profile of patients in Latvia with pre-hospital diagnosis of acute cerebrovascular incidents and help to estimate the first clinical symptoms which is the cause for patients to call EMS resulting in pre-hospital diagnosis of acute cerebrovascular incidents.

SCAPHOLUNATE AND LUNOTRIQUETRAL LIGAMENT TEARS : A RETROSPECTIVE REVIEW OF THE OUTCOMES OF ARTHROSCOPIC TREATMENT USING KIRSCHNER WIRES

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Keywords. Lunotriquetral ligament, scapholunate ligament, K-wire fixation, arthroscopic surgery.

Introduction. Scapholunate and lunotriquetral ligament tears are a very common trauma among young and active individuals, associated with high energy trauma and sport-related activities. An untreated SL and LT ligament trauma can be a cause for wrist instability and osteoarthritis Because there is no unanimous opinion about how to best treat this condition it is still a debatable topic in hand surgery and the treatment should involve finding the least traumatic method for the patient, in this case – arthroscopic fixation using Kirschner wires.

Aim. To evaluate wrist function recovery after scapholunate (SL) and/or lunotriquetral (LT) ligament tears treated arthroscopically using Kirschner wires.

Materials and methods. A retrospective study was performed: all patients who underwent an arthroscopic SL and/or LT fixation using K-wires in the year of 2013–2015 in the department of Plastic and Reconstructive surgery at Vilnius University Santariskiu Clinics hospital were included. We measured the amplitude of both wrists using the goniometer and the dynamometer was used to evaluate the grip and pinch strength of the hand. We used visual analog scale to evaluate the pain before the operation and after. Patient perception was evaluated using QuickDASH questionnaire.

Results. There were 27 patients included in this study: 17 (63 %) male and 10 (37 %) female. The mean age was 39 ± 12.85 (range 18–71 years). 12 patients (45 %) had SL ligament tears, 6 (22 %) had LT ligament tears and there were 9 patients (33 %) who had both ligaments torn. All the patients (100 %) had suffered wrist pain before the surgery, and 17 patients were complaining about the pain after the surgery. The operation significantly reduced pain for all the patients (p = 0.00): the mean value of visual analog pain scale was 4.9 ± 2 before surgery, and 1 ± 1 after the surgery. The mean value of QuickDASH questionnaire was 43.5 ± 29.9. Objectively, the motion amplitudes were: flexion – 59.3 ± 12.66, extension – 62.76 ± 12.22, radial deviation – 27.44 ± 9.33, ulnar deviation – 28.89 ± 15.69. The grip strength and pinch strength of the right hand was 43.98 ± 25.45 and 9.6 ± 4.31 respectively, and the grip strength and the pinch strength of the left hand was 45.67 ± 22.32 and 13.49 ± 6.38 respectively. The mean grip and pinch strength of the non-operated hand was statistically higher than the operated hand (p < 0.05). The average time from the initial arthroscopy to the follow-up consultation was 15 months (range 5.6–28.5 months). No complications were administrated in the post-operative period.

Conclusion. The results of treating SL and LT ligament tears by using arthroscopic technique with K-wire fixation can be assessed positively, because there was a significant decrease in wrist pain after the surgery. The motion function of the wrist was not damaged and did not differ from the non-operated hand. The grip and pinch strength of the hand muscles was higher in the non-operated hand, but was in the normal range of values. Shorter hospitalization, quicker recovery time and better cosmetic results can be accomplished by using an arthroscopic technique.

SHORT-TERM OUTCOMES IN PATIENTS WITH OUT-OF-HOSPITAL CARDIAC ARREST ACHIEVING RETURN OF SPONTANEOUS CIRCULATION

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Keywords. Cardiopulmonary resuscitation, return of spontaneous circulation, survival rates, neurological outcomes.

Introduction. Despite rapid development of technologies in emergency medicine and reanimatology the prognosis of patients suffering from sudden cardiac arrest still is doubtful.

Purpose. The objective of the study was to assess the mortality and survival rates of patients suffering from out-of-hospital sudden cardiac arrest with achieved return of spontaneous circulation (ROSC) and to evaluate the neurological outcome of patients at the time of discharge from hospital.

Materials and methods. 206 patients undergoing cardiopulmonary resuscitation (CPR) according to Advanced Life Support algorithms from 1 January 2015 until 31 August 2016 with achieved ROSC at prehospital stage, who were admitted either in Pauls Stradins Clinical University Hospital or Riga Eastern Clinical University Hospital "*Gaiļezers*" were included in this study. The medical documentation of patients was analysed retrospectively (State Emergency Medical Service of Latvia electronic medical records and medical histories of hospital). The neurological outcomes of patients who survived until discharge from hospital were evaluated according to Cerebral Performance Category (CPC) scale based on records in patient medical histories. Statistical analysis of data was performed by using *Microsoft Excel* and *IBM SPSS 20.0* softwares.

Results. The average age of patients was 63.9 ± 15.7 SD years. In 64.6 % the main diagnosis was cardiovascular disease, 8.2 % – neurological or neurosurgical disease, 2.9 % – sepsis or septic shock, 14.6 % – conditions after influence of external factors, 9.7 % – other diseases. In 45.9 % cases the initially detected rhythm was ventricular fibrillation, 2.9 % – pulseless ventricular tachycardia, 28 % – pulseless electrical activity, 19.8 % – asystole. In 6.8 % there was more than one episode of cardiac arrest at prehospital stage. The average duration of CPR performed in prehospital settings was 16.2 ± 15.7 minutes. In 59.2 % cases there was a recurrent cardiac arrest at the hospital. 33.3 % of patients survived less than

24 hours after admission to hospital, 23.2 % survived more than 24 hours, but did not survive until discharge. 42.5 % of patients were discharged from hospital. In 44.3 % of patients who were discharged from hospital the neurological state was ranked with CPC-1, 30.6 % of patients – with CPC-2, 18.1 % of patients – with CPC-3 and 6.8 % – with CPC-4. There was no significant correlation found between duration of CPR at prehospital stage and neurological outcome (p = 0.035).

Conclusion. The rates of survival in patients with achieved ROSC in prehospital stage are relatively low. The most of patients who survived until discharge of hospital had satisfactory neurological outcomes with none or mild to moderate consequences (CPC-1, CPC-2).

SIGNIFICANCE OF AN OBTURATOR NERVE BLOCK
IN KNEE ARTHROSCOPY

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Keywords. Obturator nerve blockade, lidocaine, knee arthroscopy.

Introduction. Knee arthroscopy is the most commonly performed orthopedic procedure. Although various techniques of anesthesia are used while performing it, peripheral blockades are superior to others. For a long time it was usual to use femoral and sciatic nerve blocks, but now it is recommended to add an obturator nerve block to improve perioperative conditions.

Aim. To assess benefits of adding an obturator nerve block in knee arthroscopy and optimize execution of the block, seeking a better perioperative supervision of patients.

Materials and methods. It was a two part single centre study. Firstly, archived data of 88 patients after a knee arthroscopy with peripheral blocks was collected retrospectively. Patients were divided into two groups: femoral and sciatic nerves were blocked in first group (FS) and femoral, sciatic and obturator in second group (FSO). Perioperative data was compaired among groups. Second part was perspective. Patients without contraindications for peripheral blockade prepairing for a knee arthroscopy in the period of October 2016 – February 2017 were enrolled to the study. They received FSO block using lidocaine 1 % with epinephrine. Preoperative, operative and postoperative data was collected. SPSS program was used to count differences using Chi-square test, Independent-Samples T-test and non parametric Independent-Samples Mann-Whitney U test.

Results. Retrospective data showed that FSO block required more frequent use of bupivacaine (29.9 % *vs.* 85.7 %, p < 0.001) and rarer use of midazolame (98.5 % *vs.* 33.3 %, p < 0.001). There were no differences in dose of lidocaine and other perioperative conditions among groups. Prospectively, a total of 109 arthroscopies were performed, 16 of which were executed under triple peripheral block with an average 678.8 ± 56.4 mg dose of lidocaine without toxicity signs. Surgeons rated their comfort during surgery 8.7 ± 2.5 [0–10] and patients rated their satisfaction after anesthesia 9.1 ± 1.1 [0–10]. Duration of sensory block observed 343.15 ± 98.98 min, average postoperative pain was 5.36 ± 2.82 [0–10]. The comparison of rectrospective (only FSO group) and prospective data showed that higher doses of lidocaine were used in prospective study (p = 0.006), though bupivacaine was not used at all. The frequency of administration of additional analgetics and sedatives did not differ.

Conclusion. The use of additional obturator nerve block is acceptable to patients and surgeons. A higher dose of lidocaine with epinephrine does not cause any toxicity. This provides an opportunity to avoid use of bupivacaine, resulting in shorter recovery time after anesthesia, effective control of postoperative pain and complications, faster discharge from hospital.

SODIUM METABOLISM IN NEUROSURGICAL PATIENTS

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Keywords. Neurosurgery, post-operative care, electrolytes, sodium.

Aim. To determine factors which influence sodium excretion in urine in patients after neurosurgical intracranial tumor resection.

Introduction. One of the most common complications after a major brain surgery is disturbances in sodium because of the role that CNS plays in regulation of sodium and water balance. Also, the treatment of brain injury itself can influence sodium disturbances which can lead to serious complications and prolonged post-surgery treatment in the ICU.

Materials and methods. A prospective study was carried out from September 2015 to November 30 2015 in Vilnius University Hospital ICU. The study included 45 patients, who underwent cerebral tumor resection during the period of the study; evaluation included demographic and anthropometric measurements as well as sodium, chloride, creatinine concentrations in serum post-surgery. Laboratory tests were repeated the morning after in the ICU and in addition, sodium and chloride concentrations were measured in urine. Calculations were done to determine fluid balance, amount of sodium (mmol) received. Amount of urine was measured.

Results. A positive correlation was found between urine sodium concentration and amount of sodium administered intravenously ($r = 0.446$, $p = 0.002$) as well as urine output in early post-operative period (until 4 am the next day) ($r = 0.389$, $p = 0.008$). To determine factors which influence sodium output in urine the patients were divided into two groups: group 0 (24 patients) – sodium output is less than 150 mmol/l, group 1 (21 patient) – sodium output is 150 mmol/l or higher. Patients of group 1 had increased diuresis (respectively 2122.7 ± 731.5 and 1614.8 ± 831.2, $p < 0.05$), higher serum sodium concentration (respectively 143.91 ± 3.18 and 141.70 ± 3.1, $p < 0.05$) and recieved higher amount of sodium (respectively 410 ± 205.3 and 273.5 ± 160.8, $p < 0.05$). Intervenous manitol administration had no influence on sodium output in urine.

Conclusion. Sodium concentration in urine depends on the amount of sodium received and its concentration in serum although the patients whose sodium concentration in urine was higher, diuresis was also increased. Administration of sodium leads to increased serum sodium concentration as well as increased diuresis which is due to loss of water, which might have influence on serum sodium concentration.

SPO$_2$/FIO$_2$ RATIO AS DIAGNOSTIC TEST FOR PATIENTS WITH ARDS

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Keywords. ARDS criteria, definition, SpO$_2$/fraction of inspired oxygen ratio.

Introduction. Acute respiratory distress syndrome (ARDS) is defined by Berlin Criteria, which includes also partial pressure of oxygen in arterial blood (PaO$_2$) and specific positive end-expiratory pressure (PEEP). As arterial blood analysis and mechanical lung ventilation are rarely performed in non-intensive care units, ARDS has tendency to be diagnosed late. Identifying other diagnostic and prognostic parameters may improve outcome, because treatment efficacy is depending on early detection of changes.

Aim. To find out whether arterial oxygen saturation (SpO$_2$) to fraction of inspired oxygen (FiO$_2$) ratio can be used in place of traditional PaO$_2$/FiO$_2$ ratio.

Materials and methods. Study is retrospective multicenter in Latvia. Exclusion criteria was NYHA class III–IV heart failure. PaO$_2$, SpO$_2$, FiO$_2$, neutrophil, thrombocyte and C-reactive protein levels closest to time of diagnosis confirmation and on third day after confirmation were interpreted. Vasopressor therapy was registered if provided during hospitalization. Correlation between traditional PaO$_2$/FiO$_2$ parameter and SpO$_2$/FiO$_2$ was investigated. Correlation between inflammation marker levels and outcome was analysed. Data analysis using IBM SPSS 24, MS Excel.

Results. 25 clinical cases (13 males, 12 females) were included in further analysis. Median age was 49 (21–80) years. Pneumonia was most common (60 %) main diagnosis among them; other etiologies were trauma, pancreatitis, sepsis, intoxication. For 14 patients (56 %) outcome was poor, 11 (44 %) patients recovered. Pearson rank correlation coefficient (r) between SpO$_2$/FiO$_2$ and PaO$_2$/FiO$_2$ was 0.79 ($p < 0.001$) on the day of diagnosis and 0.631 ($p < 0.05$) on the third day. T-test showed statistically significant difference in SpO$_2$/FiO$_2$ on third day after diagnosis confirmation between non-survivor (mean 132.74 ± SD 31.18) and survivor group (mean 168.85 ± SD 43.38; $p < 0.05$). No correlation was found for PaO$_2$/FiO$_2$ meanings. SpO$_2$ also has significant difference in survivor (91 ± 5.85) and non-survivor (84 ± 8.06) group ($p < 0.05$). Other parameters did not show significant differences in these two groups. Presence of vasopressor therapy did not shown statistically significant correlation with outcome.

Conclusion. SpO$_2$/FiO$_2$ ratio can be used as diagnostic test in patients with ARDS. In this study inflammation markers and thrombocyte level do not have prognostic value.

THE EFFICACY AND SIDE EFFECTS OF EEG CONTROLLED SEDATION WITH DEXMEDETOMIDINE VERSUS PROPOFOL WHEN USED FOR ELECTIVE COLONOSCOPY PROCEDURE

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Keywords. Dexmedetomidine, propofol, sedation, colonoscopy.

Introduction. Colonoscopy, like many other diagnostic and therapeutic procedures, may be associated with discomfort. Although some patients can tolerate colonoscopy without any sedation and analgesics requirements, it is a distressful procedure for most patients. As a result different techniques have been developed to limit discomfort. Dexmedetomidine is a short-acting selective α2-agonist with sedative, anxiolytic and analgesic properties Propofol is a powerful sedative that has gained the role as the "gold standard" for moderate to deep procedural sedation because of its rapid onset and offset of action.

Aim. To assess the efficacy and side effects of sedation with dexmedetomidine versus sedation with propofol during elective colonoscopy procedure.

Materials and methods. 72 patients ASA I-III scheduled for elective colonoscopy, included in a prospective study, were randomized into 2 groups of 36 to receive either dexmedetomidine (D) (1μg/kg initial loading dose for 10 min, maintenance 0.2–0.6 μg/kg/h) or propofol (P) (Target Controlled Infusion 2–6 μg/ml, using *Schnider* Effect Site pharmacokinetic model).

Rescue analgesics were used by procedure needs.

Procedure sedation levels were targeted to achieve a Narcotrend index score of 65–79.

Results. In D group mean age of patients was 57.2 ± 16.8 years, in P group – 63.0 ± 15.0 years. In D group heart rate (HR) after 10 min decreased from 74.8 ± 12.0 to $59.8 \pm 9.1 \times$/min ($P < 0.01$), systolic blood pressure (SBP) – from 143.1 ± 23.3 to 121.7 ± 20.7 mmHg ($P < 0.01$), diastolic blood pressure (DBP) – from 71.1 ± 12.1 to 64.3 ± 12.0 mmHg ($P < 0.01$), bradycardia required for atropine developed in 8/36 patients, 6/36 had hypotension treated with i/v fluid.

In P group HR after 10 min decreased from 80.2 ± 13.6 to 68.7 ± 12.1/min ($P < 0.01$), SBP – from 142.2 ± 30.4 to 110.7 ± 23.7 mmHg ($P < 0.01$), DBP – from 70.6 ± 13.0 to 60.1 ± 12.4 mmHg ($P < 0.01$). Bradycardia required for atropine developed in 1/36 patients, 3/36 had hypotension treated with i/v fluid.

All patients had adequate spontaneous breathing, no patient required bag-mask ventilation or any airway device. In D group 7/36 patients required O_2 mask supply *vs.* 25/36 in P group. Jaw thrust was required only in P group in 10/36 cases.

In D group 36/36 received rescue analgesics *vs.* only 1/36 in P group.

Conclusion. To provide adequate sedation for elective colonoscopy all patients with dexmedetomidine required analgesics *vs.* only 1 out of 36 patients in propofol group. Dexmedetomidine sedation supplemented with analgesics for elective colonoscopy associated

with less respiratory depression than propofol as a sole agent. Sedation with dexmedetomidine cause more frequently bradycardia than sedation with propofol. Patients sedated with dexmedetomidine had longer discharge time from hospital than patients sedated with propofol. Dexmedetomidine sedation resulted in less patients satisfaction than propofol sedation for elective colonoscopy.

THE RADIOLOGICAL DIAGNOSTICS OF OPPORTUNISTIC CENTRAL NERVOUS SYSTEM INFECTIONS IN HIV PATIENTS AND THE INFLUENCE OF CD4+ CELL COUNT, CD4+/CD8+ CELL RATIO AND HIV VIRAL LOAD ON THE RADIOLOGICAL FINDINGS

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Keywords. Radiology, HIV, CD4+ cell count, viral load, CD4+/CD8+ ratio.

Introduction. Radiological examination is an important tool that can help to clarify the diagnosis of a central nervous system (CNS) opportunistic infection in cases when the clinical and laboratory findings are inconclusive.

Aim. To ascertain the radiological symptoms of opportunistic infections of the CNS in HIV patients and the impact of CD4+ cell count, CD4+/CD8+ ratio and HIV viral load on the radiological manifestation of these infections.

Materials and methods. This is a retrospective study of the radiological findings and the CD4+ cell count, CD4+/CD8+ ratio and HIV viral load of HIV patients at the time of diagnosing an opportunistic CNS infection. The patients were examined at Riga Eastern Clinical University Hospitals "Gaiļezers" and "Latvijas Onkoloģijas centrs" between 1 January 2013 and 19 October 2016. The radiological symptoms of the encountered infections were identified in literature and the frequency of those symptoms was compared to the laboratory findings.

Results. In total, there were 37 diagnoses of an opportunistic CNS infection diagnosed among the 27 patients, with some patients having more than one infection simultaneously and repeated infections. The two most common infections diagnosed were cerebral toxoplasmosis (13 cases, 35.1 %) and progressive multifocal leukoencephalopathy (PML) (12 cases, 32.4 %). The most common radiological symptoms were hypodense lesions for computed tomography (CT) with 11 cases (29.7 %) and asymmetric T2 hyperintense regions (14 cases, 37.8 %) for magnetic resonance imaging (MRI). The mean CD4+ cell count, CD4+/CD8+ ratio and HIV viral load values were respectively: 104.03 cells(c.)/ml, 0.185 and 5.5098×10^5 copies/ml. As the CD4+ cell count decreased below 200 c./ml the frequency of radiological symptoms increased for both CT and MRI, and for MRI even more so with CD4+ cell count below 50 c./ml. The CD4+/CD8+ ratio below 0.1 was shown to be connected with increased findings on MRI in most infections, except for PML, in which for both MRI and CT the ratio above 0.1 was prognostic of a more distinct radiologic symptomatology. No relation between HIV viral load and radiological findings and was established.

Conclusion. Decreased CD4+ cell count and CD4+/CD8+ ratio is related to more frequent radiological findings. The radiological symptoms of PML are seen more frequent at higher CD4+/CD8+ ratio contrary to the other encountered infections. HIV viral load has no effect on the frequency of radiological symptoms.

VALUE OF STATISTICAL SHAPE MODELING AND RADIOLOGICAL PARAMETERS FOR THE ASSESSMENT OF HIP JOINT MORPHOLOGICAL ABNORMALITIES

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Keywords. Statistical shape modeling, hip morphology, osteoarthritis.

Introduction. A theory proposed by Murray in 1965 suggests that the majority of osteoarthritis (OA) cases is caused by subtle structural and morphological abnormalities of the proximal femur and acetabulum. Since then, morphometric analyses have been widely used for the diagnosis, management and prognosis assessment of skeletal pathologies. In year 2013 a fully automatic shape model matching system was presented to derive statistical shape models (SSMs) of the proximal femur from anteroposterior pelvic radiographs.

Aim. To determine the frequency and characteristics of hip joint morphological abnormalities, which can lead to the development of OA.

Materials and methods. 50 pelvic radiographs of unilateral hip OA (Kellgren/Lawrence (K/L) grade ≥ 2) patients (Arthritic group) and 50 patient (aged at least 65 years) radiographs with no definite signs of OA (K/L grade 0/I) (Control group), who were hospitalized in Hospital of Traumatology and Orthopedics during the period from year 2014 to 2015, were analysed. In both groups, alpha angle, lateral center edge angle, neck shaft angle, acetabular depth was measured and the presence/absence of pistol grip deformity and crossover sign was assessed using the *Impax-Orthopaedic-Tools 3.0.2.3* program. SSMs were created using the *BoneFinder 1.2.0* program, which automatically sets 65 landmark points on the contour of the proximal femur. The obtained data were statistically analysed by the *IBM SPSS 23* program.

Results. The mean age in both groups significantly differed – 67.40 ± 11.78 (42–89) *vs.* 82.04 ± 7.53 (65–94) years (p < 0.001) due to inclusion criteria in Control group (age ≥ 65 years). In the Arthritis group there were significantly more cases of pathological alpha angles (> 50°) 66.0 % *vs.* 28.0 % (p < 0.001; OR 4.99; 95 % CI 3.13–11.68), pistol grip deformities 56.0 % *vs.* 12.0 % (p < 0.001; OR 9.33; 95 % CI 2.13–11.68), acetabular protrusion 30.0 % *vs.* 10.0 % (p = 0.02; OR 3.85 95 % CI 1.28–11.64) and dysplasia (center edge angle < 25°) 12.0 % *vs.* 0.0 % (p = 0.02) comparing to Control group. There were significantly more cases with at least 2 signs of FAI in the Arthritis group – 68.50 % *vs.* 31.50 %. (p < 0.001; OR 5.52; 95 % CI 2.33–13.07) comparing to Control group. Two out of eight proximal femoral modes (mode 2, mode 4) were associated with hip OA characteristics (p = 0.002; p = 0.03).

Conclusion. Several morphological abnormalities of the hip joint such as two or more signs of femoroacetabular impingement (alpha angle more than 50°, pistol grip deformity, center edge angle more than 39°, crossover sign), two specific shape modes (mode 2, mode 4) of the proximal femur, acetabular protrusion and dysplasia are contributing factors for hip OA development.

WHAT CAN EFFECT PREHOSPITAL TIME FROM SYMPTHOMS ONSET TO DESISION TO SEEK HELP IN ACUTE MYOCARDIAL INFARCTION?

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Keywords. Acute myocardial infarction, delayed treatment, risk factors.

Introduction. Early diagnosis and treatment of acute myocardial infarction (AMI) can prevent life-threatening complications. Despite the time-dependent success, many patients with AMI have delays in seeking medical care. There is not enough information about the risk factors of prehospital delay time (PDT) in AMI in Lithuania.

Aim. To evaluate the possible risk factors of PDT in patients with AMI.

Materials and methods. A cross sectional study was carried out on 100 patients with AMI. Each questionnaire survey was filled during talk with patient face-to-face in cardiology intensive care unit and the remaining data were collected from medical records. Patients were categorized into 2 groups according to symptom to first medical contact (STFMC) time ≤ 6 hours (I group) and STFMC time > 6 hours (II group). Logistic regression was performed to identify which characteristics of patients contributed statistically significantly to the prediction of early (I group) versus late (II group) arrival at the hospital. The data were analysed using SPSS 21.0.

Results. From 100 interviewed patients, 94 patients were included for the final calculations. The overall median (25th; 75th percentiles) delay time was 4 (0.7; 15.7) hours. There were 56 (59.6 %) patients in the I group. II group patients were older than I group (median 65 *vs.* 62 years; p = 0.834). The emergency medical service (EMS) was used by 74 (78.7 %) of patients, and these patients had a significantly shorter prehospital delay time than those who transported themselves to hospital (median 9.3 *vs.* 3 hours; p = 0.044). The living in rural area, compared with urban, predicted longer PDT (OR = 0.361; CI 95 % = 0.131–0.995; p = 0.044). Patients with symptoms which started at night had longer PDT (OR = 2.658; CI 95 % = 0.998 –0.7078; p = 0.046). Being alone at the onset of symptoms (OR = 0.754; CI 95 % = 0.302–1.881; p = 0.544) or AMI before (OR = 1.621; CI 95 % = 0.577–4.555; p = 0.357) did not differ between groups. Patients who thought their symptoms were associated with others diseases had almost 4 times higher risk of longer PDT (OR = 3.64; CI 95 % = 1.29–10.272; p = 0.012), but common interest in medical information sources did not protect patients from longer PDT (OR = 1.163; CI 95 % = 0.474–2.853; p = 0.822).

Conclusion. Living in the rural area, symptoms which started at night and patients' assumptions their symptoms were associated with others diseases are risk factors of PDT. Use of the EMS may reduce treatment delay.

EVALUATION OF MAGNETIC RESONANCE IMAGING WITH GADOLINIUM BASED CONTRAST MEDIA IN PAEDIATRICS

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Keywords. MRI, contrast media, indications, pediatric population.

Introduction. In paediatric practice preferred examination methods are those without exposure to ionizing radiation therefore instead of computed tomography examination magnetic resonance imaging (MRI) is commonly used. MRI often requires routine administration of gadolinium (Gd) containing contrast media for many reasons. Unfortunately, Gd contrast media are related to eventually fatal complications – systemic nephrogenic fibrosis and deposition of Gd in basal ganglia.

Aim. To assess justification of Gd contrast media administration reviewing MRI examinations performed with intravenous Gd in Children's Clinical University Hospital, Riga, Latvia, determining the most common indications for MRI with contrast media administration, and the number of patients having repeated MRI with contrast media injection and the number with multiple examinations with no findings over several years.

Materials and methods. The retrospective descriptive study includes 1147 MR examinations with Gd containing contrast media injection in Children's Clinical University Hospital from May 2015 till September 2016. In the study 618 patients were included, 120 of them with oncological disease. The data were compiled in Excel tables and processed with SPSS 20.0 program.

Results. All of the patients were divided into 2 groups – patients with present malignant disease or such in the past and patients with no oncological abnormality. The comparison between non-contrast and post-contrast images was performed in 33 oncological patients who underwent $\geq$ 5 contrast MRI exams. In 52.7 % (n = 17) the pathology was not found neither in non-contrast nor in contrast sequences in average time period of 12 months (from 0 until 37 months). There were no cases showing absence of an abnormality in non-contrast images and presence of pathology after the contrast medium injection.

In the non-oncological patient group three most common indications were arthritis (28.3 %; n = 191), non-oncological brain pathology (12%; n = 81) and unclear diagnosis of miscellaneous locations (10.4 %; n = 70). An abnormality was found in 56 % (n = 367), however 44 % (n = 283) of patients did not present an abnormality.

Conclusion. Among all patients with oncological diseases, 33.3 % received multiple injections ($\geq$ 5) of contrast medium over several years despite absence of visible abnormality in non-contrast series. This requires reviewing the aggressiveness and prognosis of the primary diagnosis with the aim to reduce contrast medium administration in at least part of follow-up examinations.

Since only 56 % of patients with suspect abnormalities had a positive diagnosis, non-contrast images should be carefully reviewed to refuse contrast medium injection in cases where the abnormality is absent in non-contrast images.

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IMPACT OF A COMPOSITE INHALATIONAL AND REGIONAL ANESTHESIA TO THE OPTIMIZATION OF PERIOPERATIVE PERIOD DURING SHOULDER ARTHROSCOPY

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Keywords. Shoulder arthroscopy, composite anesthesia, safe hypotensia.

Introduction. Majority of modern hospitals attempt to improve health care quality. Only safe and prospective studies can reveal how to reduce operational costs and the number of bed-days in patients while optimizing intraoperative conditions and reducing rate of complications.

Aim. Applying a composite anesthesia and moderate hypotension in order to improve the sight of operational field during shoulder arthroscopy, we were seeking to optimize perioperative period by reducing the usage of supplementary medicaments and side effects, expecting of shorter hospital stay.

Materials and methods. In Vilnius Republican University hospital a prospective research was executed 14 patients underwent a composite inhalational anesthesia and regional brachial plexus block; monitoring of non-invasive brain oxygenation was applied. Mean arterial blood pressure (MAP), heart rate, minimal alveolar concentration (MAK) of sevoflurane, quantity of cristaloids for volemia correction, and demand of antiemetics or other drugs; duration of surgery and hospital stay were registered. Archival perioperative indicators from 28 patients undergoing same surgery were collected as a control data. Comparison between groups was performed. The result is considered statistically reliable when $p \leq 0.05$.

Result. Group's homogeneity affirmed. Reduced MAP ($p = 0.003$) and lower heart rate ($p = 0.011$) were maintained during the surgery in observational group with brain oxygenation monitoring, slightly enhancing the average MAK from 0.61 to 0.69 ($p = 0.42$). Maximum decrease of brain oxygenation was registered 14 % lower the baseline and the administration of fluid therapy was 25.52 *vs.* 24.11 ml/kg ($p = 0.059$). Supplementary antiemetics postoperatively did not differ ($p = 0.65$) in groups, even though MAP after surgery was registered higher ($p = 0.037$) in archival data. The surgery duration and extubation time were similar, but postoperative ward time (67.5 min *vs.* 60 min) and hospital stay (1.93 day *vs.* 1.29 day) – slightly shortened.

Conclusion. Deepening of inhalational anesthesia reduces MAP significantly but safely, this way creating favorable intraoperative conditions for the shoulder arthroscopy. Patients in the postoperative unit and in the hospital could stay for a shorter period of time without observed complications.

PROVIDED EXPERIMENTAL EVIDENCE OF THE NEW SUTURE METHOD ON RABBIT'S ACHILLES TENDONS UNDER EXPERIMENTAL AND LABORATORIC CONDITIONS

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Keywords. Achilles tendon, rupture, new method, suture.

Introduction. The cases of Achilles tendon rupture in developing and developed countries has been on the increase over the past 20 years. Although most Achilles tendon ruptures occur during sporting activities, the intrinsic degenerative changes related to ageing may play an important role.

The Achilles tendon is the strongest and thickest tendon in the body, but also one of the most commonly injured. Both surgical and nonoperative options for treatment have been described. End to end Achilles tendon repair with suture is the gold standard approach to open surgical intervention, with many techniques described. We describe a novel method of primarily repairing complete Achilles tendon ruptures. Our new method is considered to be "suture loop technique".

Aim. Main aim of this method is to improve the effectiveness in surgical repairing the Achilles tendon ruptures. This research will reveal the main advantages of our new suture method in comparison with the existed Krackow and its modification method.

Materials and methods. 18 rabbits were used in our research, incision was made 4 cm proximal to the Achilles insertion on the calcaneus in the right leg in order to perform the new suture with PDS*II and the left leg served as a control. All Achilles tendons also received an epitendinous repair with 3–0 polypropylene suture to appose the tendon ends. After 7 weeks biomechanical testing in order to assess the strength of Achilles tendons were initiated. In our research we have used Kruskal–Wallis variance test and Wilcoxon test for the purpose of obtaining more precise values.

Results. Breaking strength of control tendons 7 weeks postoperatively was 242 (185–287) Newton. Tendon group with new suture method endured significantly more force 220 (216–224) Newton in comparison with other two groups in which Krackow and modificated Krackow method Giftbox were applied. P value in Kruskal-Wallis test for the 3 groups was $P = 0.0018 < 0.05$. The value between control groups were not statistically significant. Wilcoxon test showed significant differences between the control and test groups. Collectively, the rates the wound complication as deep infections, delayed wound healing, adhesion formation varied from 5.8 % to 13 %. Infection has been the most reported complication in percentage rates from 3 % to 7.5 %.

Conclusions. The breaking strength of tendons repaired with New suture method was significantly higher in comparison to the tendons sutured with Giftbox and traditional Krackow method.

XI. PHYSIOLOGY, BIOCHEMISTRY, PHARMACOLOGY

CYTOXIC ACTIVITY OF BETULINIC ACID AND ITS DERIVATIVES AGAINST RARE CANCERS

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Keywords. Rare cancers, betulinic acid, cytotoxicity.

Introduction. Rare cancers are a group of tumors with a prevalence of fewer than 5 cases out of a population of 10,000 and with 20 % lower 3-year survival rates than more common cancers. The lower survival rates and poorer overall prognosis might be due insufficient diagnostic methods and lack of appropriate therapy. Thus, development of new drugs against rare cancers is an important topic. Nowadays ~50 % of anticancer drugs are natural origin or their semi-synthetic derivatives. Betulin and its oxidized form betulinic acid are naturally occurring triterpenes, isolated from birch-bark, with selective cytotoxic activity against different cancer cells.

Aim. This study was performed to assess the cytotoxic effects of betulinic acid and its newly synthesized derivatives on rare cancer cell lines.

Materials and methods. Cytotoxic activity of betulinic acid and its 14 newly synthesized derivatives was investigated in vitro against 4 types of rare cancer cells: 2 types of neuroblastoma cells (Neuro2a; N1E-115), osteosarcoma cell line (K7M2wt) and glioblastoma (NG108-15) cancer cells. To assess cytotoxic effects of tested substances on normal cell lines a myoblast cell line (C2C12) and standard fibroblast cell line (3T3) were used. Cells were incubated with studied substances for 48 h at three concentrations (10, 30 and 100 µmol/l). At the end of incubation period, the amount of survived cells was assayed using the MTT test. Activity of newly synthesized betulinic acid derivatives was characterized using IC_{50} values.

Results. Obtained results showed that betulinic acid had significant cytotoxic activity against Neuro2a, NG108-15 and N1E-115 cells. The betulinic acid IC_{50} values against Neuro2a, NG108-15 and N1E-115 cells were 10 ± 6, 9 ± 4 and 6 ± 4 µmol/l, respectively. A cytotoxic effect of betulinic acid against osteosarcoma cell line (K7M2wt) was weaker (IC_{50} = 44 ± 10 µM). Betulinic acid also demonstrated cytotoxic effects against C2C12 (IC_{50} = 16 ± 12 µM) and 3T3 (IC_{50} = 22 ± 12 µM) cell lines. Out of 14 newly synthesized derivatives, IRR-140 showed similar cytotoxicity compared to betulinic acid against Neuro2a, NG108-15 and N1E-115 cells. However the substance was more toxic against normal myoblast cell line. In addition, substance ZT-131 demonstrated significant activity (IC_{50} = 6 ± 1 µM) against NG108-15 cells.

Conclusion. Taken together our results demonstrate that betulinic acid and its derivatives have significant activity against rare cancers.

EFFECT OF FATTY ACID METABOLISM INHIBITOR ON ANGIOGENESIS OF ISOLATED AORTIC RINGS

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Keywords. Endothelium, angiogenesis, fatty acid metabolism inhibitor.

Introduction. Endothelial cells (ECs) form the inner lining of the blood vessels and have vast functions: working as a barrier, having endocrine, paracrine, autocrine effects, regulating the blood homeostasis and also playing the pivotal role in angiogenesis – formation of new blood vessels. The energy for the angiogenesis in ECs is generated by anaerobic glycolysis, however the carbon source for DNA replication and proliferation is fatty acid (FA) metabolism. Thus, the inhibition of FA metabolism in ECs would attenuate the angiogenesis and this approach would be useful to treat diseases with excessive angiogenesis.

Aim. The aim of this study was to assess whether FA metabolism inhibitor, etomoxir, attenuates the formation of new blood vessels in isolated mice aortic rings.

Materials and methods. Aortic rings were obtained from male C57bl/6 mice. Animals were euthanized and aorta was aseptically dissected, cleaned and cut into ~0.5 mm width rings. Obtained rings were embedded in collagen matrix with luminal axis parallel to bottom of the well in 96-well plate by one ring per well. Control group aortic rings were incubated in Opti-MEM media supplemented with 2.5 % FBS and 1 % penicillin-streptomycin. Aortic rings from the second group were incubated in the same media with added vascular endothelial growth factor (VEGF) at the concentration of 30 ng/ml. Aortic ring vessels from the third group were incubated in the media with VEGF and etomoxir at the concentrations of 30 ng/ml and 10 μmol/l, respectively.

Aortic rings were incubated for 6 days and cell media was changed every second day. On the sixth day of the experiment digital pictures of newly formed spouts were taken and the sprouts were counted.

Results. The highest number of newly formed sprouts was observed in the day six, afterwards the sprouts began to deteriorate, therefore, the effects of etomoxir on the angiogenesis was assessed on the sixth day of the experiment. The mean number of sprouts in the control group was 25 ± 8 sprouts/aortic ring. Incubation of mice aortic rings with VEGF statistically significantly increased the number of sprouts nearly two times. The average number of sprouts in VEGF treated rings was 50 ± 14 sprouts/aortic ring. Analysis of digital photos of aortic rings incubated in media with VEGF and etomoxir revealed that etomoxir did not inhibit VEGF stimulated sprouting. The mean number of sprouts in VEGF and etomoxir treated aortic rings was 53 ± 21 sprouts/aortic ring.

Conclusion. In summary, our results demonstrate that fatty acid metabolism inhibitor, etomoxir, does not inhibit the formation of new vessels in isolated aortic ring model.

FORMULATION OF PRODUCT FOR TOPICAL DELIVERY OF HEPARIN

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Keywords. Topical, development, formulation, heparin, gel, carbomers.

Introduction. Topical heparin products are used to relieve symptoms of varicose vein disease. While heparin gels are popular, more important is to exceed similar products as well as comply with regulatory criteria. Here we describe development of gel system containing heparin.

Aim. The study aim is to determine the use of carbopol as gelling agent in a given system and investigate the effect of additives in the formulation of topical heparin preparation.

Materials and methods. The authorized heparin product with similar content was used as a control. Ten gels containing different amounts of carbopol, but otherwise similar to control were prepared. The excipients were carbopol, triethanolamine, alcohol, Lavender oil, Neroli oil, methyl parahydroxybenzoate, propyl parahydroxybenzoate and purified water. The control contained carbopol 940, but experimental formulations contained more recent grade of polymer. Physiochemical properties as pH, viscosity, color and transparency were evaluated. Formulations meeting the criteria of physiochemical properties were compounded with additives, these formulations were put through accelerated stability testing for 6 months (temperature 40 °C ± 2 °C relative humidity 70 % ± 5 %) in compliance with CPMP/QWP/122/02 Guideline on stability testing: stability of existing active substances and related products.

Results. Three out of ten formulations had met the criteria of physiochemical properties (appearance – transparent or almost transparent colorless or yellowish gel; viscosity – 2000–2600 mPs; pH – 5.5–6.0). Acceptable formulations compounded with preservatives after 6 months accelerated stability testing showed suitable results of active ingredient identity and content, preservative identity, and microbiological stability according to Eur.Ph.9.0 01/2017:50104.

Conclusion. Carbopol is a suitable gelling agent in heparin gel. Best results were obtained using carbopol in concentrations of 1.15 %, 1.20 %, and 1.25 %, used with preservatives gelling system showed good microbiological and active ingredient stability.

NEW STABILIZED MAGNETITE NANOPARTICLES AND THEIR USE IN THE TREATMENT OF ACUTE BLOOD LOSS

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Keywords. Magnetite nanoparticles; 3-hydroxypyridine; mexidol; polyvinyl pyrrolidone; blood loss.

Introduction. Magnetite nanoparticles (MNPs) are studied as contrast agents for magnetic resonance imaging, platforms for targeted drug delivery, remedies for hyperthermia of cancer and anti-anemic preparations. The preconditions for biomedical use of MNPs is their stabilization in liquid medium, wherein the covering substances largely determine pharmacological activity and toxicity of such particles. It was obtained nanofluid containing MNPs covered with 2-ethyl-6-methyl-3-hydroxypyridine succinate (mexidol) and polyvinyl pyrrolidone (PVP), which have not been studied previously.

Aim. Research aim is to study the effect of MNPs stabilized with mexidol and PVP on hematological parameters of laboratory animals in the norm and under the conditions of acute blood loss.

Materials and methods. To prepare composite NPs we used powdered magnetite condensate with a particle size of 5–8 nm obtained by the electron-beam technology. It was dissolved in distilled water to the concentration 269 µg iron (Fe)/ml in the presence of mexidol and PVP. Physical parameters of this colloidal solution were controlled by means of laser correlation spectroscopy, magnetometry and atomic optical emission spectrometry with inductively coupled plasma. Obtained nanofluid was used in the experiments on 109 albino male rats. It was administered intraperitoneally in a dose 1.35 mg Fe/kg to intact animals and rats immediately after the blood loss. The effects were compared with the action of the standard iron preparation Ferrum Lek (1.25 mg Fe/kg). Red blood cells count (RBC), hematocrit (Hct), hemoglobin (Hb) and reticulocytes content in the blood were registered within 3 and 72 hours (hr) after the MNPs injection. The resulting digital material was statistically processed using standard software package Statistica for Windows 8.0.

Results. Nanofluid stimulates erythropoiesis in the intact animals that is characterized by the increase in RBC, Hct, and Hb, which, however, did not go beyond the norm. 3 hr after the blood loss, MNPs provides the increase in RBC by 20 % ($p = 0.0004$), Hb – by 15 % ($p = 0.0197$), and Hct by 13 % ($p = 0.018$) as compared to blood loss without pharmacological correction. 72 hr after the blood loss, the influence of investigated NPs is characterized by the increase in Hct with no significant changes of RBC and Hb as compared to pathological condition. At this period. MNPs enhance the reticulocytes content in blood by 41 % ($p = 0.0005$) as compared to control pathology. In both cases, the effects of nanofluid are more pronounced than those at the use of reference preparation.

Conclusion. Thus, MNPs stabilized with mexidol and PVP stimulate erythropoiesis in the norm and in the acute blood loss. The advantage in efficiency and the possibility of the use as nanofluid offer the promise of developing a new formulation for the correction of anemic conditions based on the given NPs.

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PRODUCTION AND CHARACTERIZATION OF BETULINIC ACID MICROCAPSULES FOR DRUG DELIVERY

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Keywords. Microcapsules, betulinic acid, poly lactic acid.

Introduction. Betulinic acid (BA) has multiple potentially beneficial medicinal properties. It is a pentacyclic triterpenoid found in a variety of plants, particularly in the bark of white birch (*Betula pubescens).* Previous studies have shown that it provides therapeutic success in the treatment of oncological illnesses, inflammation and HIV. It also promotes osteogenesis and reduces bone loss in cases of metastatic cancer. The anti-inflammatory activity is especially relevant as the effect could be a valid alternative to antibiotics. Combining this effect, with the compound ability to promote bone healing and growth, could ensure a useful treatment opportunity in cases of bone transplantation. In order to develop a bioavailable drug delivery system for BA, we attempted to produce poly lactic acid (PLA) microcapsules. PLA and microencapsulation technique would provide a drug delivery system with an increased biocompatability and a controlled release rate of the drug.

Aim. The main objective of this research is to produce and evaluate the characteristics of (PLA) microcapsules as a drug delivery system of BA.

Materials and methods. In this research, a widely applied biomaterial – PLA – was used. The production process was based on the "solid-oil-water" (s/o/w) microencapsulation method. Several variations of the method were explored and compared, by altering specific steps of the synthesis. The main changes were made regarding homogenization and drying of the microcapsules. For homogenization two techniques were used – a blender and a homogenizer. Influence of the drying method for readymade microcapsules was valued by using two methods – lyophilisation and drying in the oven at 40 °C. FTIR (*Fourier transformation infra red*) spectroscopy was used to determine whether the obtained microcapsules contain BA. To quantify the encapsulated amount of BA, UV-VIS spectrometry was used. Microcapsules were dissolved in methanol with homogenization and ultrasonication. A standard solution calibration graph was prepared and the concentration of the compound quantified. To verify the quantitative results gained with UV-VIS, an NMR (*nuclear magnetic resonance)* analysis (solution in $CDCl_3$) was used. The size distribution of the microcapsules was assessed with granulometry and visual evaluation with an optical microscope.

Results. The FTIR spectrum proved that the microcapsules contain betulinic acid. According to NMR analysis the amount of encapsulated BA varies between 5–14 weight %. The microcapsule sizes range between 10–100 μm. The form of the microcapsules is spherical, with a smooth surface, when produced with a blender, and has a grainy surface, when the homogenizer was used.

The highest material recovery was reached when blender instead of the homogenizer was used. Furthermore, the recovery was increased when lyophilisation was used. The recovery of the materials ranges between 51–74 %.

Conclusion. The production of microcapsules with 5–14 % encapsulated BA has been successfully done. Further improvements regarding the efficiency of the production process are encouraged.

PROLIFERATIVE ACTIVITY OF HELA CELLS IN CULTURE UNDER ELECTRICAL STIMULATION

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Keywords. Electrical stimulation, proliferative activity, HeLa.

Introduction. Many medical experiments nowadays are performed in vitro. Various methods are being developed to control cell proliferation and cell cycle behavior. Electrical stimulation of cells is a novel tool for tissue and biomedical engineering due to its universality and relatively inexpensive realization. This method is mainly used to enhance tissue regeneration, to affect differentiation, proliferation and other properties of cells. Despite the large number of literature data, the mechanism of cell respond to the external electric field is yet unknown.

Aim. The purpose of this study is to investigate the effect of electrical stimulation with different number of pulses on proliferative activity of HeLa cells.

Materials and methods. Epithelioid human cervical cancer cells (line HeLa) were used in this study. Cells were cultivated at 37 °C under a humidified atmosphere with 5 % CO_2. Electrical stimulation was launched 8 hours after cell passaging using programmable electrical biological stimulator (BSU, Minsk, Belarus) and lasted for 12 hours. Stimulation included uniform alternating electric field with biphasic pulses at 10 Hz frequency with 20 V/m electric field strength. Varying the number of pulses in the train (1, 3 or 5), we observed changes in the cell proliferation activity.

Results. The influence of electrical stimulation on proliferation of HeLa cells was investigated. We detected increase of proliferative activity relative to control sample. After exposing Hela cells to one-pulse mode of electrical stimulation the highest increase of proliferative activity was revealed (statistical significant difference ≥ 95 %). The average rise of proliferation relative to control sample was 20 %. Further increment of pulses quantity lead to decrease in cell proliferation. As a result, after stimulation at three-pulse mode the average rise of proliferation relative to control sample was only 15 % (statistical significant difference ≥ 90 %). Meanwhile at five-pulse mode of electrical stimulation no changes in proliferative activity were observed.

Conclusion. It was shown, that proliferative activity of HeLa cells can be controlled by varying parameters of electrical stimulation (the number of pulses in the train). As a result this method can be used in cell engineering to increase cell mass or in anti-tumor therapy to decrease cell growth.

REALIZATION OF HYPERTHERMIA EFFECT IN THE SKIN THROUGH HARMONIC VIBRATION

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Keywords. Hyperthermia, cancer treatment, skin under vibration, complex modulus.

Introduction. Hyperthermia is a type of cancer treatment, in which living tissue exposed to heat to about 45 °C. Researches have shown that high temperatures can damage the cancer cells and kill them, usually with minimal damage to healthy tissue. This type of treatment can significantly reduce the tumor, killing cancer cells and damaging proteins and structures within them. This paper will consider the method of heating living tissues through mechanical vibrations, especially in case of the skin and the underlying supportive tissue.

Aim. Developing a model that is able to predict important aspects of thermo mechanical response of the skin and the underlying supportive tissue to harmonic loads.

Materials and methods. The model is developed for the one-dimensional case with the possible subsequent expansion to fully three-dimensional and axially symmetric three-dimensional case. The mechanical part of the model is based on the Bodner and Partom viscoplastic model of skin.

By solving related system of non linear differential equation, it could be obtained the loads $\sigma(t)$ and deformations $\varepsilon(t)$ of material under oscillation with the certain frequency ω. Computing these parameters for the number of frequencies and applying complex modulus theory, it could be obtained elastic complex modulus that depends on frequency and amplitude of vibration. As a result, it could be computed the rate of energy dissipation of internal friction in the material that will appreciate its heating. The bio thermal part of the model is based on the work of Xu, Lu, & Seffen, 2008. Consequently, thermo mechanical model of skin under the cycling harmonic vibration could be obtained.

Results. Within this model it was investigated and obtained a number of results for different parameters of the rod (one dimensional case) and for the applied load. In general, two different sets of rod's sizes were considered that respectively determine the resonant frequency ω_0, and values of applied load F. Also, the impact of the biological components of the heat equation was considered. Analysis of this model showed that for achieving the therapeutic affect of hyperthermia it is quite enough to apply small frequencies and amplitudes of the load in the case of rod of co dimensional sizes with the size of the cancer tumor in II and III stage of disease.

Conclusion. This model relatively well correlated with thermoregulation features of real leather. Therefore, the reasoning in this work can to some extent be useful for more accurate modeling of thermo-mechanical characteristics of the cancer tumor.

THE IMPACT OF VARIOUS FACTORS IN LATVIAN POPULATION ON THE NITRITE LEVEL IN SALIVA

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Keywords. Nitrite, nitric oxide, saliva, lifestyle.

Introduction. Various nitrogen compounds including nitrite take part in nitrosylation, nitration of different biomolecules, thus affecting the role of these molecules in various signal transduction pathways, enzymatic reactions, physiological and pathophysiological processes in the body. The body can get nitric oxide, not only from the L-arginine-nitric oxide (NO) synthase pathway, but also from nitrates in food. Dietary nitrate further mixed with endogenously synthesized nitrate in the bloodstream. Most of these nitrates taken up by the salivary glands and secreted into saliva. Oral bacteria reduce the nitrates to nitrites. Parts of nitrites are reduced to NO in the stomach acidic environment. The remaining nitrites are rapidly absorbed and accumulate in tissues, where it regulates the function of the cells by reacting with proteins and lipids or reducing to NO. So nitrite role in human metabolic pathways is invaluable. It is therefore essential to clarify the factors that affect the nitrite levels for saliva.

Aim. The goal of this study was to clarify the relationship between nitrate levels in human saliva and diet, oral hygiene, smoking habits, blood pressure, weight and common diseases.

Materials and methods. 67 subjects were enrolled in the study. 5 ml of saliva was collected from each, samples were immediately frozen at −80 °C, blood pressure was measured, subjects were weighed and filled form with questions about their lifestyle. Nitrite level was determined by nitric oxide analyser NOA 280i. Statistic methods IBM SPSS Statistics version 23.0 was used.

Results. The significant correlation between gastritis and average nitrite concentration in saliva ($p = 4.66 \times 10^{-2}$) was established. There was not found significant correlation between nitrite level and mouthwashes, blood pressure, smoking, other conditions and average nitrite concentration in saliva.

Conclusion. Our data suggest that variations in salivary nitrite levels can serve as biomarker of gastritis and as a predictive indicator of gastric ulcers.

THE PATTERN OF BREATHING AS A REFLECTION OF THE ACTIVITY OF LIMBIC-RETICULAR COMPLEX OF HUMANS AND ANIMALS

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Introduction. Respiratory center provides rhythmic breathing and is activated under the action of strong stimuli. The activity of the respiratory center is control by the reticular formation, the nuclei of the hypothalamus and the limbic system of the brain. Respiratory activity of a person in a state of emotional excitement or stress is different from breathing of a person who is in a state of psychic and physical rest. The purpose of polygraphic registration is finding changes in human visceral functions upon presentation of neutral, control and significant questions. The aim: to study the characteristics of a person breathing pattern at rest and on stimulation.

Materials and methods. All observations were carried out on volunteers. The sensor, which registers pneumogram, was applied to the chest. Recording pneumogram was carried out with simultaneous recording of the blood pressure and galvanic skin response.

Subjects were asked to perform certain tests.

Results. The pneumogram of a person in a state of total repose shows that the subject is calm. The breath is rare, 5 heart beats during one respiratory cycle, galvanic skin response is zero. In some individuals there were spontaneous fluctuations, galvanic skin response and respiratory rate were increased, the amplitude was decreased, pneumatic graphic shifted up as a result of a small increase in inspiratory tone. The amplitude pulse pressure decreased as a result of increased vascular tone that is evidence of the change of the activity of the sympathetic nervous system. The parity the duration of the inspiratory and expiratory phase was 1:3. Human respiratory cycle in a state of tension – can be presented as a ratio of inhalation and exhalation phases 1:1.8. Pneumogram a person in a state of relative calm with the breathing cycles practically unchanged.

A characteristic change occurs in the ratio between the inspiratory and expiratory phases between the conditional "slow" high-amplitude waves and "fast" low amplitude cycles.

Conclusion.

The signs of sensory, emotional arousal of the organism in terms of respiratory curve are:

1. Increased frequency of respiratory cycles.
2. Reduction of the amplitude of respiratory waves.
3. The displacement of the breathing curve which contours up.
4. Significant decline in the ratio of inhalation and exhalation phase in a situation of emotional stress.
5. The presence of a part of the low-amplitude single pneumogram breaths.

XII. CASE REPORT, SMALL CASE SERIES

3D-PRINTED HEART MODEL AIDED REPAIR OF POSTINFARCT VENTRICULAR SEPTAL DEFECT

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Keywords. Postinfarct ventricular septal defect (PIVSD), 3-D printing, 3-D heart model.

Introduction. Postinfarct ventricular septal defect (PIVSD) is a rare complication occurring in 0.2 % of patients with acute miocardial infarction (MI). Despite low incidence, it is a potentially fatal complication, associated with an mortality of 94 % in patients treated medically, therefore surgical repair of PIVSD is a class I recomendation in the AHA/ACC guidelines. Fabricated 3-D printed models from reconstructed computed tomography (CT) scans provide the advantage of better understanding of cardiac anatomy in complex cases, therefore are highly useful in preoperative planning.

Case report description. A 59-year-old male was admitted to cardiac surgery department for elective repair of PIVDS. Three months prior repair patient was admitted to regional hospital with miocardial infarction with ST-segment elevation due to total occlusion of right coronary artery. Soon afterwards patient developed progressing dyspnea and transthoracic echocardiography (TTE) revieled acquired ventricular septal defect with left-to-right shunt, therefore patient was transfered to Pauls Stradins Clinical University hospital. Further investigation with TTE, CT angiography and cardiac magnetic resonance imaging showed approximately 14 mm diameter large oblique tunel in inferioposterior part of ventricular septum. Right ventricular and atrial dialatation as well as grade II-III tricuspid insufficiency was also seen. Due to complex anatomy of defect and its uncommon location 3D reconstructed images from CT scans were used to fabricate a 3-D printed model of patient's heart to evaluate best approach for surgical repair. Transatrial repair of PIVDS with Dacron® patch and concomitant tricuspid annuloplasty as well as coronary artery bypass graft in order to revascularize ischemic heart wall was also performed within cardiopulmonary bypass and aortic cross-clamp times 146 and 100 minutes respectively. Postoperative period was smooth and TTE showed no residual flow.

Conclusion. 3-D printed models increase understanding of complex anatomy and improve preoperative surgical planning.

Summary. PIVSD is a fatal complication of MI and surgical repair is recommended treatment option. Implemantation of 3-D printed models in complex cases is useful in preoperative planning. A 59-year-old male with prior MI and resultant PIVDS was admitted for elective surgical repair. Due to complexity of defect anatomy 3-D printed model of patient's heart was fabricated. Transatrial repair was performed with Dacron® patch and postoperative TTE showed no residual flow.

A CASE OF ACUTE TYPE A AORTIC DISSECTION WITH DETACHMENT OF THE RIGHT CORONARY ARTERY AND RUPTURE OF THE RIGHT COMMON ILIAC ARTERY

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Keywords. Stanford A acute aortic dissection, valvuloplasty.

Introduction. Acute aortic dissection is a life-threatening condition which can have fatal results if not treated immediately. Most common presenting symptoms are acute pain in the anterior chest or back. Pain can be presented with syncope, signs of congestive heart failure.

Case report description. A 51 year old male was admitted to emergency room presenting with chest pain that started the day before at 11 PM. He suddenly felt a chest pain in the substernal area with radiating pain between shoulder blades which migrated to right leg. He had a medical history of hypertension and had been on medication. He was transferred to Pauls Stradins Clinical University hospital Latvian Cardiology center. His general condition was serious. Initial vital signs were: blood pressure 110/70 mm Hg, pulse rate 60/min, respiration rate 14/min. Patient had no palpable pulse on right arm and right leg. Electrocardiogram showed normal sinus rhythm 66/min with left ventricular hypertrophy. Laboratory findings were: creatine kinase (CK) 94 IU/L, CK-myocardial band 3.14 IU/L, troponin 708 ng/mL, C-reactive protein 12.88 mg/dL, white blood cell 10,300/μL, hemoglobin 9.3 g/dL, thrombocytes 135×10^9/L.

Computed tomography showed an acute aortic dissection Stanford type A starting from aortic valve with its distal extent to common iliac arteries and retroperitoneal hemorrhagic fluid in right iliac fossa.

Decision was made to perform an emergency operation: right iliac artery stenting, replacement of ascending aorta, open heart valvuloplasty of the aortic valve due to mild aortic regurgitation, left coronary artery reimplantation, right coronary artery shunt, bilateral carotidal shunting.

Postoperative period went well. Patient received antibacterial therapy, blood transfusion, platelets, 20 % human albumin, fresh frozen plasma and cryoprecipitate. Patient was discharged 16 days after the operation with recommendations to start a cardiac rehabilitation within 2 months, to continue hypotensive therapy and intake of warfarin while controlling INR.

Conclusion. This case report reflects the importance of clinical suspicion of acute aortic dissection and discusses the clinical presentation of aortic dissection and its diagnostic methods as well as treatment.

Summary. A rare case of massive acute aortic dissection with successful outcome due to life-saving treatment is reported. Patient presented only with chest pain and history of hypertension controlled by medications. As the diagnosis was clear, decision to perform emergency operation was made. Patient was discharged 16 days after operation in good condition.

5 April 2017

ACUTE DIZZINESS – A SYMPTOM OF
VARIOUS DISEASES: CASE SERIES

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Keywords. Acute dizziness, emergency medicine, emergency department, patient triage.

Introduction. Acute dizziness (AD) is a very common symptom amongst emergency department (ED) patients. It is also considered to be one of the leading reasons why patients seek help from local emergency medical services. Despite most cases of AD being benign and self-limiting, it is often challenging for emergency medicine staff to identify the specific cause of this symptom. Depending on how accurate the primary diagnosis is, the care provided by the emergency department may result in unnecessary consultant enrolment, laboratory workup and even premature discharge.

Case report description. This small case series showcases 4 patients which have been admitted to Pauls Stradins Clinical University hospital emergency department with individually different complains and diagnosis about AD during January 2017. All patients underwent admission triage, and were managed accordingly to patient priority. Despite the triage, all patients went through prolonged evaluation due to the lack of definitive cause estimation.

The first patient, a 22-year-old male, presented to the ED with AD and hyponatremia was falsely treated as a neurological patient with prehospital loss of consciousness. The diagnosis of adrenocortical insufficiency (Addison's disease) was confirmed after detailed evaluation.

The second patient a 37-year-old male – a military soldier was admitted to the ED with bradycardia and AD. Patient had 2 readmissions with similar complaints in 2016. Patient was discharged with the diagnosis of somatoform vegetative disorder.

The third patient, a 47-year-old female, was admitted to the ED by the local emergency medical services when shortly after a plane flight the patient experienced AD, urinary incontinence and bradycardia. Medication induced dizziness was suspected, due to patient's questionable use of sedatives. Patient was discharged without a precise confirmation of diagnosis.

The last patient, a 56-year-old female, was presented to the ED with AD and primary diagnosis of unspecified gastrointestinal bleeding. After surgical bleeding was excluded the patient refused further evaluation and was discharged with unspecified hypokalemia.

Conclusion. These patients reveal that despite the majority of benign self-limiting outcomes, certain patients require an extensive differential diagnostic approach. Precise patient triage is essential for adequate emergency care arrangement.

Summary. Patients with AD remain a challenging patient group for emergency care providers. Implementation of local ED protocols for AD may increase patient safety, improving patient care and ED workflow.

ADDISON'S DISEASE AS THE INITIAL MANIFESTATION OF NON-SMALL-CELL LUNG CARCINOMA

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Keywords. Adrenal insufficiency, hyponatremia, lung cancer, metastases.

Introduction. Unrecognized adrenal insufficiency leads to life-threatening Addisonian crisis unless treated with glucocorticoids. Exceptionally, the cause of insufficiency may be deadly by itself, as in the case of adrenal metastases.

Case report description. A 56-years old female, a smoker without previous medical records, presented with increasing fatigue, anorexia and weight loss. An abdominal ultrasound showed a pancreatic and an adrenal mass. She was referred to the Gastroenterology unit where laboratory investigations showed hyponatremia (130 nmol/L) and high levels of tumor marker CEA (830 µg/L). Upper and lower endoscopy of the gastrointestinal tract revealed just gastritis and duodenitis. Abdominal CT scan excluded the pancreatic mass and revealed bilateral adrenal masses (1.5 × 1 cm on the left, 2 × 3 cm on the right side). The patient was referred to the Endocrinology unit, where dark skin pigmentation was noticed. A pathological short Synacthen test and high levels of ACTH confirmed Addison's disease, so the patient was immediately put on hydrocortisone. At the same time, suppressed TSH, elevated thyroid hormones and TSH receptor antibodies revealed Graves' disease and anti-thyroid drugs were administered. A biopsy of the left adrenal mass showed poorly differentiated large tumor cells, presumably of metastatic nature. A chest CT scan and a bronchoscopy revealed a soft-tissue mass in the left lower lung lobe, pathohistologically an adenocarcinoma. A gemcitabine-cisplatine chemotherapy was successful, so the patient underwent a left lower lung lobectomy followed by bilateral adrenalectomy and post-operative radiotherapy. The patient had no relapse of the disease in the next decade and was doing well on full adrenal replacement therapy.

Conclusion. In patients presenting with a typical clinical picture and hyponatremia, adrenal insufficiency should be always considered. Addison's disease is typically caused by autoimmune adrenalitis, while metastatic destruction of both glands is uncommon. Nevertheless, in addition to endocrine testing, an adrenal CT scan should be routinely done, while ultrasound is not a valid diagnostic alternative – as our case showed.

Summary. A female, aged 56, presented with fatigue, anorexia, weight loss and skin hyperpigmentation. Laboratory tests were remarkable for hyponatremia and high levels of tumor marker CEA. Abdominal CT scan showed bilateral adrenal masses. Addison's disease was confirmed by short Synacthen test and by high levels of ACTH. Biopsy of the left adrenal mass showed poorly differentiated tumor cells. Chest CT scan and bronchoscopy uncovered a mass in the left lower lung lobe, pathohistologically an adenocarcinoma.

The patient had successful chemotherapy, followed by left lower lung lobectomy, bilateral adrenalectomy and post-operative radiotherapy. Regular follow-ups showed no relapse of the disease in the next decade and the patient was doing well on adrenal replacement therapy.

ANDROGEN INSENSITIVITY SYNDROME

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Keywords. Androgen insensitivity syndrome, gonadal tissue neoplasm.

Introduction. Complete androgen insensitivity syndrome is a rare clinical condition that is characterized by a female phenotype and a karyotype 46, XY due to mutations in the X-linked androgen receptor gene Xq11–Xq13. These changes lead to complete resistance to the biological actions of androgens and fetal sex differentiation that results in a female phenotype, but in adolescence is characterized by excess aromatisation of androgens and consequently the development of secondary female characteristics. Patient care should be individualized, but it is recommended to perform gonadectomy due to the risk of malignancy, which is described as 30 % in late adulthood for patients without gonadectomy.

Case report description. A 48-year-old patient was admitted to hospital in August 2016 with suspected germinoma due to complete androgen insensitivity syndrome. In further investigations MRI revealed oval structures without follicular activity, while pelvic ultrasound showed bilateral masses present in the inguinal canals with resemblance of testes. Laboratory analyses revealed excessive luteinizing hormone, follicle-stimulating hormone, testosterone and androstenedione concentrations. General examination: female phenotype, Prader stage 0, Tanner grade IV (breast development). During palpation elastic oval mass was noted in the right inguinal canal. The medical history revealed that patient had primary amenorrhea and a karyotyping report showed a male karyotype, 46, XY. Patient underwent bilateral orchidectomy in September 2016. Histopathologic examination of the specimen revealed atrophic changes, fibrosis, hyalinosis, hemorrhages and necrobiosis, but without spermatogenesis and malignancy. Post-operative laboratory results remained elevated raising suspicion of possibly retained testes structures, which was confirmed by further investigation and led to another gonadal extirpation.

Conclusion. This case report not only represents the typical characteristics of the syndrome, such as phenotype, hormonal changes and findings in radiological examination, but also reveals notable distinctions in form of long term complications of retaining testes structures and polyorchidism, thus proving the importance of individualized and multidisciplinary patient management.

Summary. Androgen insensivity syndrome is a rare condition that interferes with sex differentiation and development. The classic history includes typical phenotype and development with characteristic findings in hormone profile, karyotype analysis and radiological examination as represented in the case report. Patient management guidelines recommend timely gonadectomy which can only be emphasized by this case of late intervention.

CERVICAL SPINE INSTABILITY AS A RESULT OF TOO EARLY BEGINNING OF JUDO PRACTICE

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Keywords. Judo, cervical spine instability, radiological contraindications.

Introduction. Judo is a martial art focused on the use of grasps. Training allows to develop quickness, agility, endurance, strength, sense of balance and concentration. An interest in the discipline does not decline and there is an increasing trend towards lowering the age limit allowing to practice judo. On initial examination in Poland it is mandatory to perform an X-ray scan of the cervical spine segment (AP and side) which is supposed to exclude those who have contraindications to exercise this sport. However children often undergo examination just before their first competitions.

Case report description. An 8-year old boy showed up for a mandatory examination at a sports medicine practice doctor's office. He had already trained judo for a year. X-ray scans of the cervical spine segment were performed. No abnormalities were detected and the child was pronounced fit to practice judo.

After two years of a regular training (two times a week), the scans were repeated and a discrete instability between C2–C3 and C3–C4 segments was found with a 1.3 mm translation between the vertebral bodies on both levels. As a result, additional, functional X-ray scans were performed. In an anteflexion there was a normal line connecting the posterior edges of the vertebral bodies, but in a retroflexion a discrete instability between C2–C3 and C3–C4 segments was still present, even though the patient remained asymptomatic.

According to an expert panel consisting of a neurosurgeon, an orthopedist and a sports medicine physician, a statement of fitness to resume trainings was issued with recommendation to have another X-ray scan taken in 2 years.

Conclusion.

1. In case of an instability found in stationary X-rays, it is possible to allow children aged below 12 to practice judo, provided they would undergo comprehensive clinical examination and functional instability would be confirmed as resulting from the laxity of the capsular and ligamentous system only.
2. Development of cervical spine instability with absence of previous lesions may indicate too early start of specialized training, putting too much strain on the cervical spine segment.
3. It is necessary to introduce general physical exercises to strengthen muscles in the cervical segment in children before they would start training judo.

Summary. Practicing judo for three years resulted in radiological manifestation of discrete instability between cervical segment of the spine in a 10-year old boy. After more comprehensive examination, the child was pronounced fit to continue trainings, with further observation based on finding a wide vertebral canal characterized by only capsular and ligamentous instability which is typical for children.

5 April 2017

CHICKENPOX COMPLICATIONS: IS CHICKENPOX REALLY SO INNOCENT DISEASE?

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Keywords. Chickenpox, Chickenpox complications, Vaccination.

Introduction. Mostly Chickenpox is a common and benign childhood disease and those uncomplicated cases overshadow the severe complications and morbidity associated with Chickenpox. In our society there are significant risk groups for Chickenpox complications, for example, pregnant women, newborns, etc. But nevertheless, severe complications may also occur in previously totally healthy individuals.

Case series description. 3 patients with diagnosis Chickenpox that were admitted in Children's Clinical University Hospital (CCUH) were observed.

Case number 1. 4 years old boy was admitted to Emergency department with complaints of gait disturbance, balance impairment. Previously child was healthy and had history of Chickenpox for 10 days. Next day after admission patient had more progressive neurological symptoms and general weakness. No acute neurological changes were found in CT, but lumbar puncture shoved the signs of serous meningitis. The diagnosis of Chickenpox cerebellitis (incidence 1 to 500,000) and meningitis was made. Child received intravenous treatment for week and had improvement in general condition but at the day of discharge still had unstable and clumsy gait.

Case number 2. 17 days old neonate was transported to CCUH from Rēzekne's Hospital with high temperature and Chickenpox elements on skin. On the 4th day of illness respiratory distress with low oxygen saturation levels joined, on the 6th day artificial lung ventilation was started and diagnosis of bilateral pneumonia was made. Artificial lung ventilation was done for 4 days and all together patient spent 19 days in hospital.

Case number 3. 7 months old infant was admitted to CCUH with complaints of severe intoxication due to Chickenpox. Child's general condition fastly deteriorated and repeated laboratory tests shoved CRP levels > 300 mg/dL (at admission CRP was 6 mg/dL). In X-ray lung effusion and after cardiac ultrasound pericardial effusion was found. After pericardial puncture the diagnosis of acute myocarditis (very rare Chickenpox complication) was made and the child was treated in ICU.

Conclusion. This case series report highlights that chickenpox is common and benign childhood disease but it can cause severe complications with long lasting consequences. No one of those patients were vaccinated against Chickenpox and it could be the reason for so severe complications.

Summary. 3 patients with diagnosis Chickenpox and severe complications were hospitalized in CCUH. While one of the patients is in the risk group (newborn), 2 other patients were totally healthy before. Those examples with patients with severe complications should be more demonstrated to prove the necessity of Chickenpox vaccination in the society.

CONGENITAL ACUTE LYMPHOBLASTIC LEUKEMIA: A RARE CASE IN NEONATAL INTENSIVE CARE UNIT

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Keywords. Congenital acute lymphoblastic leukemia, t (4; 11), Interfant-06.

Introduction. Congenital acute lymphoblastic leukemia (CALL) is an extremely rare disease with incidence 4.3 to 8.6 per million live births. It is diagnosed at birth or within the first 30 days of life. The etiology includes chromosomal defects like t (4; 11) which is the most common in children under 12 months of age. CALL is more resistant to several standard chemotherapeutic agents and the disease is also characterized by a poorer prognosis compared with older children.

Case report description. A female neonate was born at 38 w/o gestation to a mother with Von Willebrand disease. The patient had elevated AsAT – 117 IU/L and decreased platelet count – 85×10^9/L, but due to her parents request she was discharged four days after birth. At the age of 15 days she was admitted in NICU with the complaints of feeding difficulties and hematomas on the abdominal wall. On physical examination – pallor, multiple hematomas ~1 cm/D, cutaneous nodules and hepatosplenomegaly was noted. WBC count – 356×10^3/uL, 70 % monocytes, 0.7 % neutrophils and 28 % lymphocytes. Platelet count was 26×10^3/uL. Blood biochemistry – increased bilirubin, AlAT and AsAT, total calcium level of 3.73 mmol/L and LDH 2437 IU/L. Blast cells – 78 %. Immunophenotyping showed CD10-/CD24- and CD15+ blast cells, that is common in patients with t (4; 11). After the diagnosis of CALL was confirmed – prednisolone (Interfant-06 Induction phase), allopurinol, hydration and alkalization were initiated. Henceforth the overall clinical condition deteriorated, she was intubated and sedated because of progressing lethargy and respiratory distress. Due to no response to prednisolone, progression of the hemorrhagic syndrome the therapy was changed to dexamethasone, but no clinical improvement was seen. WBC increased to 391×10^3/uL, so the chemotherapy was canceled and the patient continued to receive symptomatic therapy as a hospice patient until *exitus letalis*.

Conclusion. Although CALL may resemble several neonatal conditions it should be kept in mind in a newborn with petechiae, ecchymosis and hepatosplenomegaly. Infants with CALL are at higher risk of treatment failure with only 10–20 % survival rate for those younger than 6 months. Early treatment is always significant. Though it is unknown if in this case the treatment would have succeeded if the diagnosis was made right after birth.

Summary. A neonate admitted in the NICU with clinical features of thrombocytopenia, leukocytosis and hepatosplenomegaly was diagnosed with CALL and Interfant-06 protocol was started immediately after. The patient had t (4; 11), her overall clinical condition worsened and the treatment was stopped.

CONGENITAL ATRIOVENTRICULAR BLOCK DUE TO MATERNAL ANTI-RO ANTIBODIES

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Keywords. Congenital atrioventricular block, anti-SSA antibody, anti-Ro antibodies.

Introduction. Third-degree or complete atrioventricular block (CAVB) is seen either in the fetal life or any time after birth with complete atrioventricular dissociation and bradycardia. The association and prognosis of CAVB differ depending on whether the block is identified in the fetus, newborn, or older child. CAVB occurs in 5 % of children born to mothers with anti-SSA antibody, which can be seen with subclinical or clinical maternal lupus erythematosus, maternal Sjögren syndrome, or other maternal autoimmune diseases.

Case report description. A patient, 4 days old boy was hospitalized to Neonatology Department of Children's Clinical University Hospital (CCUH) from Pauls Stradins Clinical University Hospital's (PSCUH) Maternity Ward due to congenital atrioventricular block. During the second trimesters ultrasound screening doctor found reduced fetal heart rate – 63 ×/min and pericardial effusion. Mother was sent to do fetal echocardiogram, where was diagnosed congenital atrioventricular block based on findings – pericardial effusion, arrhythmic heartbeat, ventricular rhythm – 66 ×/min, atrial rhythm – 144 ×/min. Mother has anti-Ro antibodies without clinical manifestation. Mother's blood was tested for Lupus anticoagulant – 1.2 (weakly positive). Based on low heart rate doctor indicated C-section in tertiary hospital. After birth investigations: APGAR scale – 7/8, weight – 2120 g, height – 49 cm, heart rate – 70 ×/min, breathing rate – 40 ×/min without heart failure symptoms. Following procedures after transfer to CCUH: electrocardiography results were 3rd degree atrioventricular block with atrial rhythm 102–128 ×/min and ventricular rhythm 73 ×/min; echocardiogram showed anatomically normal heart, good left ventricul systolic function; X-ray findings were as follows: cardiothoracal index 0.65, without any pathological findings. Objective findings at this time was: heart rate – 70 ×/min, blood presure – 74/65 mmHg. 24 hour Holter monitoring results were CAVB with medium heart rate – 78 ×/min, min heart rate – 65 ×/min, max heart rate – 109 ×/min, pauses were no longer than 3 seconds.

Conclusion. CAVB mostly occurs in cases when mother has anti-SSA antibody. In these situations, the mother has to do fetal echocardiogram to detect whether the fetus has developed CAVB. Most of the cases infants need implanted pacemaker.

Summary. Clinical case introduces a 4 days old newborn with prenatal diagnosis of CAVB. In this case the newborn does not have a heart rate lower then 55 ×/min, which means that for now there is no indication for implanting pacemaker.

CONGENITAL CYTOMEGALOVIRUS INFECTION

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Keywords. Congenital CMV infection, risks, symptoms, diagnosis, treatment.

Introduction. Cytomegalovirus is the most common cause of intrauterine infection. Congenital CMV infection is related to slowed fetus growth, CNS and various organ damage.

Case report description. 31 year old female, AOG 12 weeks. Complains: nausea, vomiting, headache, fever, running nose. The patient was diagnosed with subacute ethmoiditis and treated with cefuroxime 250 mg twice a day. The treatment had no effect and the patient was hospitalized to Vilnius University Hospital Santariskiu Clinics. Obstetric history: graviditas I (I). History of the illness: on the the 6th gestational week patient visited Canary Islands. During the trip the woman once felt nauseous, vomited. Any possible contact with infected people was denied. Laboratory tests: WBC 9.68×10^9/L. CRP 53.4 mg/l, blood and urine cultures negative. Pelvic ultrasound revealed splenomegaly. Fetus ultrasonography was normal for the gestational age. The patient was consulted by a therapist and diagnosed with an unknow origin fever for which Ampicillin 1 g 4 times a day i/v was prescribed. After 6 days patient's common state was good, inflammatory markers and temperature decreased, she was sent home. On the 18th gestational week the woman was consulted by geneticist, development abnormalities and chromosomal pathology markers were not found. On the 32nd week of the gestation CMV identification was performed and anti-CMVIgG and CMV DNA 4925 copies/ml were detected. The patient was diagnosed with chronic CMV infection. Fetal ultrasonography was normal to 35th week fetus. On the 38th gestational week delivery activities started, Cesarean section due to acute CMV infection was recommended. Female baby was born during CS, weight 2790 g, height 51 cm, Apgar 9–10. The molecular blood test was performed which showed CMV DNA 16040 copies/ml, urine molecular diagnostics showed CMV DNA 4266000 copies/ml, anti-CMV IgG was found in the blood, neurosonography revealed subependymal cyst in the left hemisphere, vascular pathology, first degree intraventricular hemorrhages. The congenital asymptomatic CMV infection was diagnosed, no treatment prescribed. After the 1st and the 4th month of birth hearing test and neurosonography were performed which revealed no abnormalities.

Conclusion. Mother who was diagnosed with chronic CMV infection infected her fetus and baby was born with congenital asymptomatic CMV infection.

Summary. Infectious diseases of pregnant woman require special attention and can lead to various congenital abnormalities of newborns.

CRANIOFACIAL SURGERY APPLIANCE
IN THE MANAGEMENT OF CHRONIC
FRONTAL SINUSITIS COMPLICATIONS

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Introduction. Surgical treatment of chronic frontal sinusitis is a complex procedure demanding good knowledge of sinus anatomy and appropriate surgical skills. Surgical approach should be chosen according to patients' specific anatomical features because of great anatomical variability of frontal sinus structure. The aim of surgery is to restore sinus drainage pathway.

Case report decription. 64 years old woman presented to the otorhinolaringology clinic in April 2016 due to facial pain and pressure sensation in her left frontal region, recurrent subcutaneous inflammatory processes above the left eyebrow and orbital pressure. Patient had chronic frontoethmoiditis for six years with three following functional sinus surgeries including *trepanopunctio sinus frontalis sinistra* and *frontoethmoidotomia sinistra cum excisio cicatrice meati nasi media sinistra*. On endoscopic nasal cavity examination the patient had hyperemated mucosa in the left middle nasal meatus with mucosal crusting and scar tissue in frontal recess region. According to the patients' complaints and clinical findings computed tomography (CT) investigation of paranasal sinuses was indicated. CT showed opacification of frontal sinus with a discharge of sinus content into the subcutaneous space through the bony defect in the anterior wall of frontal sinus after previous *trepanopunctio sinus frontalis sinistra.* According to clinical and radiological findings, it has been decided to perform frontal sinus surgery and frontal sinus obliteration with autologous abdominal fat material and an osteosinthesis of the anterior wall of frontal sinus to reduce the complication recurrence risk. Surgery has been performed in external approach with osteoplastic flap through bitemporal coronal incision.

After the surgery patient was prescribed three-day intravenous antibiotic course and analgesia. Surgical wound healed primarily. Three days after surgery patient was discharged from clinic for further treatment at home. In postclinical period she was prescribed one-week antibiotic course and analgetics of necessity. On control visit six months after operation the patient did not have any complaints. Control computed tomography scan has been performed.

Conclusion. Long-term surgical outcome depends on the selection of adequate surgical approach. Osteoplastic flap procedure and sinus obliteration is appropriate for management of chronic frontitis complications.

Summary. We present a patient with recurrent chronic frontoethmoiditis with facial pain and pressure on her left side. CT investigation revealed frontal sinus opacification and frontal sinus wall defect allowing sinus content discharge into subcutaneous space. External surgical approach was indicated.

DIFFERENTIATION DIAGNOSIS COMPLICATIONS OF LOWE SYNDROME AND MITOCHONDRIAL DISORDER COMBINED WITH CONGENITAL CMV INFECTION

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Keywords. Lowe syndrome, mitochondrial disorder, cytomegalovirus.

Introduction. Lowe Syndrome is a rare mutation in a gene OCRL1 that causes defect in PIP2-5-phosphatase enzyme. Mitochondrial dysfunction caused by mutation of genes encoded by either nuclear DNA or mitochondrial DNA (mtDNA). Both diseases are clinically heterogeneous.

Case report description. Full-term newborn (39 weeks), pregnancy complicated by prolonged mother's sterility, threatened abortion, polyhydramnios, cord entanglement – perinatal hypoxia. During neonatal period were detected: congenital cataract, generalized hypotonia (central origin – MRI, EMG) and IUGR. Diagnosis of CMV infection and Hypoxic-ischemic encephalopathy includes clinical manifestations, newborn TORCH testing (+IgG) and MRI. By that time that explained all complains. Target treatment with anti-CMV IgG gave weak recovery process.

Further management revealed: lasting lactate acidosis (by 9 month), LMW proteinuria, optic atrophy, delay development and absent tendon reflexes. Mitochondrial disorder suspected. Marker test was positive but physician regarded result as questionable. 2nd year monitoring showed liver failure (raise AST, Ultrasound), renal tubular dysfunction (bicarbonate- and phosphaturia) and exocrine pancreatic defects. Target analysis revealed abnormality in respiratory chain enzymes. That verifies respiratory chain disorder. Genetic test is necessary to confirm established diagnosis (mother refused).

Due to pregnancy management, newborn anamnesis (optic and neurological violations), Fanconi type tubular injury appeared in 12 months, small cysts on MRI, intellectual disability and systemic osteoporosis it is reasonable to differentiate diagnose with rare Lowe syndrome based on enzyme and DNA analysis (mother refused).

Conclusion. Complexity of similar clinical signs, prolonged symptoms detection (for 2 years), genetic renouncement made precise diagnosis challenging.

Two genetic disorders combination may explain polymorphisms of clinical symptoms and formalize adverse life prognosis.

GIANT NON-SEMINOMA TESTICULAR CANCER
IN A TEENAGE BOY

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Keywords. Testicular cancer, mixed germ cell tumour, metastasis.

Introduction. Testicular cancer is the most common cause of cancer death in males of age group 15 to 24 years. It is associated with distinctive biology of testicular tumours after puberty and misleading nature of clinical course – painless mass within the testis that requires primary health care providers a high clinical suspicion among young male patients to consider a cancer. The average cancer diameter at presentation is 4.0 cm and 76 % of patients have already metastasis.

Case report description. A 16 year-old teenage boy was admitted to Children's Clinical University Hospital in December 8, 2016 due to severe pain and enlargement of the left testis, also with dyspnea and pain in the lumbar part of spine. Patient admitted that the left testis has gradually enlarged and become painful in one year period after trauma in sports. Objective examination revealed enlarged left testis ~20 cm (length) × 15 cm (width). It was dense and warm with redness. Also examination revealed dense palpable mass 4 cm × 4 cm of length in the left supraclavicular region, generalized lymphadenopathy and palpable mass in renal region. Ultrasound examination of the testis suggested normal right testis and malignant tumour of the left testis. Biopsy results for the left testis shown mixed germ cell carcinoma – embryonal carcinoma and yolk sac tumour elements, what approves non-seminoma testicular cancer. Diagnosis was also supported by laboratory tests – elevated LDH 403 U/L, Alpha fetoprotein 4777 IU/mL and hCG 1.23 IU/mL. MRI revealed metastasis in the lungs and lymph nodes. Despite acute testis clinic and enlargement, surgical removal was postponed and primary treatment with chemotherapy courses of bleomycin, etoposide and cisplatin was initiated.

Conclusion. Testicular cancer can also occur in paediatric population, mainly in the late puberty. Purpose knowledge and high suspicion of testicular cancer are necessary in every patient presenting with gradually enlarged and painful testis. Testicular cancer, especially non-seminoma has a high risk of developing metastasis, therefore chemotherapy is the first line treatment.

Summary. Reported case is convincing example why testicular cancer is the most common cancer death in young males. Delayed diagnostics due to gradual testis enlargement and early metastatic disease are important characteristics of testicular cancer.

HERLYN-WERNER-WUNDERLICH SYNDROME

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Keywords. Herlyn-Werner-Wunderlich syndrome, uterus didelphys, obstructed hemivagina, ipsilateral renal agenesis.

Introduction. Herlyn-Werner-Wunderlich syndrome is a very rare congenital anomaly of urogenital system characterized by uterus duplex, obstructed hemivagina, and ipsilateral renal agenesis. The infrequency of the syndrome makes it a tremendous diagnostic challenge, which increases the risk of complications like infertility or endometriosis.

Case report description. A 14-year-old girl was admitted to Vilnius University Hospital Santariskiu Clinics Gynecology department with a 3-month history of progressive severe pelvic pain, which was getting stronger during menses. Menarche had occurred at age of 14, menses were regular, every 28 days. The girl was sexually active.

During the abdomen palpation no pathological changes were found. Digital rectal examination revealed that pelvis is occupied by tight, painful mass, unrelated to the rectal wall. Transvaginal ultrasonography examination data: double uterus, the right uterine cavity is enlarged, below it there is a 10 cm formation, distended with solid content. The right part of the lesser pelvis, near to the uterine cervix, there is a 97 × 79 × 104 mm cystic formation with heterogeneous content and distinct borders.

Laboratory exams were normal. MRT scan of the abdomen and pelvis demonstrated the absence of the right kidney and double uterus. In the T1 sequence the accumulation of hyper intense fluid in both uterine cavities was found. The signal was more intensive in the right uterus. In the region of the uterine cervix, there was a 74 × 77 × 126 mm size of a fluid accumulation connected with the right cavity of the uterus and vagina. On the right side of the right uterus, there was a similar fluid accumulation. Both accumulations were connected one to each other at their upper and lower poles. There was no visible connection between the left uterus and the measured fluid mass. The left uterine cavity seemed to open into an independent compressed cavity, which had a connection with the vagina.

The patient underwent the hymenectomy, the clotted blood was evacuated during the puncture of the fluid mass in the cervix region. After the atresia of the vagina was removed, 0.5 L of clotted blood was removed from the cavity. The septum between the left and right hemivaginas was removed.

Conclusion. This syndrome is hard to diagnose, because of the usual absence of any specific symptoms. It should be suspected in all female neonates with renal agenesis. An early diagnosis can prevent complications.

Summary. We report a case of a very rare congenital anomaly with a purpose to call attention to challenges it may create to gynaecologists.

LUNG TRANSPLANTATION PATIENT IN LATVIA – LONG TERM RESULTS

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Keywords. Idiopathic pulmonary arterial hypertension, lung transplantation, complications, immunosuppressive therapy.

Introduction. Pulmonary hypertension (PH) is defined as an increase in mean pulmonary arterial pressure (mPAP) ≥25 mmHg at rest. There is a pathogenetic therapy available for a pulmonary arterial hypertension (PAH) patients. For those who fail on drug treatment and remain in WHO functional class III-IV, lung transplantation is a treatment option to increase survival and gain a good quality of life.

Case report description. A 32-year-old female with anamnesis of idiopathic pulmonary arterial hypertension (IPAH) for 3 years is in high risk group – predicted one year mortality > 10 % (based on these findings: progression of symptoms, clinical signs of right heart failure, repeated syncope, WHO functional class IV PAH, BNP plasma level ~5000 pg/ml, right atrium area 42 cm^2, pericardial effusion, right atrial pressure 125 mmHg). According to the medical reports patient is a potential candidate for transplantation procedure. A double lung transplantation under ECMO support was performed on April 2014. Patient has to use immunosuppressant drugs for life (tacrolimus, everolimus, prednisolone).

On follow-up visits after transplantation patient is in a good general condition. Significant complications (severe infections or graft versus host disease) have not developed. Spirometry shows normal lung ventilation function. Echocardiography show normal heart function and there are no data about PH (right ventricular systolic pressure ~ 30 mmHg, inferior cava diameter 19 mm with inspiratory collapse > 50 %, right atrial area 15 cm^2).

On follow-up visit (17.03.2015.) there are some side effects of immunosuppressive therapy present– chronic kidney disease (CKD) 3A (creatinine 121 μmol/l; GFR 54.9 ml/min/m^2 (Cockroft-Gault)), anemia (hemoglobin 98 g/l), hepatotoxicity (AlAT 47 U/l), hypercholesterolemia (total cholesterol 7.0 mmol/l).

On follow-up visit (8.12.2016) there is CKD 2 present (creatinine 107 μmol/l; GFR 62.1 ml/min/m^2 (Cockroft-Gault)).

Conclusion. Lung transplantation procedure has improved survival and quality of life for patient with WHO functional class IV IPAH. Significant complications after transplantation have not developed, but side effects of immunosuppressive therapy (tacrolimus, everolimus, prednisolone) are present.

Summary. The case report demonstrates a 32-year-old female with WHO functional class IV IPAH. A double lung transplantation was performed on April 2014. Patient is in a good general condition 1 and 3 years after transplantation. Significant complications have not developed, but there are such side effects of immunosuppressive therapy present like CKD and hypercholesterolemia.

MANAGEMENT OF PRIMARY MALIGNANT MELANOMA
OF UTERINE CERVIX WITH RADICAL SURGERY
AND ADJUVANT ONCOLYTIC ADAPTED
ECHO-7 VIRUS IMMUNOTHERAPY

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Keywords. Oncolytic virotherapy, primary malignant melanoma of uterine cervix, immunotherapy in rare gynaecological tumours.

Introduction. Genital tract melanomas comprise 18 % of mucosal melanomas and mostly are vulvovaginal in origin, while other gynaecologic sites are involved rarely with currently about 96 primary malignant melanoma of cervix (PMMC) reports available on Medline. The emphasis of the therapy is laid on radical surgery but there is no consensus regarding adjuvant treatment nevertheless the overall prognosis is poor. The objective of this case report is to demonstrate the use of oncolytic virotherapy as adjuvant treatment of PMMC.

Case report description. Diagnostic laparoscopy with attempt to remove tumour was made by gynaecologist in a 25-year-old patient with complaints of pain in lower abdomen and findings on ultrasound. Due to histologically verified melanoma the patient underwent repeated surgery – radical hysterectomy type II and omentectomy. Diagnosis of PMMC staged FIGO IVA with dissemination in peritoneal cavity and distant metastasis in omentum and iliacal lymphnode was made; subsequently adapted ECHO-7 virus was administrated.

Increase in CD8+ and lymphocytes with markers of activation and IL-2 was noted 12 months after initiation of ECHO-7 virus.

Patient tolerates virotherapy well and progression of the disease is not observed for 30 months.

Conclusion.

Delayed cellular immune response to virotherapy might be observed due to lymphocyst formation after lymphadenectomy.

Immunotherapy with adapted ECHO-7 virus is safe, non-toxic and preserves the overall quality of life; furthermore it does not induce ovarian failure in young women. Oncolytic virotherapy could be used as adjuvant treatment in PMMC, but more extensive research is necessary to define its' impact on clinical outcome and prognosis.

Summary. This case report describes rare gynaecological tumour – primary malignant melanoma of uterine cervix – and demonstrates that it could be successfully treated with radical surgery and adjuvant oncolytic virotherapy.

NON-FUNCTIONING PANCREATIC NEUROENDOCRINE TUMOR IN A 9-YEAR-OLD GIRL: A CASE REPORT

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Keywords. Pancreatic neuroendocrine tumor, child, operation, immunohistochemical study.

Introduction. Neuroendocrine tumors (NET) – a neoplasm of cells of diffuse neuroendocrine system, mainly affecting the gastrointestinal tract. This is a potentially malignant tumor that have ability to deep infiltrative growth, however, characterized by a slow progression of the tumor. NET of pancreas are rare, especially in children. Pancreatic neuroendocrine tumors can be divided into functioning and non-functioning tumors based on their physiologic activity. In addition, the WHO divides these tumors into three broad categories based on tumor differentiation: well differentiated neuroendocrine tumor G1, well-differentiated neuroendocrine carcinoma G2, and poorly-differentiated endocrine carcinoma G3.

Clinical case. Patient K., born in 2006, visited the children's department of the Medical Center "Oberig", Kyev, 13.03.2015 for planned surgical treatment of tumor of the pancreas. This tumor was found accidentally during 3 month ago. The ultrasound examination was shown a solid lesion in the pancreas. The laboratory studies including pancreatic enzymes and tumor markers, were within normal limits. Contrast-enhanced pancreas CT scan yielded a 23 × 22 × 20 mm-size solid mass with clear smooth contours, in the posterior part of the body of pancreas (at the level of the abdominal aorta). Abnormal of regional lymph nodes is not defined. Liver parenchyma without focal changes. Conclusion: solid tumors of the pancreas.

The patient had an operation – laparoscopic distal pancreatic resection by Kimur 14.03.2015. After opening the omental in the body of the pancreas revealed tumor similar to 3.0 cm in diameter with a clear path. The regional lymph nodes were not enlarged. The part of pancreas with tumor is removed by expanding the video port to 3 cm.

On histopathological study presented the body and tail of the pancreas with tumor 3.0 × 2.5 × 2.0 cm. Microscopy of the specimens revealed that the tumor cells had a trabecular structure. Immunohistochemistry staining revealed positive reaction for synaptophysin, neuron-specific enolase, Chromogranin A. To determine the grade of the tumor, a mitotic count and a Ki67 immunostain were also performed. The tumor had one mitosis per ten high power fields averaged over 50 high power fields, consistent with a G1. The Ki67 proliferation index was less then 2 %, consistent with a G1 too.

Conclusion. NET – a rare disease, especially in childhood. The peculiarity of this case is the fact that child's pancreas tumor was diagnosed in time and successfully operated, that gives a chance for a full recovery from this disease. Now, 23 months later, with no further medical care other than clinical followup, the patient is well.

PANTHOTHENATE KINASE ASSOCIATED NEURODEGENERATION WITH REFRACTORY STATUS DYSTONICUS

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Keywords. Panthothenate kinase associated neurodegeneration (PKAN), status dystonicus.

Introduction. We present a complicated case of an 11-year-old girl with PKAN and refractory status dystonicus. PKAN is a rare disorder with extrapyramidal dysfunction, caused by mutations in the PKAN2 gene. Due to the risk of complications, refractory cases are treated with sedation, till dystonia-specific or surgical treatment takes effect.

Case report description. At the age of nine, after bacterial tonsillitis, our patient's right arm became clumsy. Subsequently, she was admitted to Children's Clinical University Hospital (CCUH) for dystonia work-up. The brain MRI revealed the pathognomic "eye-of-the-tiger" sign and diagnosis was confirmed genetically. Over next nine months, she developed generalized dystonia and she was started on Baclofen. After flu infection, attacks of forced postures occurred. Treatment with Tinazidine and Pramipexole had little effect.

At the age of eleven, she was admitted to CCUH in status dystonicus. Treatment with intermittent IV Midazolam failed, so she was admitted to Paediatric Intensive Care Unit (PICU) for continuous infusion. Even after adding Clonidine infusion, she had breakthroughs requiring boluses of Thiopental, Propofol, Midazolam, and Clonidine. The effect from anti-dystonic medications (Gabapentine, Tetrabenazine, Baclofen, Clonazepam, Trihexyphenidyl, Phenobarbital) was absent. Therefore, continuous Thiopental infusion was started.

Due to pharmaco-refractory status dystonicus, the patient was transferred to Germany for deep brain stimulation (DBS) and intrathecal Baclofen pump implantation, however the effect was not achieved immediately; she still required continuous sedation.

Back in Latvia, following botulinum toxin injections, increased DBS voltage and Baclofen dose, she was gradually weaned off general anaesthetics and discharged from the PICU.

Still, she suffered from long-term sequelae from the disease progression, medication side-effects and care problems. The problems included: encephalopathy, chronic respiratory failure with tracheostomy, gastroparesis, spastic urinary bladder, chronic UTI, Baclofen pump bedsore and contractures.

Conclusion. Status dystonicus is a rare neurologic emergency, without clinical treatment guidelines. Hence, the therapy is based on other reported cases. Our report illustrates treatment options for refractory status dystonicus in Latvia and elsewhere in the world.

Summary. 11-year-old girl with PKAN and refractory status dystonicus was treated with multiple anti-spasticity medications, general anaesthesia and surgical methods. Her dystonia eventually improved, however she suffered from complications caused by both – the underlying disease and the treatment.

RHOMBENCEPHALITIS: RARE MANIFESTATION OF LYME DISEASE

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Keywords. Lyme disease, neuroborreliosis, rhombencephalitis.

Introduction. Lyme disease (LD) is an infectious illness caused by bacteria *Borrelia burgdorferi (Bb).* An early sign of infection is *erythema migrans* which can easily remain unnoticed. If left untreated bacteria spreads systemically reaching cardiovascular, musculoskeletal and nervous system, causing chronic condition. Neuroborreliosis is characterized by the involvement of central nervous system (CNS) typically causing meningitis. This case depicts a very rare manifestation of LD presenting with brainstem infection also called rhombencephalitis.

Case report description. A 53-year-old woman was admitted to Emergency Department in Riga Eastern Clinical university hospital on February 2016 due to altered mental state and progressive severe headache. Primary neurological assessment revealed disorientation and positive meningeal signs. It was known that the patient had been previously hospitalized in December 2015 complaining of nausea, episodic vomiting, deteriorating appetite, weight loss and persistent headache. The patient was thoroughly investigated and discharged with diagnosis of gastroesophageal reflux disease.

Blood tests and native brain CT did not reveal any pathology and spinal tap was performed. Cerebrospinal fluid (CSF) analysis showed lymphocytic pleocytosis, decreased glucose and increased protein level. The patient was hospitalized and i/v Acyclovir therapy was initiated. Head MRI scan was performed presenting hyperintense signal in T2 and FLAIR sequences with patchy, partly confluent, contrast enhanced changes involving brainstem and brain meninges. Further laboratory tests were performed to exclude Candida, Aspergillus, Cryptococcus neoformans, HIV, syphylis, tbc, Enterovirus, EBV, CMV, VZV, HSV ½, TBEV, bacterial infections, sarcoidosis and paraneoplastic syndromes. There was no previous history of LD in this patient but *Bb* IgG in CSF and blood came positive (4600 AU/mL and 1244 AU/mL) with CSF-to-serum antibody index 3.69 proving production of intrathecal *Bb* antibodies. The patient was treated with i/v Ceftriaxone 2 g for 21 day. The symptoms improved after the treatment.

Conclusion. This case shows extremely rare manifestation of neuroborreliosis mimicking various other neurological conditions. Appropriate diagnostic algorithm allows timely identification of infection and an early initiation of specific treatment for a better clinical outcome.

Summary. Neuroborreliosis can occur with no previous history of tick bites or characteristic manifestation of Lyme disease. However, the clinician has to have a high suspicion of CNS involvement when the patient presents with long-lasting headache and nausea.

SUCCESSFUL OUTCOME OF PREGNANCY WITH MULTIPLE LARGE UTERINE FIBROIDS

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Keywords. Uterine fibroids, pregnancy, cesarean hysterectomy.

Introduction. Uterine fibroids are the commonest benign uterine tumors, with an estimated incidence of 20–40 % in women during their reproductive years. Their incidence during pregnancy is about 4–7 %, and has been increasing in recent years. Fibroids during pregnancy are associated with an increased rate of spontaneous miscarriage, preterm labor, placenta abruption, malpresentation of fetus, cesarean delivery and postpartum hemorrhage. The management of uterine fibroids during pregnancy is largely expectant and their surgical removal is generally delayed until after delivery, because of the risk of massive hemorrhage.

Case report description. A 43 year old multigravida (G3 P2) female presented in Riga Maternity hospital at a gestational age of 37+3 with diagnosis of uterine cicatrix and multiple large uterine fibroids. Because of this, an elective caesarean section was planned. She was on antenatal check up and, throughout pregnancy, 3 intramural fibroids were seen on ultrasonography (USG), increasing in size. On admission her vitals were normal, USG confirmed 38+1 weeks pregnancy, normal fetus with cephalic presentation, anterior high situated placenta with normal liquor and 3 large intramural fibroids in size of 74 mm and two node summary of 124 mm. Elective cesarean section was carried out and live female baby was delivered with good Apgar score of 8–9, birth weight of 3400 g and lenght of 52 cm. Multiple intramural and submucous fibroids in all uterine walls were visualized, in diameter of 2 to 10 cm. Considering the amount and size of fibroids, a decision to perform cesarean hysterectomy with bilateral salpingectomy was made. Postoperative period was uneventful and she was discharged on 8th postoperative day.

Conclusion. Fibroids in pregnancy are quite common and may pose a serious risk for both mother and fetus, as they are associated with adverse outcomes of pregnancy. Although cesarean hysterectomy has not been universally accepted as a popular procedure in obstetrics, for some patients an operation that can accomplish both delivery and definitive treatment of their fibroids may be a reasonable and safe option.

Summary. Uterine fibroids may cause severe complications during pregnancy and their surgical removal is generally delayed until after delivery because of massive hemorrhage risk. The interesting features of this case are the normal, full-term development of the fetus in a large fibroid uterus, absence of fibroid related complications during whole pregnancy and excellent recovery of mother following cesarean hysterectomy.

TOLOSA – HUNT SYNDROME

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Keywords. Tolosa–Hunt syndrome, cavernous sinus, lymphocytic hypophysitis.

Introduction. Tolosa–Hunt syndrome (THS) is described in the International Classification of Headache Disorders as unilateral orbital pain associated with paresis of one or more of the third, fourth and/or sixth cranial nerves caused by a granulomatous inflammation in the cavernous sinus, superior orbital fissure or orbit. The etiology of this neurological disorder is largely unknown. THS is a rare syndrome with an estimated annual incidence of one case per million per year. THS diagnosis is based on the clinical presentation, neuroimaging results and a prompt clinical response to corticosteroids therapy.

Case report description. 74-year-old male was admitted to Klaipeda University Hospital in November of 2013 with the following symptoms: unilateral left sided headache, mostly behind his eye, double vision, nausea and dizziness. The patient's symptoms developed within a week. Physical examination revealed a total ptosis of the left eyelid, lateral deviation of the left eye and enlarged left pupil. Patient reported that his pain level was 9 to 10 scores on a visual analogue scale (VAS).

In July of 2012 he was diagnosed with lymphocytic hypophysitis. MRI showed an extensive growth of hypophysis with contrast assembling. The condition resulted in panhypopituitarism, treated with levothyroxin 75 mcg q.o.d. and oral prednisone 10 mg q. o. d.

Laboratory tests were performed to exclude other possible disorders. In most cases of THS, MRI of the head may show unilateral enhancement of the cavernous sinus with abnormal tissue that is usually isointense to gray matter on T1 and iso- or hypointense on T2, abnormal convexity of the wall of the cavernous sinus or a focal narrowing of the intracavernous internal carotid artery. In rare cases of THS, as in this case, the MRI reveals no specific lesions to THS.

The treatment of THS consisted of oral prednisone 60 q. o. d. for five days, considering the dosage of prednisone used before. Corticosteroids therapy produced positive outcome. The patient's headache decreased (5 scores according to VAS) and orbital pain entirely disappeared after 2 days of treatment. The headache and ptosis vanished after five days of corticosteroids treatment. Double vision, eye deviation and dilated pupil improved as well.

Conclusion. The patient was diagnosed with THS based on combination of distinct clinical features, disclaimed feasible diseases, rapid pain resolution after prescribed treatment and previously detected lymphocytic hypophysitis, that could provoke inflammatory cells proliferation within the cavernous sinus septa and its walls.

Summary. In this case, the patient's hypophysis was affected by lymphocytic inflammation. After one year, clinical symptoms specific to THS manifested. Even though, MRI test did not reveal any findings addressed to THS and the biopsy of cavernous sinus was not performed, we can assume that suppression of the structures passing through cavernous sinus is a consequence of lymphocytic hypophysitis.

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