RĪGA STRADIŅŠ UNIVERSITY
INTERNATIONAL
STUDENT CONFERENCE

HEALTH AND SOCIAL SCIENCES

ABSTRACT BOOK
Health Sciences

16 March 2016

RĪGA STRADIŅŠ
UNIVERSITY

RSU SP

RĪGA, LATVIA

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Authors are responsible for their Abstracts.

Layout: Ilze Stikāne

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Preface

Dear participants,

It gives me a great pleasure to welcome you at Riga Stradiņš University (RSU) International Student Conference 2016. This annual conference is a significant event for each RSU student as it brings together students and experts from different fields. This is the 65th RSU student scientific conference, and we are proudly continuing our path to organise it as an international event – this year conference will gather participants from Latvia, Lithuania, Poland, Russia, Ukraine, Norway, United Kingdom, Germany, Kazakhstan, and other countries.

The RSU International Student Conference (ISC) will cover topics in health and social sciences – the fields of study that RSU offers for our students – and I am sure this conference will make an important contribution towards promoting high quality science among young researchers and the importance of science in the study process. RSU strives to train students with comprehensive knowledge, thus developing scientific research skills. Our scientific conference is the place to demonstrate these skills to a broad range of teachers, experts and students from many countries in the world. In addition, it is the chance to hear and appreciate the presentations of your peers.

I am delighted to see such widespread interest and meet enthusiastic participants with poster and oral presentations. I wish you a fruitful and successful conference and I hope it will open up great opportunities for all.

Professor Jānis Gardovskis
Rector of Rīga Stradiņš University

Dear participants, colleagues and friends,

We are honoured to welcome you at Riga Stradiņš University International Student Conference "Health and Social Sciences" 2016. This year we celebrate the 65th anniversary of student scientific conference in our university. Our students have been using this opportunity for presenting their researches almost since the very beginning of RSU. Why not make this experience more valuable by inviting colleagues from many different countries in the world to share their scientific works with us? For this reason, this is the second year in a row when RSU Student Council organises this grand event in international scale. Yes, we, the organisers, are students from RSU, who are interested in science and the amazing prospect of being able to share our thoughts with our peers from Lithuania, Poland, Russia, Ukraine, Norway, United Kingdom, Germany, Kazakhstan, and other countries where ISC participants are from.

Every year is a new chance to learn from our previous experience and make this event even better than it was. This time we offer practical workshops, led by the teachers of RSU, for our participants. We are thankful to all the doctors and experts without whom this event would not be possible.

We are delighted that you have decided to be part of our conference, and we wish you all the luck in presenting your scientific work. Enjoy your time at RSU ISC 2016 and make the most out of this experience by learning new knowledge and meeting new friends and future colleagues!

Valdis Ģībietis
Chair of the Organising Committee

16 March 2016

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I. Internal Medicine:
Cardiology, Pulmonology

HISTORY OF TRANSIENT ISCHAEMIC ATTACK, STROKE, MYOCARDIAL INFARCTION AND THE IMPACT ON OUTCOMES FOLLOWING CAROTID ARTERY STENTING

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Keywords. Carotid artery stenosis, stroke, stenting.

Introduction. Several clinical trials and registry studies have demonstrated controversial results regarding the safety and efficacy of carotid artery stenting (CAS). The decision making on patient selection who most likely would benefit from CAS still remains unclear due to the high prevalence of patients with severe medical comorbidities in every-day clinical practice.

Aim. This study sought to evaluate the independent predictors of post-procedural major adverse cardiovascular events (MACE) in patients undergoing CAS at Latvian Centre of Cardiology.

Materials and methods. A retrospective analysis was performed using prospectively collected 182 patient registry data. Multivariate regression analysis was used to establish the impact of patient baseline demographic and clinical characteristics on outcomes one month and a year after CAS. Patients were stratified according to symptom status within the preceding six months and lifetime history of stroke / transitory ischaemic attack (TIA) / myocardial infarction (MI).

Results. Mean patient age was 69.1 years. Majority of the patients had hypertension (79.2%) and dyslipidemia (86.8%). Concomitant coronary artery disease (CAD) was present in 91.7% of patients and 79.6% had multivessel and / or left main CAD. A history of stroke / TIA was present in 28.7% of patients and 13.5% suffered a neurological event within 180 days before CAS. A history of MI was present in 31.7% of patients and 4.4% underwent CAS within 30 days after MI. No significant differences in the incidence of adverse events within 30 days and one year after CAS was observed in symptomatic *vs.* asymptomatic patients and in patients with *vs.* without a history of stroke / TIA / MI. No independent predictors of all the risk factors for the 30 day MACE rate were found by the multivariate logistic regression analysis. Age ≥80 years (OR 4.96; 95%CI 1.31–18.86; p = 0.019) and structural valve disease (OR 3.30; 95%CI 0.92–11.77; p = 0.066) increased the risk of MACE within a year post procedure. Pre-procedural neurologic and cardiovascular events did not show any influence on MACE at 30 days. A history of MI was associated with MACE at one year in the univariate logistic regression analysis (OR 2.83; 95%CI 1.01–7.89; p = 0.041), while it disappeared in the multivariate analysis (OR 2.55; 95% CI 0.74–8.81; p = 0.139).

Conclusions. CAS could be performed with similar clinical outcome results regardless of symptom status and lifetime history of stroke / TIA / MI. Age ≥80 years was an independent predictor of an adverse event and reinforces the need of a careful patient selection in the group of octogenarians.

COMPARISON OF EFFICACY AND SAFETY OF LONG-TERM WARFARIN THERAPY IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION

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Keywords. Warfarin, atrial fibrillation, thromboembolic complications, bleeding.

Introduction. Anticoagulation with vitamin K antagonist (VKA) has been an enduring gold standard for stroke prevention in AF as well as for the prophylaxis and long-term treatment of venous thromboembolism. But the potential for serious bleeding complications of the drug remains a problem for the safe use of drug.

Aim. Examine the prevalence of thromboembolic and bleeding complications in patients with non-valvular atrial fibrillation who receiving warfarin in Ukraine (Sumy).

Materials and methods. A total of 40 patients with non-valvular atrial fibrillation were recruited between July 2015 and January 2016 and were provided written informed consent. They were divided on two groups: firsts group of patients who did not take warfarin and second group of patients who took warfarin. We used CHA_2DS_2VASc score to assess the risk of thromboembolic complications (TEC), scale HAS-BLED to assess the risk of bleeding, control of laboratory parameters (blood count, creatinine, glomerular filtration rate (GFR) by MDRD, coagulation). Patients who taking warfarin, was calculated TTR (time spent in the target range INR). Demographic data were retrospectively obtained from the computerized patient record system (CPRS). Participants also completed a questionnaire about their vitamin K-rich beverage and food intake.

Results. The majority of patients (72%) were aged from 65 to 70 years. A stable patient on warfarin was defined as having at least three consecutive International Normalized Ratio (INR) measurements within the expected therapeutic range (2–3, according to indication for warfarin use). Patients, who taking warfarin, INR time spent in the target range (TTR) arranged from 78 to 82%. Patients with high risk of thromboembolic complications (more than 5 points) of CHA2DS2VASS scale was significantly more in patients, who were not taking warfarin (18%) compared with patients, who received warfarin (p = 0.011). The majority of patients had a high risk of bleeding (more than 3 balls) on a HAS-BLED scale.

Conclusions. the relationship between monitoring VKAs and their efficacy / safety balance is proven. The exponential increase in studies evaluating health-related quality of life as an important outcome in anticoagulated patients has shown that monitoring these patients leads to more anticoagulation stability, lower incidence of bleeding, and less ischemic events. The structure of the leading risk factors was defined among patients with atrial fibrillation who live in Ukraine (Sumy). The treatment of new oral anticoagulants allows us to assign them without special control laboratory control.

SEVERITY OF COPD IN INITIAL DIAGNOSIS

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Keywords. Chronic Obstructive Pulmonary Disease, COPD, Chronic bronchitis.

Introduction. Chronic Obstructive Pulmonary Disease (COPD) is characterized by airflow limitations that are irreversible and progressive. COPD is one of the Top10 death causes in the world right now and World Health Organization is predicting it will be 3rd by year 2020. Its' main cause is smoking and clinically significant COPD develops in 15–50% of smokers. COPD is manageable and preventable, however, COPD is highly under-diagnosed in the whole world. It's considered that in the USA 50% of COPD patients stay undiagnosed; in Latvia this number is nearly 90%. Early diagnosis and management of the disease is the keystone for a good outcome and better quality of life.

Aim. To determine the severity of COPD in initial diagnosis in Latvia and consequences of delayed diagnosis.

Materials and methods. Retrospective study of 139 patients with COPD in Riga East Clinical University Hospital between 2009 and 2015 of whom 31 patient were first time diagnosed with available spirometry data, 101 patient were brought to the hospital with COPD exacerbations and 7 patients had no available spirometry data. Data analysis with "IBM SPSS Statistics" program.

Results. From our first-time diagnosed patients 77.4% (24) were males and 22.6% (7) females. First-time diagnosed patients most often are diagnosed with COPD in grade III – 35.5% (95% confidence interval (CI) 19.4–51.6%); grade II – 29% (95% CI 12.9–45.2%); grade IV – 22.6% (95% CI 9.7–38.7%) and grade I – 12.9% (95% CI 3.2–25.8%). All patients with COPD had co-morbidities involving: 88% cardiovascular system; 70% respiratory system; 28% endocrinology system; 23% gastrointestinal system; 20% musculoskeletal system; 19% nephrology; 15% neurology; 13% urology / gynecology.

Conclusions. The 3 main conclusions are: 1. On initial diagnosis patients suffering from COPD are already in advance stage of the disease, thus making the management of the disease more difficult and prognosis of the patients worse. 2. The high number of patients brought to the hospital with COPD exacerbations shows the difficulties managing patients with delayed diagnosis and low patient compliance. 3. With the delayed diagnosis patients' health problems become more complicated involving multiple organ systems.

EVALUATION OF RESIDUAL PULMONARY HYPERTENSION AFTER THE CORRECTION OF CONGENITAL HEART DEFECTS

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Keywords. Pulmonary hypertension, congenital heart disease.

Introduction. Pulmonary hypertension (PH) is one of the most severe complications in congenital systemic-to-pulmonary shunts. Accurate timing of defect correction in patients with PH and congenital heart disease (CHD) is crucial. For some patients PH may persist after surgery. Despite recent advances in PH management and published PH guidelines, a "grey zone" in correction decision still exists.

Aim. To evaluate preoperative factors related to the progression of PH after surgical correction of congenital systemic-to-pulmonary shunts.

Materials and methods. The study had two stages. At the first stage, we retrospectively reviewed data of 4118 cardiac catheterizations (1985–2007 year period) in our hospital and selected 454 patients with PH and CHD (mean pulmonary artery pressure (PAP) $\geq$ 25 mmHg). At the second stage previous data were checked in the Cardiac Surgery Centre database and 155 patients who underwent surgical correction of CHD were selected. For the final evaluation 97 patients were included with regular follow-up data that were found at the hospital's electronic patients' records system. Patients were divided into groups based on the severity of PH and the type of CHD.

Results. Mean age of the 97 studied patients during the surgery was 6 (SD $\pm$ 14) years. 50.5% were male (n = 49) and 49.5% (n = 48) female. Simple CHD was diagnosed in 45.4% (n = 44) patients and complex CHD in 55.6% (n = 53) patients. After correction PH persisted in 27.8% (n = 27) patients, of whom 40.7% (n = 11) had simple CHD and 59.3% (n = 16) complex CHD. In residual PH group 3.7% (n = 1) patients had mild PH, 40.7% (n = 11) moderate PH and 55.6% (n = 15) severe PH before surgery. Pulmonary vascular resistance was significantly higher in residual PH group (4.6 $\pm$ 3.2 Wood units) compared to non-residual PH group (2.8 $\pm$ 1.9 Wood units) (p = 0.018). Shunt was significantly lower in residual PH group (46.1 $\pm$ 19.8%) than in non-residual PH group (60.5 $\pm$ 19.3%) (p = 0.044). CHD were diagnosed and corrected later for patients to whom PH persisted after correction. Simple CHD was diagnosed later than complex CHD, respectively 9.9 $\pm$ 19.3 years and 2.2 $\pm$ 3.3 years (p = 0.012).

Conclusions. PH remained in 27.8% of patients after surgical treatment. Positive effect of surgery was observed in 3/4 of all patients. Significant preoperative factors that had an effect on residual PH was time of diagnosis and operation, higher pulmonary vascular resistance, lower shunt and more severe PH.

HEART RATE VARIABILITY AND QUALITY OF LIFE IN DEPRESSED CARDIAC SURGERY PATIENTS

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Keywords. Depression (DEPR), heart rate variability (HRV), cardiac surgery, quality of life (QOL).

Introduction. DEPR is accompanied by dysfunction of the cardiac autonomic nervous system and associated with low HRV. Low HRV predicts mortality and arrhythmias in cardiac patients.

Aim. To assess DEPR severity impact on HRV and QOL in depressed post-cardiac surgery patients.

Materials and methods. We analysed 74 patients from 2014 to 2015 at 1.5 month after surgery and who had increased DEPR score (SCL-90R subscale ≥61T). HRV data were measured using short-term 5-min recordings at rest and during mental task. HRV measures were abbreviated as recommended: standard deviation of all normal-to-normal intervals (SDNN), low frequency (LF), high frequency (HF) power in normalized units. HRV data were compared between two groups with different DEPR severity. Student's T-test was used for statistical analysis. Data are presented in mean ± SD format. P-value < 0.005 was considered statistically significant. The study was approved by the Kaunas Regional Committee for Biomedical Research Ethics; all participants provided written informed consent.

Results. 52 patients (70.3%) underwent coronary artery bypass graft, 12 (16.2%) – valve replacement / valve repair and 10 (13.5%) – combined surgery. 45.9% of patients had a history of smoking, 44.6% – myocardial infarction. Mean DEPR score was 65.51 ± 5.36. Mean standard deviation of SDNN was 25.31 ± 24.24 ms at rest, 31.09 ± 22.43 ms at mental task. 58.2% of patients had severe DEPR (score ≥65) and 41.8% mild (score < 65). The mean of HR at rest in more depressed patients was 67.72 ± 10.59 bpm and in group with mild DEPR – 61.87 ± 7.63 bpm (p = 0.010), SDNN 24.76 ± 19.74 ms vs. 25.72 ± 27.35 ms (p = 0.873), LF 58.01 ± 18.28 vs. 57.23 ± 13.25 (p = 0.838), HF 33.29 ± 13.54 vs. 35.56 ± 14.31 (p = 0.510). Older patients than 60 yrs. had lower SDNN at rest than younger (20.30 ± 22.52 vs. 28.92 ± 25.24 ms, p = 0.042). SDNN in smokers was 21.18 ± 22.43 ms, in nonsmokers 26.69 ± 24.87 ms at rest (p = 0.421) and 21.71 ± 8.48 ms vs. 34.22 ± 24.73 ms at mental task (p = 0.046). Some differences were found on QOL components in two patients groups with different DEPR severity: general health (GH) 41.94 ± 15.09 vs. 50.70 ± 13.57 (p = 0.011), vitality (V) 42.90 ± 18.9 vs. 59.53 ± 15.42 (p = 0.001), social function (SF) 52.94 ± 22.92 vs. 64.19 ± 19.53 (p = 0.026), mental health (MH) 53.81 ± 18.84 vs. 72.74 ± 14.27 (p = 0.001); no statistically significant differences were found between physical function (PF), role limitations due to PF, bodily pain (P), role limitations due to emotional function (p > 0.005).

Conclusion. General HRV didn't differ between patients with mild or severe DEPR. General HRV at rest is lower in older patients and in smokers. The patients with higher DEPR assessed significantly lower GH, V, SF, and MF QOL parameters.

ASSESSMENT OF PULMONARY EMBOLISM
BY CLINICAL SCORING SYSTEMS

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Keywords. Pulmonary embolism, scoring systems.

Introduction. Pulmonary embolism (PE) is the third most common cause of death from cardiovascular disease. Scoring systems are important for clinicians attempting to diagnose, evaluate the severity and predict complications of many diseases including PE (*Goldhaber, Bounameaux, 2012*).

Aim. To evaluate clinical possibility of PE, compare different severity indexes for PE and find out the association between predicted value of bleeding scores and episode of bleeding in 3-months follow-up.

Materials and methods. The prospective cohort study was conducted to enroll patients in the RIETE registry. All patients provided written consent for participation in the registry in accordance with local ethics committee requirements. The study population included 109 consecutive patients in a single university hospital from August 2014 till December 2015 with symptomatic PE, confirmed by CT pulmonary angiography. For suspected PE, two scores are widely used: the Wells score (WS) and the revised Geneva score (RGS). PE Severity Index (PESI) and its simplified version stratify patients with PE according to prognosis. The bleeding risk score (BRS) is estimated by HEMORR2HAGES score and RIETE score. All data were analyzed by SPSS 20.0.

Results. The age of patients ranged from 23 to 92 years. The mean age ± standard deviation (SD) was 64.4 ± 17.0 [95% confidence interval (CI) = 61.2–67.6] years.

WS showed the value of 3.76 ± 1.73 [1.48–1.94] and RGS of 6.32 ± 3.48 [5.67–7.05] which had significant correlation ($p < 0.001$). The correlation between WS and RGS both divided in Three-level score was not found ($p = 0.062$). However, for Two-level score it was seen ($p < 0.001$). No correlation was obtained between Two-level and Three-level WS and RGS and value of D-dimer ($p > 0.05$).

The class 3 of PESI was predominant in 36 cases or 33% [24.8–42.2]. Simplified PESI showed 69.7% [60.6–78.0] of high-risk patients. The significant correlation between PESI and Simplified PESI according to RIETE was obtained ($p < 0.001$).

HEMORR2HAGES BRS displayed the value of 2.28 ± 1.35 [2.01–2.57], RIETE BRS – 2.09 ± 1.19 [1.86–2.35]. The correlation between two BRS was significant ($p < 0.001$). The 3-months follow-up was performed in 90 patients and the bleeding was mentioned in 13.3% [6.28–20.32] of cases. No statistically significant difference between value of both BRS and confirmed episode of bleeding was established ($p > 0.05$).

Conclusions. Evaluation of clinical possibility obtained with WS or RGS has similar accuracy. High-risk patients are predominant according to PESI. Estimation of hemorrhagic risk showed no significant difference between value of bleeding scores and confirmed episode.

INFLAMMATORY MARKERS AND PNEUMONIA SEVERITY INDEX IN PATIENTS WITH PNEUMONIA

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Keywords. Community-Acquired Pneumonia, CRP, CURB65, PSI.

Introduction. Community-Acquired Pneumonia (CAP) is disease with a significant risk of mortality for elderly patients. Important is CAP individualized therapy, each patient should be assessed by etiology, co-morbidities and biomarkers. C-reactive protein (CRP) is biomarker most frequent studied in case of CAP.

Aim. Quantitative CRP evaluation in patients with CAP and comparing with severity index. CRP role in the etiology and severity for patients with co-morbidities.

Materials and methods. A prospective, randomized study includes patients with CAP, hospitalized in Pauls Stradins Clinical University Hospital. An originally created study protocol, containing 23 anamnestic and laboratory parameters, was used. Statistical analysis performed using SPSS. Pneumonia severity scales used-CURB65 and Pneumonia Severity Index (PSI).

Results. 73 patients, average age of 67. 31 (42.5%) male and 42 (57.5%) female. Co-morbidities: oncology – 11 (15.1%), liver diseases – 10 (13.7%), heart failure – 35 (47.9%), stroke – 8 (11%), kidney diseases – 11 (15.1%). CRP measured in 70 (96%) patients, CRP > 100mg/L in 40 (57.1%). White blood cell (WBC) count measured in 68 (93%), > $15x10^9$/L in 16 (21.9%). Pleural effusion diagnosed in 25 (34.2%), 18 (72%) of them CRP > 100 mg/L. Evaluation using CURB65 applied for 68 (93.2%), often scores were 1 and 2 – 32 (47.1%) and 19 (27.9%), no scores ≥ 4 evaluated. Evaluation using PSI applied for 73 (100%), often classes were 1. and 2. – 59 (80.8%) and 10 (13.7%), no class 5 evaluated. Statistically significant moderate correlation was found between CRP un WBC (p = 0.001, r_2 = 0.406), weak negative correlation between CRP and sodium (p = 0.02, r_2 = −0.287), weak correlation between CRP and pulse rate (p = 0.03, r_2 = 0.273), moderate correlation between age and CURB65 (p < 0.001, r_2 = 0.568), weak correlation between sodium and haematocrit (Ht) (p = 0.021, r_2 = 0.310), weak correlation between Ht and pulse rate (p = 0.011, r_2 = 0.33), partly statistically significant weak correlation was found between CURB65 and PSI (p = 0.056, r_2 = 0.232). There is no statistically significant correlation between CRO and CURB65 (p = 0.9, r_2 = −0.016) or PSI (p = 0.794, r_2 = 0.032) and between WBC and CURB65 (p = 0.362, r_2 = −0.116) or PSI (p = 0.346, r_2 = −0.116).

Conclusions. 1. CRP level greater than 100mg/L describe patients with CAP. 2. CRP is sufficient inflammatory marker, because there is correlation between CRP and WBC count. 3. CRP level with and without X-ray pleural effusion is weakly statistically significantly different, therefore usefull in predicting complications, but in need of further research. 4. Severity assesment scales often rank patients into low 1 and 2 risk categories.

ADENOSINE PULMONARY VASODILATOR TEST IN CONNECTIVE TISSUE DISEASE ASSOCIATED PULMONARY ARTERIAL HYPERTENSION

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Keywords. Pulmonary arterial hypertension, Pulmonary vasodilator test, Adenosine, Calcium channel blockers.

Introduction. Classified as World Health Organization group I PAH, connective tissue disease associated pulmonary arterial hypertension (CTD-APAH) is linked with reduced quality of life and poor outcome. During right heart catheterization (RHC), Pulmonary vasodilator testing (PVT) with short-acting agent (Adenosine IV, Epoprostenol IV or inhaled Nitric oxide) may be used, assessing the reversibility of the pulmonary vasoconstriction. Positive PVT signifies potential benefits out of long-term calcium channel blocker (CCB) therapy and predicts a favorable outcome. The USA-based registry for pulmonary arterial hypertension 1982–2006 published in 2007, showed an overall 4.6% positive PVT, while only 2.3% among the CTD-APAH.

Aim. To explore the usage and the response of adenosine pulmonary vasodilator testing in CTD-APAH.

Materials and methods. We retrospectively analyzed data of CTD-APAH cases diagnosed between February 2008–2015. Data was obtained from the Latvian national registry.

Prior to the RHC, patients were evaluated for possible adenosine contraindications.

After baseline hemodynamics were obtained, IV adenosine was started at a dose of 50 μg/kg/min, increased by 25 μg/kg/min at 2 min intervals to a maximum 500 μg/kg/min.

Positive or negative vasculature reversibility was reported, as reactivity to adenosine; a decrease of $\geq$ 10 mmHg in the mean pulmonary arterial pressure to an absolute value of $\leq$ 40 mmHg, together with preserved cardiac output, was regarded as positive PVT.

Results. A total of 20 CTD-APAH patients; 90% ♀ (n = 18) and 10% ♂ (n = 2). Mean age and standard deviation was $\bar{x}$ = 58.5 ± 14y; range 33–77y.

Out of the 20 patients, only 1 had positive test 5% (CI 95% 0.009–0.236) and indeed had milder course of the disease. In comparison to the larger scale US based study this was not significantly different (p-value 0.42).

Minor side effects; 15% (n = 3) had lightheadedness, 10% (n = 2) had short lasting chest pain and 5% (n = 1) had bradycardia.

No major adverse effects to adenosine infusion were reported.

Noteworthy, while only 5% had positive PVT, 40% (n = 8) received combination therapy with CCB and ambrisentan (n = 6) or sildenafil (n = 2). 75% (n = 6) of these patients had a concomitant systemic hypertension which might explain the usage of CCB.

Conclusion. Our CTD-APAH population demonstrated a poor response to adenosine vasodilatory test. Nonetheless, Adenosine can be applied relatively safely and rapidly to assess pulmonary vasculature reactivity in these patients. However, as suggested in the literature, introduction of inhaled nitric oxide or IV epoprostenol to the practice in Latvia should be considered.

16 March 2016

THE RISKS OF THROMBOTIC AND BLEEDING COMPLICATIONS AFTER ORTHOPEDIC SURGERY

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Keywords. Bleeding risks, thrombotic risks, orthopedic surgery.

Introduction. Knee and hip replacement operations are rapidly increasing in frequency. Despite the significant consequences of perioperative bleeding, there is a lack of information about baseline risk factors. This complicates the preoperative evaluation and makes it difficult to assess the thrombotic and bleeding risks of surgery.

Aim. The aim of study is to investigate the risk factors for bleeding and thrombotic events in patients undergoing orthopedic surgery.

Methods. We performed analysis of 68 patients < 60 years old, (I group) 61–75 years old (II group), > 75 years old (III group), undergoing hip or knee replacement surgery in Vidzemes Hospital and Madonas Hospital, Latvia between January 7, 2015 and May 14, 2015. Bleeding risk was evaluated based on HAS-BLED scale and usage of medications prone to cause bleeding due to raising concentration of anticoagulants (*Wessler JD et. al JACC 2013; 61(25):2495-2502*) and thrombotic risk was evaluated based on CHAD-VASC and low, medium and high venous thromboembolism risk factors by (*S. Konstantinides, A. Torbicki, G. Agnelli et al. 2014 ESC Guidlines on the diagnosis and management of acute pulmonary embolism*).

Results. Of total 68 patients 70.6% underwent hip and 29.4% knee surgeries. 68% are women and 32% are men. Using HASBLED scale for bleeding 41.2% of patients had 2 points, 32.4% – 1 point, 16.2% – 0 points, 7.45% – 3 points and 2.9% – 4 points. The medications prone to cause bleeding due to raising concentration of anticoagulants are using 19% of all 68 patients. Using CHAD-VASC scale almost one third of patients (27.9%) had 3 points, 21% – 1 point, 19% – 2 points, 15% of all patients – 4 points, 10% – 0 points, 4% – 5 points, and 3% had 6 points. Using HASBLED scale in I group mode is 1 point, II group mode is 2 points and in III group mode is 2 points. Using CHAD-VASC scale in I group mode is 1 point, II group mode is 3 points and III group mode is 4 points. Correlations is statistically distinguished between CHAD-VASC scale and age of patients (P = 0.064). Comparing the age of patients with low, medium and high thrombotic risk factor scale: all have at least 1 high risk factor of thromboembolic episode due to orthopedic surgery which is one of the criteria evaluating the risk factors. In I group: low risk factors are less common than in III group, medium risk factors in I group are more or less compatible with II group and the most medium risk factors have III group.

Conclusions. 1. There is greater risks of thrombotic episodes after orthopedic surgeries in III group rather then in younger participants. 2. There is no significant difference of bleeding risk between groups II and III. 3. Bleeding risk factors are significantly lower in the I group.

THE IMPACT OF TICAGRELOR VERSUS CLOPIDOGREL ON FIFTEEN MONTH SURVIVAL OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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Keywords. Myocardial infarction, Clopidogrel, Ticagrelor, survival.

Introduction. Ticagrelor and clopidogrel are both platelet surface ADP P2Y12 receptor inhibitors used for preventing platelet aggregation in sufferers of an acute myocardial infarction (acute MI). Clopidogrel, approved in 1997, has been the ADP inhibitor of choice in the treatment of patients who have suffered an acute MI for many years. Ticagrelor, approved in 2011, has overtaken clopidogrel for many subsets of acute MI patients such as those undergoing a percutaneous coronary intervention (PCI).

Aim. To assess whether the in-hospital use of ticagrelor over clopidogrel in the early period after an acute MI has occurred results in a statistically significant difference in patient fifteen month survival after discharge from the hospital.

Materials and methods. A retrospective cohort study, using the medical records of patients discharged from the Latvian Center of Cardiology at Pauls Stradins Clinical University Hospital after suffering an acute MI and receiving treatment for it, was conducted. Data from the Population Register of Latvia on fifteen month survival of patients were obtained. The obtained data were statistically processed with MS Excel and IBM SPSS software.

Results. The study involved 256 patients, 71.9% (n = 184) men (average age 63.2 ± 11.9), 28.1% (n = 72) women (average age of 73.5 ± 11.4). The two groups consisted of 39.5% (n = 101) receiving clopidogrel and 60.5% (n = 155) who receiving ticagrelor.

Of those receiving ticagrelor 90.3% (n = 140) survived at fifteen months in comparison to 78.2% (n = 79) of those receiving clopidogrel (p = 0.007).

Of the total number of patients 18.4% (n = 47) did not undergo a PCI (nonPCI group), 79.7% (n = 204) underwent a PCI (PCI group) and 1.9% (n = 5) developed a myocardial infarction after planned PCI. The survival factored according to whether the patients underwent PCI shows that in the nonPCI group fifteen month survival was 82.4% (n = 14) for those receiving ticagrelor compared to 70.0% (n = 21) for those receiving clopidogrel (p = 0.335), for the PCI group, the survival of those on ticagrelor was 91.3% (n = 126) compared to clopidogrel 81.4% (n = 57) at fifteen months (p = 0.038).

Conclusions. A statistically significant positive impact in fifteen month survival is observable for patients suffering an acute myocardial infarction when receiving ticagrelor compared to receiving clopidogrel treatment. There is a strong improvement in fifteen month survival for those undergoing PCI after an acute myocardial infarction when receiving treatment with ticagrelor compared to clopidogrel, no such improvement is observable for patients not undergoing PCI.

THE IMPACT OF ATRIAL FIBRILLATION ON FIFTEEN MONTH SURVIVAL OF PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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Keywords. Atrial fibrillation, myocardial infarction, survival.

Introduction. Atrial fibrillation (AF) is one of the more common arrhythmic complications following an acute myocardial infarction (MI). Scientific research suggests that AF is associated with a significant decrease in survival in patients suffering an acute MI.

Aim. To assess whether suffering from atrial fibrillation has a negative impact on in-hospital and fifteen month survival after the occurrence of an acute MI.

Materials and methods. A retrospective cohort study, using the medical records of patients treated at the Latvian Center of Cardiology at Pauls Stradins Clinical University Hospital after suffering an acute MI, was conducted. Data from the Population Register of Latvia on fifteen month survival of patients were obtained. The obtained data were statistically processed with MS Excel and IBM SPSS software.

Results. The study involved 288 patients, 71.2% (n = 205) men (mean age 64.1 ± 12.2), 29.1% (n = 83) women (mean age 73.4 ± 11.5). Amongst the patients 27.4% (n = 79) had had a registered case of AF during their stay in the hospital or had suffered from the disease prior to admission and 72.6% (n = 209) had had no registered cases of the disease.

Of those who had no prior history of AF 84.2% (n = 176) survived at fifteen months in comparison to 59.5% (n = 47) of those with AF (p < 0.001). Excluding first time AF or 16.5% (n = 13) of the total suffering from AF, the fifteen month survival for the AF group was at 57.6% (n = 38) (p < 0.001).

In-hospital mortality was at 9.4% (n = 27) for the total group studied, however the in-hospital survival if there was no current AF was 93.3% (n = 195) to the AF affected groups 83.5% (n = 66) (p = 0.012).

First time occurrence of AF resulted in an in-hospital survival rate of 69.2% (n = 9) as compared to having prior AF resulting in an 86.4% (n = 57) in-hospital survival rate (p = 0.141) and the in-hospital survival of those not suffering from AF 93.3% (n = 195) (p = 0.002). The fifteen month survival rate for AF occurring for the first time after an acute MI was at 69.2% (n = 8) when compared to the fifteen month survival of those not suffering from AF 84.2% (n = 176) (p = 0.118).

Conclusions. Suffering from AF has a statistically significant negative impact on both in-hospital and fifteen month survival for patients after an acute MI in comparison to those not suffering from AF. First time occurrence of AF has a statistically significant negative impact on in-hospital survival, when compared to not suffering from AF, however there is no statistically significant impact of first time AF on fifteen month survival compared to not suffering from AF.

ORTHOSTATIC HYPOTENSION CHANGES AFTER FIRST CARDIAC PACEMAKER IMPLANTATION

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Keywords. Cardiac pacemaker, orthostatic hypotension.

Introduction. The effect of pacemaker in orthostatic hypotension has been described in only few cases so far. Orthostatic hypotension is a syndrome with a multifactorial etiology and various forms of pathogenic mechanisms. One of the compensatory mechanisms in orthosatic hypotention is the increase of frequency of heart rate. The treatment includes lifestyle changes and drug therapy in severe cases. Although for some patients orthostatic hypotension cause symptoms, not enough attention is brought to the treatment and diagnostics.

Aim. Determine, whether orthostatic hypotension is reduced for patients whom orthostatic hypotention was diagnosted and first-time pacemaker implantation was indicated.

Materials and methods. In 2015 from June to December in Pauls Stradins Clinical University Hospital were selected 8 male and 10 female patients (av. age 75.5 ± 7.5). The eligibility criteria included: indicated first-time pacemaker implantation, age 18 to 85 years, and determined orthostatic hypotension before the implantation. Exlusion critetia: after the pacemaker implantation, no evidence of pacemaker action is seen in the electro-cardiogramm. Orthostatic hypotension was determined by measuring artherial blood pressure with an electronic tonometr lying down and standing up. Measurements were taken day before and day after the implantation. The diagnostic criteria for orthostatic hypotension was the decrease of the systolic artherial blood pressure by 20mmHg and / or the decrease of the diastolic blood pressure by 10 mmHg. (based on the European Society of Hypertension and the European Society of Cardiology Guidelines for the management of arterial hypertension 2013). For data analysis used SPSS IBM version 22.

Results. Before implantation orthostatic hypotension was observed – 66.7% of patients (n = 12) only the decrease in sysrolic blood pressure for at least 20mmHg, 11.1% of patients (n = 2) only the decrease of diastolic blood presure for at least 10mmHg. For 22.2% of patients (n = 4) both systolic and diastolic blood pressure changes were observed. Orthostatic hypotension simptoms were recognized in 38.9% (n = 7) of patients. After the implantation, orthostatic hypotension was still observed in 16.7% (n = 3) of patients, but none of the simptoms for orthostatic hypotension were present.

Conclusions. Patients diagnosed with orthostatic hyptotention and with an indications for first-time pacemaker implantation experienced the decrease in orthostatic hypotension and dissapearance of simptoms. In conclusion, pacemaker implantation has a high impact on the decrease of orthostatic hypotension and adds an additional benefit to the treatment.

VALUE OF DUKE TREADMILL SCORE IN PREDICTING CORONARY ARTERY LESION AND NEED OF REVASCULARIZATION

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Keywords. Duke treadmill score; exercise stress test; previous cardiovascular events; revascularization; risk stratification.

Introduction. Duke Treadmill score (DTS) is the most widely used risk stratification index for suspected coronary artery disease (CAD) evaluation. However, there is little information about the relationship between DTS and severity of coronary artery lesion as well as estimation of the need for revascularization.

Aim. The aim of the study was to ascertain the role of DTS in predicting the severity of CAD and need of coronary revascularization.

Materials and methods. 224 patients, who were admitted to outpatient clinic with chest pain and underwent exercise testing and coronary angiography, were included in retrospective cross-sectional study. The patients were divided into three groups according to DTS: low-risk (with a score of $\geq$ +5), moderate-risk (with scores ranging from −10 to +4), and high-risk (with a score of $\leq$ -11) groups. Coronary angiography was performed by the Judkins technique. Coronary lesion was considered significant when stenosis of coronary artery was $\geq$ 70% or stenosis of the trunk was $\geq$ 50%. Revascularization was performed if considered necessary after coronary angiography. Statistical analysis was performed by using SPSS 17.0. All *p*-values were two-tailed with a value $\leq$ 0.05 considered to be statistically significant.

Results. Mean age of all patients was 62.75 ± 9.6 and most of them were men 74.6%. Significant coronary artery stenosis were identified for 100% patients in high risk group, 69.5% in moderate-risk group (69.5%) and 49.2% in low-risk group (p = 0.005). DTS of patients subsequently treated with cardiac revascularization was significantly (p < 0.001) lower (0.08 ± 5.13) than of those treated conservatively (2.76 ± 5.12). DTS negatively correlated with significant coronary artery stenosis (r = −0.205, p = 0.002) as well as with cardiac revascularization (r = −0.251, p < 0.001).

Using multiple linear regression analysis (p < 0.001, adjusted R2 = 0.087) we found association between coronary revascularization and previous cardiovascular events (B = 0.178, p = 0.006) and DTS (B = −0.240, p < 0.001).

Conclusions. The DTS alone is a useful tool in suspecting a significant coronary artery stenosis, but not precise enough for selecting revascularization. So, by adding clinical information, his value may be maximized.

THE INCIDENCE OF CARDIOVASCULAR RISK FACTORS AMONG ELECTIVE CORONARY ANGIOPLASTY PATIENTS

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Keywords. PCI, cardiovascular risk factors, obesity, arterial hypertension.

Introduction. Cardiovascular diseases are number one cause of death in Latvia. Since 1990 there has been a solution in the country to prevent myocardial infarction even when coronary vessel stenosis is too pronounced to be reduced by pharmacotherapy – percutaneous coronary intervention (PCI). In Latvia approximately 200–400 stents are placed per million of population per year, which is equivalent to Finland, Spain and Portugal.

Aim. To determine the most common cardiovascular risk factors among elective PCI patients in Latvia and compare to those of Europe.

Materials and methods. A prospective research was held: questionnaires developed and 188 patients interviewed. Obtained data was analyzed with Microsoft excel.

Results. 188 patients aged 39–87 years old, mean age 67.1, median – 67.5 years. 63% of all patients were men. 49.5% of patients had previously had myocardial infarction; 57.9% had undergone PCI before and 6 patients (3.2%) – coronary artery bypass grafting. Most common cardiovascular risk factors in elective PCI patients in Latvia were found to be patients' age (males over 45 and females over 55 years) – 96%, elevated body mass index (BMI) – 80% (38% of which had BMI > 30), arterial hypertension – 71% (poorly controlled – 39%), abdominal obesity – 65%.

Conclusion. Most common cardiovascular risk factors in elective PCI patients in Latvia are patients' age (96%), elevated BMI (80%), history of arterial hypertension (71%), abdominal obesity (65%), gender (male – 63%), insufficient physical activity (56%) and high stress levels (51%).

Since 96% of patients already have 1 risk factor (age) present, and 63% have two (age and gender), it is especially important to reduce the adjustable risk factors by means of reducing body weight and gaining better control of blood pressure, which can be achieved through introducing more physical activities, paying closer attention to medication and dosage choices and promoting patients' compliance.

In comparison with EUROASPIRE IV data, the incidence of BMI > 30 is equal in both Latvia and Europe (38%), more patients smoke in Latvia – 20% (16% on average in Europe), blood pressure is better controlled in Latvia – 39% poorly controlled (52% in Europe). Three most common risk factors in Europe were abdominal obesity (58%), poorly controlled arterial blood pressure (42%) and diabetes (40%).

TARGET ORGAN DAMAGE IN MEN WITH ERECTILE DYSFUNCTION

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Keywords. Erectile dysfunction, target organ damage.

Introduction. In patients with erectile dysfunction (ED) a greater prevalence of structural and functional cardiovascular (CV) alterations has been described, possibly explaining the higher incidence of CV events, as compared to subjects matched for age and sex.

Aim of this study was to analyze the presence of target organ damage (TOD) in ED men and in controls matched with traditional cardiovascular risk factors.

Materials and methods. 128 men with traditional CV risk factors were evaluated: 65 (50.8%) men with mean age 47.23 ± 4.29 was allocated into erectile dysfunction group and 63 (49.2%) men with mean age 46.37 ± 3.89 in the control group (p = 0.327). International Index of Erectile Function (IIEF), EuroHeartScore were used. TOD were evaluated by cardio ankle vascular index (CAVI), ankle brachial index (ABI) with VaSera VS-100, carotid-radial pulse wave velocity (cr-PWV), carotid-femoral pulse wave velocity (cf-PWV) with SphygmoCor (v10.) ArtCor Medical, Australia devices. Biochemical parameters (glomerular filtration rate, albumin creatinine index), as well as echocardiography and carotid ultrasound imaging (left ventricular mass index (LVMI), carotid intima media thickness (IMT), plaques in carotid arteries) were obtained. Total of all TOD was calculated.

Results. Mean IIEF score in subjects with ED was 18.02 ± 3.11 vs. 23.49 ± 1.05 in the control group (p = 0.0001). No significant differences between groups were observed in EuroHeartScore – 2.4 ± 2.70 vs. 2.25 ± 1.93, p = 0.244, as well as vascular damage (p = 0.365), renal damage (p = 0.137) and heart damage (p = 0.328). Total of all TOD did not significantly differ between patients with ED and control group – 31 (54.4%) vs. 26 (45.6%), p = 0.227.

In the multiple regression analysis cr-PWV (ß = −0.340, p = 0.03), eGFR (ß = −0.320, p = 0.03) and mean ABI (ß = −0.307, p = 0.036) recognized as an independent risk factors for ED severity.

Conclusion. Patients with and without ED did not differ by TOD. The severity of ED was positively related with lower cr-PWV, eGFR, ABI.

THE ACCURACY OF DIAGNOSIS AND STAGE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN DAILY PRACTICE

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Keywords. Chronic obstructive pulmonary disease, COPD stages.

Introduction. Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality all over the world, representing the largest fraction of mortality due to respiratory diseases, which are the third most common cause of deaths (8%) in 25 member states of the European Union. Despite the fact that this disease looks like a well-known problem and has clear diagnostic criteria, COPD is frequently underdiagnosed and under-treated.

Aim. The aim of this research is to evaluate the accuracy of diagnosis and stage of chronic obstructive pulmonary disease in the Center of Family Medicine of Vilnius University Hospital Santariskiu Klinikos.

Materials and methods. In retrospective case ambulatory cards of 240 pacients, who are registred in the Center of Family Medicine of Santariskiu klinikos hospital and had the diagnosis of COPD till 2015 year, were reviewed. Pulmonary function tests, spirometry in particular, are the "gold standart" of the diagnostic evaluation of patients with suspected COPD. The most important values measured during spirometry are the forced expiratory volume in one second (FEV_1) and the forced vital capacity (FVC). A postbronchodilator FEV_1 / FVC ratio less than 70% is considered diagnostic of airflow limitation and is the main indicator of COPD. The severity of COPD is valued using GOLD criteria (this is typically based on the FEV_1 and the presence of pulmonary failure). The spirometry results of these pacients were reviewed.

Results. Out of 240 patients, which had COPD diagnosis, 203 diagnoses were written in their ambalatory cards. Only 82 of these met the criteria of COPD diagnosis (FEV_1 / FVC ratio < 70%) and 121 did not. Out of 240 observed patients, 37 did not have diagnosis of COPD written in their ambulatory card. Nevertheless, 17 of them met the criteria of COPD (FEV_1 / FVC ratio < 70%). Investigating the patients with chronic obstructive pulmonary disease, 6 cases were indicated as a lighter stage, whereas 20 were indicated as a more severe stage of the disease than it should be according to GOLD criteria.

Conclusion. The accuracy of diagnosis and stage of chronic obstructive pulmonary disease is not sufficient. Discrepancies are observed in both disease diagnosis and staging. Therefore, steps must be taken in order to diagnose COPD more precisely, so that patients could receive immediate assistance and treatment.

CHRONIC OBSTURCTIVE PULMONARY DISEASE ASSOCIATION WITH UNDERLYING CONDITIONS

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Keywords. Chronic obstructive pulmonary disease, COPD, comorbidity, underlying diseases.

Introduction. Chronic obstructive pulmonary disease (COPD) is one of the major causes of morbidity, mortality and lower quality of life. This disease is diagnosed mostly for elder people as it develops over many years during and after exposure of risk factors, for example tabaco smoking. Senior patients tend to have more than one condition. Comorbidity may cause treatment insufficiency, reduced life quality and increased medical care costs and risk of lethal outcomes.

Aim. To evaluate association between chronic obstructive pulmonary disease and underlying conditions considering differences of age, gender, smoking experience and stage of COPD.

Materials and methods. We conducted a retrospective analysis of medical records of 99 patients diagnosed COPD until 2015 and treated in GP centre of Vilnius University Hospital Santariskiu Clinics.

Results. Of 99 patients with chronic obstructive pulmonary disease (mean age 70.88 ± 12.23) 96% had one or more underlying chronic disease (in median 4 (min.1; max. 9)) and only 4% did not. 15% had 1 or 2 diseases (excluding COPD), 70% 3 to 6 illnesses and 11% had more than 6 conditions that need regular medical care. As we examined medical records, we found that 82% of all patients had arterial hypertension, 64% other cardiovascular pathology, 41% neurological, 30% urogenital, 19% other pulmonary disease, 22% were diagnosed with gastroesophageal reflux disease and 17% of patients had diabetes. There were no statistically significant difference between genders, smokers and non-smokers and the stage of COPD. However, elder patients tended to have more underlying diseases: average age of patients with 1or 2 conditions was 61.6 ± 12.32, average age of patients with more than 2 conditions was 73.03 ± 10.32 years.

Conclusions. Comorbidity is common in COPD patients. In addition to COPD patients usually have 4 more chronic diseases that complicates their health condition despite the smoking status, gender or stage of chronic obstructive pulmonary disease. As expected, elder patients tended to have more underlying conditions than younger ones.

IMPROVEMENT IN EXERCISE CAPACITY IN PULMONARY ARTERIAL HYPERTENSION PATIENTS TREATED WITH PATHOGENETIC THERAPY

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Keywords. Pulmonary hypertension, pulmonary arterial hypertension, endothelin antagonists.

Introduction. Pulmonary arterial hypertension (PAH) is a rare disease, one of the 5 forms of pulmonary hypertension (PH). It is categorized as the group 1 in current classification of pulmonary hypertension. The disease is defined by an increase in mean pulmonary artery pressure (mPAP) $\geq$25 mmHg, mean pulmonary artery wedge pressure (mPAWP) $\leq$15 mmHg combined with increased pulmonary vascular resistance (PVR) > 240 dyne/sec/cm^{-5} determined by right heart catheterization. PAH is characterized by the presence of pre-capillary PH with the given hemodynamic parameters in absence of other causes of pre-capillary PH.

Therapy for PAH patients has evolved in the past decade and now there is a specific drug therapy available for treating pulmonary arterial hypertension. Bosentan is an oral dual endothelin antagonist, which has shown improvement in exercise capacity in randomized controlled trials.

Aim. The aim is to estimate the change on exercise capacity in PAH patients treated with endothelin antagonist Bosentan for the time of one month.

Materials and methods. Exercise capacity of 5 patients included in the Latvian PAH registry since July 2015 was tested before and after starting the therapy. All the patients have performed the 6-minute walking test prior the beginning of Bosentan therapy and after one month of receiving the therapy to evaluate the change in their exercise capacity performance. The background therapy has not been changed for any of the patients. The collected data were analyzed to estimate the change on exercise capacity in PAH patients treated with endothelin antagonists.

Results. The average distance walked in 6-minute walking test prior the specific drug therapy in PAH patients was 294.2 m. (NYHA functional class III) After one month of receiving Bosentan the arithmetic mean distance walked in 6 minutes was 348.6 m (NYHA functional class III), which means it was improved in average by 54.4 m.

Conclusions. The results of 6-minute walking test after one month of receiving Bosentan, when compared to the results prior the therapy, reveal that the exercise capacity of 5 tested patients has improved by 54.4 m. For a comparison – exercise capacity in BREATHE-1 trial improved by 35 m after 16 weeks of receiving Bosentan.

BICYCLE ERGOMETRY AND HOLTER 24 HOUR MONITORING DATE IN PATIENT WITH COMPLAINTS OF ARRHYTHMIAS

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Keywords. Arrhythmia, Holter monitoring, bicycle ergometry.

Introduction. Irregular heart beat may be a sign of serious heart disease and complications they can affect patient's quality of life and ability to work, endanger the patient's life and increase sudden cardiac death rate. In symptomatic arrhythmias the patient should pass a series of examinations. Patients with complaints of arrhythmia can be normal peace of ECG that because it needs to take 24 hours Holter monitoring, exercise tests and other examinations.

Aim. To compare date of bicycle ergometry and 24 hour Holter monitoring in patients with complains of arrhythmias.

Materials and methods. This retrospective study was performed in the First Riga Hospital where 2708 medical histories were reviewed for 2015 year and 138 patients with complains of arrhythmia were selected. All patients underwent both bicycle ergometry and Holter 24 hour monitoring. Data was analyzed in MS Excel and SPSS 22.0.

Results. Research involved 138 patients: 49 (36%) of patients were male and 89 (64%) female. The average age of patients was 65.2 (SD11.12) years – 63.9 (SD12.04) years for males and 65.9 (SD10.20) years for females. In 138 patients 109 premature ventricular contraction (PVC) cases were revealed; 71 of them were found in bicycle ergometry and 86 were found in Holter monitoring. But they were 23 (21% of all PVC cases) discovered only in bicycle ergometry and 48 (44% of all PVC cases) were found only in Holter monitoring. Only 2 (25% of all cases) ventricular tachycardia was found in Holter monitoring and 8 (75% of all cases) was found in bicycle ergometry. Paroxysmal atrial fibrillation was detected more often in Holter monitoring – 14 (87.5% of all cases) and 6 (13.5% of all cases) in exercise test. In that study Holter monitoring detected 14 pause longer than 2 second and no heart pause (> 2 sec) was found in bicycle ergometry. In Holter monitoring sinoatrial block was found in 8 (89% of all sinoatrial blocks) and 2 (21% of all sinoatrial blocks) in bicycle ergometry. In 24 (17.4% of all patients) patient with complaints of arrhythmia were no changes found in both of examinations.

Conclusions. There are different genesis arrhythmias and some of them cannot be detected only in Holter monitoring or only in bicycle ergometry. That because to fully detect arrhythmias type and characteristics need to use both of these investigations.

ECHOCARDIOGRAPHY DATA IN PATIENTS WITH ARRHYTHMIA REVEALED ON BICYCLE ERGOMETRY

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Keywords. Arrhythmia, bicycle ergometry, echocardiography.

Introduction. Presence of arrhythmia that depends on exertion in patients with strucutural heart alteration points out its severity and serious prognosis. Further diagnosis and treatment strategy depends on echocardiographic findings. Lack of echocardiographic findings potentially could be related with ischemia.

Aim. Analyze echocardiographic findings in patients with arrhythmia revealed on bicycle ergometry.

Materials and methods. Retrospective study including 155 patients (96 female and 59 male) was made in Riga 1st hospital's archive by review of medical records of patients hospitalized during the period from January 2015 to October 2015 and have done bicycle ergometry test and echocardiography examination at the same hospitalization time. Obtained data statistically analyzed in IBM SPSS Statistics V22.0.

Results. Mean age of females was 65.7 years (SD = 9.9 years), males was averagely 64.9 years old (SD = 10.8). Men who developed ventricular bi-, tri- or quadrigeminy had significantly higher left ventricular mass index (LVMI) than normal value with mean difference 14.5 g/m^2 (p = 0.002), especially in bigeminy group (16.4 g/m^2, p = 0.005), in contrast to group with frequent premature ventricular contractions (PVC) average LVMI was in the normal range and there was no difference with patients who did not have PVC at all (113.6 vs. 113.9 g/m^2, p = 0.965). LVMI in women was similarly higher in ventricular bi-, tri-, quadrigeminy group (10.3 g/m^2 above normal value, p = 0.013) and significantly different from group with frequent PVC (7.7 g/m^2, p = 0.03), furthermore this group did not have significant difference of LVMI from normal (only 2.6 g/m^2 above, p = 0.342). Amount of PVC correlates with LVMI in men (r = 0.63; p < 0.001) and in women (r = 0.54; p < 0.001). Significant difference in diameter of the left atrium in men (43.6 vs. 36.1 mm, p = 0.001) and women (39.8 vs. 37.3 mm, p = 0.007) was between patients who combined frequent PVC and frequent premature atrial contractions (PAC) and patients who had frequent PAC only. Patients who combined frequent PVC and PAC had lower ejection fraction compared to patients with frequent PVC only (56.2 vs. 61.9%, p = 0.042).

Conclusions. Ventricular bigeminy, trigeminy and quadrigeminy are associated with ventricular hypertrophy. Amount of premature ventricular contractions during exercise depends on LVMI. Not only supraventricular premature beats are associated with left atrial dilatation. Combination of frequent premature ventricular and supraventricular contractions is related with worse echocardiographic findings.

PULMONARY CAPILLARY WEDGE PRESSURE AND LEFT VENTRICULAR END DIASTOLIC PRESSURE DIAGNOSTIC MEANING

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Keywords. Pulmonary hypertension, PCWP, diagnostics.

Introduction. Recent studies have raised the question about pulmonary capillary wedge pressure (PCWP) diagnostic role in pulmonary hypertension classification. Indicating that left ventricular end- diastolic (LVEDP) pressure measurement is crucial in differentiation between pulmonary hypertension class I and class II (WHO classification). WHO I class pulmonary hypertension have specific treatments available, which is discouraged in all other WHO classes, because of higher rate of adverse events. It can be emphasized as the main reason for precise classification.

Aim. Aim is to test the hypothesis that PCWP is unreliable measurement, compared to LVEDP, to diagnose and classify pulmonary hypertension into class I and class II.

Materials and methods. Results from left and right heart catheterization: LA (systolic, diastolic, mean), RV (systolic, diastolic, mean), PA (systolic, diastolic, mean), PCWP (systolic, diastolic, mean), Ao (systolic, diastolic, mean), LV (systolic, diastolic, mean), CO, CI, PVR.

Results. Preliminary results include six patients who underwent left and right heart catheterization without any post procedure adverse events. Looking only at right heart catheterization data two patients would have been classified with pre-capillary pulmonary hypertension (class I) with PCWP measurements – 15 and 14 mmHg. For one patient diagnosis didn't change after left heart catheterization because LVEDP measurements was also below 15 mmHg, for second patient LVEDP was 17 mmHg and that classifies as post-capillary pulmonary hypertension (class II). Four patients were classified as class II after right heart catheterization with PCWP measurements – 28, 21, 28 and 20 mmHg. Left heart catheterization data showed LVEDP 15, 15, 25 and 12 mmHg. Diagnostic classes changed for three patients – from class II to class I. Compering PCWP and LVEDP measurements for all six patients, the average difference between measurements was 5.3 ± 4.3 mmHg and in five cases PCWP was greater than LVEDP.

Conclusion. Hypothesis was true for four patients but it is insufficient to make statistically reliable conclusions, more research is needed for statistically reliable results.

ATRIAL FIBRILLATION AS A RISK FACTOR
FOR VENOUS THROMBOEMBOLISM

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Keywords. Venous thromboembolism, Pulmonary embolism, Deep vein thrombosis, Atrial fibrillation.

Introduction. Venous thromboembolism (VTE) is a major health problem. It combines two related conditions – pulmonary embolism (PE) and deep vein thrombosis (DVT).

Until recent decades VTE was viewed primarily as a complication of hospitalization for major surgery or associated with the late stage of terminal illness. However, recent trials in patients with a wide variety of medical illnesses have demonstrated a risk of VTE in medical patients comparable with that seen after major general surgery. One of the risk factors associated to VTE is thought to be atrial fibrillation (AF). But to this date, the potential relationship between the most frequent atrial arrhythmia and acute VTE is still controversial.

Aim. The aim of this study was to identify whether atrial fibrillation contributes to development of VTE in patients hospitalized either with PE or DVT, and also to identify its prognostic role on VTE.

Methods. A retrospective study was performed. The data of all acute DVT and PE patients were obtained from one of the main hospitals of capital of Latvia – Pauls Stradins Clinical University Hospital during the period from first of January 2014 until 31 of December 2014. Patients with atrial fibrillation were identified. During pre-hospital period used therapy was analyzed. Chronic DVT and PE were excluded out of the study.

Results. We identified 157 patients with VTE. 58.6% (n = 92) were women and 41.4% (n = 65) were men. 83.4% (131) had PE and 47.8% (75) had DVT. Among all 22.9% (36) had known AF.

The majority of all AF patients (48.6%, n = 17) prior to VTE event did not use any anticoagulant, nor antiplatelet therapy. 28.6% (n = 10) used antiplatelet therapy, 20% (n = 7) – anticoagulant therapy and 2.9% (n = 1) triple therapy. Among those AF patients who used Warfarin 85.7% (n = 6) had INR value below therapeutic range.

The prevalence of PE was 82.6% (100/121) in patients without AF and 86.1% (31/36) in patients with AF (p = 0.63). After adjustment for confounding factors, AF did not significantly modify the probability of PE (OR 1.3, 95% CI 0.45–3.7).

Patients with AF had significantly higher intrahospital mortality rates (19.4% vs. 6.6%, p = 0.015, OR – 4.05, 95% CI 1.31–12.5).

Conclusions. Overall, the presence of AF does not increase the probabilty of VTE events. The study suggests that there is a potential relationship between AF and short-term prognosis in patients with acute VTE as it may independently predict in-hospital mortality.

RISK FACTORS FOR VENOUS THROMBOEMBOLISM – A STUDY IN TWO MAIN HOSPITALS IN RIGA, LATVIA

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Keywords. Venous thromboembolism, Pulmonary embolism, Deep vein thrombosis, Risk factors.

Objectives. Venous thromboembolism (VTE) is a major health problem. It combines two related conditions – pulmonary embolism (PE) and deep vein thrombosis (DVT).

Until recent decades VTE was viewed primarily as a complication of hospitalization for major surgery or associated with the late stage of terminal illness. However, recent trials in patients with a wide variety of medical illnesses have demonstrated a risk of VTE in medical patients comparable with that seen after major general surgery.

Independent risk factors for VTE include increasing patient age, surgery, trauma, active cancer with or without specific cancer therapy, hospital confinement, and prior vein thrombosis among others.

Aim. The aim of this study was to identify those risk factors that contribute to development of VTE in patients hospitalized either with PE or DVT.

Methods. A retrospective study was performed. The data of all DVT and PE patients were obtained from two main hospitals of capital of Latvia – Riga East Clinical University Hospital and Pauls Stradins Clinical University Hospital during the period from first of January 2014 until 31 of December 2014. Risk factors such as age, gender, previous thrombotic events, ischemic heart disease, previous myocardial infarction, arterial hypertension, atrial fibrillation, cardiomyopathies, congestive heart failure, chronic obstructive pulmonary disease, asthma, pulmonary hypertension, chronic kidney disease, tumors, recent operations, hip replacement surgery, traumas were identified. Chronic DVT and PE were excluded out of the study.

Results. In total we identified 362 confirmed cases of VTE (mean age of 69.4 years ± 14.8). 89.5% (n = 324) had PE and 43.4% (n = 157) had DVT. Among those 41.2% (n = 149) were men and 58.8% (n = 213) were women. Mean hospitalization time was 12.5 days. Among all cases 7.2% (n = 26) were hospital-acquired VTE and 15.2% (n = 55) were in-hospital deaths.

Positive statistically significant correlation was observed between PE and DVT (χ^2 = 5.94; p = 0.001). Men showed to have almost 2 fold higher risk acquiring DVT than women [OR 1.95, CI 95% 1.27–2.99, p = 0.02]. Previous thrombotic events also have 2-fold higher risk for DVT [OR 1.93, CI 95% 1.14–3.28, p = 0.014]. Among other risk factors only arterial hypertension showed statistically significant correlation with PE (χ^2 = 8.99; p = 0.011). DVT accounts for higher incidence rates with increasing age in both genders, peaking at age 65–80.

Conclusion. Pulmonary embolism is strongly correlated with deep vein thrombosis. Men have higher risk for developing deep vein thrombosis. DVT accounts for higher incidence rates with increasing age in both genders. Previous thrombotic events have higher risk for DVT to occur. Arterial hypertension contributes to development of pulmonary embolism.

16 March 2016

VITAMIN D LEVELS IN RELATION
TO THE OUTCOME OF CARDIAC SURGERY

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Keywords. Vitamin D, cardiac surgery, in-hospital complications.

Background. Deficiency of vitamin D is known to be highly prevalent worldwide. It is affecting up to 50% of general population. Traditionally it has been associated with musculo-skeletal disorders, however, in recent years, it has been recognized that deficiency of vitamin D also influences other organ systems, including the cardiovascular system.

Aim. To seek possible evidence on the effect of vitamin D on cardiac surgery outcomes.

Materials and methods. A prospective cohort study was done in P. Stradiņš Clinical University Hospital. A total of 103 patients who underwent cardiac surgery between July 2015 and January 2016 were included in the registry. The inclusion criteria was: patients undergoing cardiac surgery using cardiopulmonary bypass. Exclusion criteria were: patients with previous cardiac surgery; patients with malignant disease; patients with chronic infectious disease. Levels of 25-hydroxyvitamin D were assessed twice – prior to surgery and in the following week after surgery. Patients were observed for the complete length of their hospital stay to assess their laboratory and clinical findings and possible complications following cardiac surgery. Obtained data was analysed with descriptive statistic methods using IBM SPSS Statistics Version 20 and Microsoft Excel 2007.

Results. The mean value of vitamin D level before surgery was 22.36 ng/ml. Vitamin D levels measured after surgery had significantly lower mean value – 18.06 ng/ml ($p < 0.001$). Before surgery, 47% of patients (n = 49) had deficient Vitamin D levels (below 20 ng/mL) and all-cause in-hospital complications were observed in 55% of these patients. 31% of patients (n = 30) had insufficient Vitamin D levels (between 20 and 30 ng/mL) and all-cause in-hospital complications were observed in 29% of these patients. A normal level of Vitamin D (above 30 ng/mL) was assessed in 22% of patients (n = 21) and all-cause in-hospital complications were observed in 27% of these patients. Furthermore, preoperative vitamin D level showed weak, but statistically significant correlation with all-cause in-hospital complications ($r = 0.188$, $p = 0.04$), but failed to show statistically significant correlation with cardiac and cerebrovascular complications, length of hospital stay, length of stay in intensive care unit and use of inotropes after cardiac surgery.

Conclusions. Most of the patients undergoing cardiac surgery have insufficient or deficient levels of vitamin D. There is statistically significant decrease in vitamin D levels after cardiac surgery. All-cause in-hospital complications are observed more often in patients with deficient and insufficient levels of Vitamin D compared to patients with adequate Vitamin D levels. Preoperative vitamin D levels could be associated with complications after cardiac surgery and should be studied further.

ECHOCARDIOGRAPHY AS A DIAGNOSTIC METHOD FOR PULMONARY ARTERIAL HYPERTENSION ASSOCIATED WITH CONGENITAL HEART DISEASE

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Keywords. Right heart catheterization, Echocardiography, Pulmonary arterial hypertension, Congenital heart disease.

Introduction. Pulmonary arterial hypertension (PAH) is characterized by an increased mean pulmonary arterial pressure (mPAP) of at least 25 mmHg at rest and an elevation of the pulmonary vascular resistance (PVR) of more than 3 WU with a normal pulmonary artery wedge pressure ≤15 mmHg. PAH is a common complication of congenital heart disease (CHD) when an intra- or extracardiac shunt exists. Echocardiography (ECHO) is a noninvasive method that provides an estimate of the pulmonary artery pressure. Nevertheless the gold standard for diagnosing the condition remains right heart catheterization (RHC). As RHC is an invasive method, the question is whether echocardiography could be an effective substitute when it comes to diagnosing PAH.

Aim. The objective of this study is to determine whether echocradiography is a reasonable substitute for right heart catheterization when diagnosing patients with pulmonary arterial hypertension associated with congenital heart disease (PAH-CHD) and evaluating the severity of PAH.

Materials and methods. A total of 41 patients' who were diagnosed with PAH-CHD clinical data from Pauls Stradins Clinical University Hospital were evaluated. 23 patients fulfilled the inlcusion criteria of ≤3 years between the echocardiograghic and RHC results. The Bland-Altman plot analysis was used in order to determine whether there is a significant level of agreement regarding right ventricular systolic pressure between echocardiography and RHC.

Results. A total of 23 patients (7 male, 16 female) with an average age of 55.39 ± 17.23 years (range of 23 to 80 years) were included in this retrospective cross-sectional study. The mean pulmonary arterial pressure (mPAP) was 53.64 ± 20.14 mmHg (range 25–91mmHg), mean systolic pulmonary arterial pressure (sPAP) was 84.74 ± 30.03 mm Hg (range of 37–140mmHg) and the mean right ventricular systolic pressure (RVSP) diagnosed via right heart catheterization was 83.95 ± 30.22 mmHg (range of 41 to 133mmHg). The mean ECHO-estimated RVSP was 69.26 ± 27.27mmHg. Bland-Altman plot analysis revealed that the ECHO and RHC methods regarding RVSP do not reach sufficient level of agreement (p = 0.034) and regression analysis showed that there is no proportional error in the results either (t = 0.401; p = 0.693). Bland-Altman analysis showed a mean difference in ECHO and RHC results regarding RVSP of 14.6364 ± 30.28mmHg.

Conclusion. Even though echocardiography is a non-invasive, low-cost diagnostic tool it can not replace right heart catheterization when it comes to diagnosing and assessing the severity of PAH-CHD. It remains a valuable method for screening the suspected patients.

EFFECTS OF CHLOROPHYLLIN AND RESVERATROL ON THE SODIUM HYPOCHLORITE INDUCED ENDOTHELIAL DYSFUNCTION

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Background. The pathogenesis of vascular dysfunction observed in processes such as ischaemia / reperfusion, diabetes, atherosclerosis, ageing or inflammation involves the release and overproduction of reactive species. Hypochlorite is a potent oxidizing and chlorinating species produced by myeloperoxidase. Plant derived substances, resveratrol and chlorophyllin have shown vasoprotective effects in several experimental models of vascular dysfunction.

Aim. The aim of this study was to assess the effects of resveratrol and chlorophyllin on the hypochlorite induced endothelial dysfunction.

Methods. Aortic rings were isolated from male Wistar rats. Endothelial function was assessed before and 30 min after incubation in buffersolution containing 75 µM sodium hypochlorite. Vasoprotective effects of both studied compounds were assessed by adding them for 30 min to buffersolution before or after incubation with sodium hypochlorite. The vasoprotective effects of chlorophyllin and resveratrol were studied at the concentrations of 1, 0.1 and 10µM, respectively.

Results. Incubation of aortic rings with sodium hypochlorite induced endothelial dysfunction (ED) that was evidenced by elevated EC_{50} and maximal relaxation values. The EC_{50} and maximal relaxation values before and after incubation with sodium hypochlorite were 76 ± 13 nM, $85 \pm 3\%$ and 280 ± 42 nM, $66 \pm 5\%$, respectively. Addition of chlorophyllin or resveratrol to buffersolution before or after incubation with sodium hypochlorite did not attenuate the development of ED. Pre-incubation with resveratrol in higher concentration (10µM) delayed the hypochloryde induced endothelial dysfunctrion ($E_{max} = 93 \pm 2\%$ un $EC_{50} = 158 \pm 34$ nM). Adding resveratrol after incubation with hypochloride did not attenuate ED.

Conclusions. The results demonstrate that pre-incubation with resveratrol in high concentration (10µM) show positive vasoprotective effect. Chlorophylin at the studied concentrations did not attenuate the development of sodium hypochlorite induced endothelial dysfunction.

TRANSESOPHAGEAL ECHOCARDIOGRAPHY INDICATIONS, PROCEDURE PATHOLOGICAL FINDINGS AND STATISTICAL PROCESSING OF ESTABLISHED DIAGNOSES AT RIGA EASTERN CLINICAL UNIVERSITY HOSPITAL

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Keywords. Transesophageal echocardiography, valvular abnormalities, heart defects, thrombosis.

Introduction. Transesophageal echocardiography (TEE) is being widely used as a diagnostic method, TEE provides a clearer image of the heart, it is particularly suited to define complex anatomical structures, functional abnormalities, and flow disturbances that may not always be obtainable from transthoracic echocardiography.

Aim. Clarify and statistically summarize the most common diagnoses and indications for patients undergoing TEE at Riga Eastern Clinical University Hospital.

Materials and methods. Retrospective study, period from 01.01.2007 to 01.01.2015, 768 patients which were undergoing TEE at Riga Eastern Clinical University Hospital. Data about the different pathologies and diagnoses associated with heart structures were obtained and summarized from 768 patient protocol conclusions. Data processing and interpretation of the results was made using *Microsoft Excel 2007* and *IBM SPSS 20.0.*

Results. The study included 768 patients. Most common diagnosis is mitral valve insufficiency or regurgitation 41.4% (n = 318), the mitral valve prolapse as well 6.9% (n = 53), mitral valve chordal rupture – 6.5% (n = 50). The second most frequent valvular pathology and indication for transesophageal echocardiography is aortic regurgitation – 35% (n = 296), intratrial septal defects: intratrial atrial septal aneurysm – 10.2% (n = 78), patent foramen ovale – 9.5% (n = 73). Formations in the anatomical structures of the heart: occurence of thrombus 10.4% (n = 80), with the most frequent localization in the left auricle – 43.8% and the left atrium – 21.3%, infective endocarditis, abscess – 1.7% (n = 13) and vegetations – 7.7% (n = 59), with the most often location on the aortic valve – 37.5% and on mitral valve – 36.6%. Congenital heart abnormalities and congenital heart diseases were also included: congenital bicuspid aortic valve – 7.9%, atrial septal defect – 4.8% and ventricular septal defect – 0.4%. Condition after valve replacement surgery, its dysfunction and dehiscence is another preferential indication for TEE – condition after valve replacement surgery amounted to – 7.2%, 67% of which were aortic valve prosthetics, mitral valve replacement surgery in 19.6% or prosthesis of both valves – 17.9%, dysfunction was in 23.2% (n = 13) and dehiscences – 8.9% (n = 5).

Conclusion. TEE procedure indications are: heart valve insufficiency, more likely to have mitral valve regurgitation and aortic valve regurgitation, as well as with other valves-related pathologies such as mitral valve prolapse in different cusps and segments, mitral chordal rupture. An important indication is monitoring and diagnosis of different heart formations: thrombus as the most frequent finding in the left auricle and left atrium, as well as vegetations, findings of infectious endocarditis abscesses, and diagnosis of congenital heart malformations, septal defects, aneurysms. There is a significant indication for TEE in case of the examination of prosthetic heart valves.

16 March 2016

II. Internal Medicine:
Gastroenterology, Endocrinology, Nephrology, Haematology, Rheumatology

GASTRIC POLYPOID LESIONS:
PATHOLOGIC SPECTRUM BY GROSS SIZE

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Keywords. Gastric polyps, gastric cancer.

Introduction. Polypoid gastric lesions, frequently found at upper digestive endoscopy, represent wide causal spectrum, ranging from chronic inflammation to neoplasms. Pathologic assessment ensures exact diagnosis as well as prognosis regarding progress to malignant tumour (MT). The relevant epidemiologic profile is practically useful (Gencosmanoglu *et al.*, 2003) but affected by geographic variability.

Aim. The research aim was to analyse gastric polypoid lesions in a sample from Latvian population with respect to pathologic diagnosis, gross and demographic data.

Materials and methods. Retrospectively, consecutive biopsies (2014–5) from polypoid gastric lesions were identified within archives of a single university hospital. Masses of known size reaching at least 0.5 cm were selected. Demographic (gender, age) and gross (number, location, largest diameter) data were recorded. The pathology was assessed by internationally recognised diagnostic criteria (Gencosmanoglu *et al.*, 2003; Rosai, 2011). Further, polyps were stratified into subcentimetral (0.5–1 cm) and large ones (> 1 cm). Descriptive statistics including detection of 95% confidence interval (CI); as well as Fisher's exact test was performed by online software (GraphPad, San Diego, USA). Differences were considered statistically significant if $p < 0.05$.

Results. Subcentimetral polyps, detected in 162 patients, showed predominance of foveolar hyperplasia (FH), found in 65 (40.1%; CI:32.9–47.8) cases; followed by hyperplastic polyps (HP) in 57 (35.2%; CI:28.2–42.8) patients and inflammatory polyps (IP) in 22 (13.6%; CI:9.1–19.8) cases. Precancerous conditions (PreCA) including adenomas and any dysplastic lesions were observed in 15 (9.3%; CI:5.6–14.8) patients, but leiomyomas (LM) and MT – in two (1.2%; CI:0.1–4.7) cases each.

Among large polyps, found in 61 patients, MT (20; 32.8%; CI:22.3–45.3) prevailed, followed by HP (17; 27.9%; CI:18.1–40.2), FH (13; 21.3%; CI:12.8–33.3) and PreCA (8; 13.1%; CI:6.5–24.1). IP and LM were present in 2 (3.3%; CI:0.3–11.9) cases each.

Size-related difference of frequency was significant regarding MT ($p < 0.0001$), IP ($p = 0.03$) and FH ($p = 0.01$).

Stratifying cases by lesion size and diagnosis, female predominance (range, 59.1–76.5%) was noted except MT within large lesions (35.0%; CI:18.0–56.8) and PreCa (range, 46.7–50.0%). No significant differences were found regarding location and mean age by subgroup. In the whole group, the mean age was 63 ± 2 years.

Conclusions. Malignant tumours are significantly more frequent in polypoid gastric lesions larger than 1 cm. Such masses should be targeted by active biopsy strategy. Importantly, the frequency of premalignant pathologies shows no size-related difference. Gastric polyps, except malignant tumours, are predominantly found in women. Statistically significant geographic differences from other reports were found confirming the novelty and practical value of the present study.

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16 March 2016

CHRONIC PANCREATITIS ABDOMINAL PAIN SEVERITY AND PARENCHYMAL CHANGES OF THE PANCREAS

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Introduction. As a chronic progressive parenchymal inflammation of pancreas (P), chronic pancreatitis (CP), causes irreversible parenchymal fibrosis of the affected organ, often accompanied with exocrine and endocrine dysfunction. CP leads to a whole range of clinical symptoms, predominantly those of abdominal pain, causing suffering in 90–95% of patients. The character of CP-induced abdominal pain is variable: from periodic severe recurrent abdominal pain to the attenuation resulting from the so-called "pancreas burnout" at the late stages of CP. Radiological findings are also variable, and often are of no importance.

Aim. To compare the severity of abdominal pain and parenchymal changes in pancreas of patients suffering from CP.

Materials and methods. The prospective research was conducted in the time period from 2007 till 2013. Within the research, the analysis of 106 cases of CP was performed. The cases of abdominal pain were analysed by means of a modified visual analogue scale where slight pain was given 1 point, moderate – 2 points, and severe pain – 3 points. The present analyse comprises the numbers of points obtained within 5 days. All patients were subject to an abdomen USG, whereof the data were used to evaluate the integral parenchymal changes in pancreas on the grounds of the Visual Pancreatic Index (VPI). The VPI is based on six pancreatic visual parameters: The size of the head of the pancreas, the echostructure of the pancreas, calcification, the diameter of *ductus pancreaticus*, pseudocysts, and other indications. Each pancreatic parameter was awarded 0 to 3 points, depending on its severity. The total VPI is a sum of all parameter points, where 0–3 points stand for an unlikely CP diagnosis, 4–8 points – for slight changes, 9–14 points – for moderate changes, and 15–21 points – for severe changes. The data were processed via SPSS, version 20.0. The research was made upon authorization of the Ethics Committee of Riga Stradiņš University.

Results. The average severity of patients' abdominal pain (SD) was 9.25 (3.67) points. The average VPI (SD) was 4.41 (3.07) points. There was no significant correlation between the severity of abdominal pain and the total VPI ($r = -0.048$; $p = 0.693$).

Conclusions. Within the present research, the severity of abdominal pain of patients suffering from CP does not correlate with parenchymal changes in pancreas stated by means of USG.

THE PREVALENCE OF CARDIOVASCULAR PATHOLOGY IN TURNER SYNDROME IN LITHUANIAN POPULATION

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Keywords. Turner Syndrome; Cardiovascular pathology.

Introduction. Turner syndrome (TS) is a rare disorder, caused by the loss of all or a part of one of sex chromosomes, occuring in 50 per 100,000 live-born females. Congenital heart defects are a major cause of pre- and postnatal mortality and affect approximately 50% of individuals with TS. The prevalence of these findings and the risk factors for aortic dilatation or dissection, have all been the subject for debate.

Aim of the study. To investigate the prevalence of cardiovascular pathologies in women with Turner syndrome in Lithuanian population.

Material and methods. There were 150 women with genetical confirmed TS, over 18 years old included in the study. The data of 50 patients with TS were available. The retrospective analysis of medical records was done. The perspective physical and cardiovascular evaluation was performed. Aortic diameter (AD) adjusted for the body surface area (BSA) using cardioechoscopy was evaluated. Arterial hypertension (AH) was defined as blood pressure > 140/90 mmHg. Aortic dilation (AD) was defined in the diameter of aorta > 2.0 cm/m². Collected data were processed and analyzed using the statistical package SPSS 20.0. The difference between proportions was confirmed using the chi-square (χ^2) criterion. The data has been considered as statistically significant when $p < 0.05$.

Results. The median age of participants was 30 years (range: 18–59 years). Classical (45,X0) karyotype (CK) was detected in 60.4% of the women (n = 29), nonclassical karyotype (non 45,XO) in 39.6% of women (n = 19). Cardiovascular pathology (CP) was identified in 56% of TS patients (n = 28). Congenital CP was found in 18.4% of women (n = 9). Aortic coarctation (AC), was reported in 4.1% (n = 2) and bicuspid aortic valve (BAV) was detected in 19.1% (n = 9) of the participants. Acquired CP was found in 54.2% of women (n = 26). AH was detected in 10.4% of women (n = 5). AD was found in 52.1% of women (n = 25). Presence of CK was significant (p = 0.005) more frequently in women with BAV and there were no significancy in between CK and AC (p = 0.512), AD (p = 0.108), AH (p = 0.724). There was no relation between any congenital malformation and acquired CP (p = 0.115).

Conclusion. The study demonstrates that CP are common in women with TS. BAV is more frequent in women with CK (p = 0.005). There were more women with acquired CP than congenital malformations (54.2%vs18.4%, p = 0.12). Appropriate cardiovascular monitoring is required for women with TS.

FOOT EXAMINATION IN DIABETIC PATIENTS – ASSOCIATIONS WITH DISEASE COMPENSATION LEVEL

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Keywords. Diabetes, sensation, inspection, foot.

Introduction. Diabetes mellitus (DM) is a group of chronic metabolic diseases where prolonged hyperglycemia provoke damaging impact on vascular, neurological, dermatological and musculoskeletal systems. Comprehensive foot examination is very informative manual investigation of diabetic patients that may help to diagnose DM earlier and control the development of disease.

Aim. To investigate and assess prevalence of the most commonly impaired diabetic foot exam components, to find out their association with disease duration and control indicator (HbA1C) in particular population of the study.

Material and methods. A retrospective cohort study was performed. Participants were randomly included from Internal Medicine clinic of Riga Eastern Clinical University Hospital. Patient interviewing, foot vascular, neurological, dermatological investigation and retrospective analysis of case files were performed. 128-Hz tuning fork, disposable pin, cotton swab was used for foot exam.

Results. 151 patients were included – 70 (46%) men and 81 (54%) women; the mean age was 59.9 years (SD 15.9 years). Patients were divided into 3 age groups – group I ($\leq$ 45 years) 19%, group II (46–59 years) 25%, group III ($> = 60$ years) 56%. Patients were divided into groups by DM duration, type and therapy – (0–5 years of DM) 27%, (6–10 years) 23%, (11–20 years) 34%, (> 20 years) 16%; Type 1DM 19%, Type 2DM 75%, other (secondary) 6%; patients who had insulin therapy (60%) and patients who had peroral therapy or only diet (40%). 4 most frequently impaired foot exam components were identified – dermatological pathologies (95%), peripheral arterial pulse (52%), deep sensation (55%), vibratory sensation (52%). Prevalence of impaired peripheral arterial pulse was found statistically significant in III age group 81% ($p = 0.006$); with disease metabolic compensation level (HbA1C) 84% ($p = 0.035$); in patients with insulin therapy 81% ($p = 0.024$). Impaired deep sensation was found significant in III age group 86% ($p = 0.014$). Impaired vibratory sensation was found significant in patients with insulin therapy 60% ($p = 0.001$) and in the group of disease duration over 11 years 59% and 20 years 54% ($p = 0.005$).

Conclusion. Most impaired foot exam components are dermatological pathologies, peripheral arterial pulse, deep and vibratory sensation. Associations with age, treatment, disease duration and metabolic compensation level were defined. Mentioned foot investigation components easily may be used to control development of main metabolic complications in diabetic patiens and in patients without DM diagnose as a part of screening programm.

MATURITY ONSET DIABETES OF THE YOUNG (MODY) MUTATIONS AMONG PATIENTS AND THEIR RELATIVES

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Keywords. MODY, genes, mutations.

Introduction. Maturity-onset diabetes of the young (MODY) is a genetically heterogeneous disease caused by a mutation in a single gene. Though it affects 1–2% of all people with diabetes, it is often either misdiagnosed as type 1 or type 2 diabetes or not diagnosed at all due to its vast clinical variability. However, a proper diagnosis could help to determine the appropriate treatment for a specific individual and give information about the prognosis of the disease and the possible risks of other family members.

Objective. The aim of the study is to detect how many of the Children's Hospital patients, suspected of having MODY, have a mutation in any of the 13 candidate-gene exons, most commonly known to cause the mentioned disease.

Materials and methods. The study included 39 Children's University hospital patients with suspected MODY and their relatives willing to participate. Data about the current diagnosis, therapy and related laboratory findings were acquired. Genetic analysis has yet been performed for 19 patients using Sanger sequencing method. A panel of 13 candidate-gene (HNF4A, GCK, HNF1A, PDX1, HNF1B, NEUROD1, KLF11, CEL, PAX4, INS, BLK, KCNJ11, ABCC8) exons was analysed. It should be noted that the identification of insertions and deletions was limited due to the chosen screening method and the regulatory and intron regions were not included in the screening process. The genetic material from the cooperative relatives of probands with proven mutation was analysed as well.

Results. Candidate gene mutations were identified in 6 of the 19 genetically screened probands. All of the mutations found were heterozygous amino-acid substitutions in the glucokinase (GCK) gene, confirming the diagnosis to be type 2 MODY, if accompanied by the corresponding clinical symptoms. Based on the suspicion of type 2 MODY among the family members of the patients with proven mutations in GCK gene, 9 relatives were screened for mutations in this specific gene. 6 of these individuals had the same substitution mutation as the proband of their family.

Conclusion. Type 2 MODY is the most frequent type of MODY among study subjects. At the same time, there were no mutations found in the analysed regions of the majority of patients screened. The detection of disease causing mutations can be troubled due to the features of the sequencing method used and the normal genetic variability of the human genome. Therefore, MODY diagnosis can not be fully excluded even without a proven mutation, if the individual has symptoms corresponding with the disease.

SELF-MONITORING OF BLOOD GLUCOSE AND INSULIN ADMINISTRATION PRACTICES AMONG PATIENTS WITH DIABETES MELLITUS

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Keywords. Diabetes mellitus, blood glucose monitoring, insulin administration.

Introduction. Unsafe practices during diabetes care (blood glucose monitoring and / or insulin administration) have led to multiple outbreaks of hepatitis B virus and put persons at risk for acquiring other bloodborne pathogens, including hepatitis C virus, HIV etc. In order to prevent bloodborne pathogen transmission during blood glucose monitoring and insulin administration it is recommended that fingerstick devices (lancets) and injection equipment (insulin pens, needles, syringes) should never be used for more than one person. Blood glucose meters also should not be shared (CDC, 2012).

Aim. To find out how patients with diabetes mellitus use devices for blood glucose monitoring and insulin administration.

Materials and methods. The prospective study was conducted in Pauls Stradins Clinical University Hospital within a time period of November 2015 – January 2016. An anonymous survey was conducted via a printed questionnaire which included questions about participants' blood glucose monitoring and insulin administration practices. Participants included 140 type 1 and type 2 diabetes patients aged 18 and older. Statistical analysis was performed using SPSS version 19 for Windows.

Results. 47 respondents (33.6%) admitted having shared blood glucose monitoring and / or insulin administration devices with other persons. 38 patients (27.1%) have shared those devices with 1–2 other persons, 6 patients (4.3%) – with 3–4 other persons, 3 respondents (2.1%) – with 5 or more other persons.

38 patients (27.1%) have shared their used blood glucose meters with other persons. 20 respondents (14.3%) have used blood glucose meters that other persons had already used. 13 patients (9.3%) have shared their used fingerstick devices (lancets) with other persons. 8 respondents (5.7%) have used lancets that other persons had already used. 1 patient (0.7%) has shared his injection equipment (insulin pen) with other person and has used insulin pen that other person had already used.

112 patients (80.0%) always discarded used blood glucose monitoring and / or insulin administration devices into the household bin. 17 patients (12.1%) always used approved sharps container.

Conclusion. More than one third of respondents share blood glucose monitoring and / or insulin administration devices with other persons. Most of respondents discard used blood glucose monitoring and / or insulin administration devices incorrectly. Blood glucose monitoring and insulin administration practices among patients with diabetes mellitus are not safe.

RECURRENT DISEASE IN RENAL ALLOGRAFT

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Keywords. Recurrent disease, kidney, allograft.

Introduction. Recurrence of original disease following renal transplantation is observed in 10–20% and is considered a significant cause of premature graft dysfunction. The wide variation in incidence depends on the definition of recurrence (clinical *vs* histological), the original glomerular disease and type of glomerulonephritis (GN). There are many difficulties in studies of recurrent disease because not for all transplant recipients the etiology of end stage renal disease (ESRD) is established.

Aim. To focus on the incidence of recurrent original disease in renal allograft in first year after transplantation and to define the amount of precise native kidney disease diagnoses.

Materials and methods. This was the survey of clinical records of all 108 patients who had undergone renal transplantation in Latvian Transplant center in year 2013 and 2014. Records were observed to determine diagnoses that had progressed to the ESRD with subsequent transplantation and to define the number of biopsy confirmed recurrent disease during first post-transplant year.

Results. Patients who died or lost their allograft (graft rejection, primary graft dysfunction, noncompliant patient) in first year after transplantation were excluded from the analysis (n = 11). Analysis of 97 records showed, that the most common diagnose was chronic GN (n = 27, 28%); but only in 11 cases the type of GN has been recognized. The main type was membranoproliferative GN (MPGN) (n = 6, 6%), 2 patients had focal segmental glomerulosclerosis (FSGS), other 3 patients had IgA nephropathy, mesangiocapillary GN or endocapillary proliferative GN. 2 patients had unsuccessful native kidney biopsy and in 3% of cases global glomerulosclerosis was recognized. In 11% the diagnosis of GN was clinical (without native kidney biopsy). The other causes for ESRD were chronic tubulointerstitial nephritis (n = 26, 27%), polycystic kidney disease (n = 17, 18%), hypertensive nephropathy (n = 12, 12%), diabetic nephropathy (n = 4, 4%) and in 11 cases more rare diseases. Observation showed that the total risk for recurrent renal disease in first post-transplant year is comparatively low – 4%, but it is increasing dramatically in cases where original renal disease was GN (15%). In 3 cases recurrent GN type was MPGN, in one case it was FSGS. None of recurrent GN progressed to graft failure in first year after transplantation.

Conclusion. Recurrent native kidney disease is uncommon in first post-transplant year. It can be explained by relatively short follow-up time after transplantation. The most common recurrent disease was MPGN. In many cases unidentified original kidney disease and unrecognized GN type cause difficulties in studies about recurrent underlying renal disease.

ASSOTIATIONS OF MORPHOGENETIC PROTEINS – FGF-23 AND KLOTHO – WITH CARDIOVASCULAR EVENTS IN PATIENTS WITH CHRONIC KIDNEY DISEASE 1-5D STAGES

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Keywords. FGF-23, Klotho, chronic kidney disease.

Introduction. Cardiovascular problems are the most common complications in patients with chronic kidney disease (CKD). It is believed fibroblast growth factor (FGF)-23 and its co-receptor Klotho may cause direct effects on vascular and myocardial tissues.

Aim. To elucidate the role of the morphogenetic proteins FGF-23 and Klotho in the development of cardiovascular events in CKD patients

Materials and methods. 130 patients aged 41 ± 6.7 years were included. There were a total of 67 men and 63 women. The control group consisted of 30 volunteers comparable to the patients by age and gender. The serum levels of FGF-23 (Human FGF-23 ELISA kit using monoclonal antibodies to complete molecule of FGF-23), Klotho (Human alpha-K1 ELISA using anti-Klotho antibodies), parathormone (PTH), phosphorus and calcium were investigated in all the 130 patients. Electrocardiography, echocardiography evaluation, sphygmography («Shygmocor» (Australia)) and radiography of abdomenal aorta in lateral projection (method Kauppila) were performed in the patients. These parameters were studied on the screening examination and the following year as well.

Results. Analyzing the results of the serum dynamics at various CKD stages the changes of FGE-23 and Klotho levels were observed from the 3A stage, whereas PTH and phosphorus levels altered at 3B-4 CKD.

Moreover, the serum level of Klotho interconnected reversely with pulse wave velocity (PWV) [r = −0.647; p < 0.01] and the calcification of abdominal aorta [r = −0.638; p < 0.01].

The serum level of FGE-23 was related directly to PWV [r = 0.514; p < 0.01], the calcification of abdominal aorta and the concentric myocardium remodeling [r = 0.598; p < 0.01]. The average level of FGE-23 was about [669118 and 45889 respectively] at the patients with high level of arterial pressure (blood pressure (BP) > 140/80) and the normal one (BP 120–140/75–85). It clearly indicates the influence of FGE-23 on left ventricular mass index (LVMI) independently of BP level.

According to the multiple regression analysis LVMI was upper in patients with higher parameters of central systolic pressure, PWV and serum FGF-23.

Pursuant to ROC-analysis the concentration of FGF-23 is higher than 412 pg/ml indicates left ventricular hypertrophy (LVH) with sensitivity 80% and specificity 76%. On the other hand, the concentration of KLOTHO lower than 487 pg/ml is a predictor of increase in LVH with sensitivity 80% and specificity 75%.

Conclusion. The results of the study indicate the serum levels of the morphogenetic proteins FGF-23 and Klotho may be considered as early markers of cardiovascular events in CKD patients.

CORRELATION OF SERUM ALPHA FETO-PROTEIN WITH TUMOR SIZE AND THE NUMBER OF TUMORS IN HEPATOCELLULAR CARCINOMA

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Keywords. Hepatocellular carcinoma, Alpha feto-protein, correlation.

Introduction. Alpha feto-protein (AFP) is a protein produced by the liver and yolk sac of a developing fetus during pregnancy. AFP test may be ordered periodically to help monitor the patient's with diagnosed hepatocellular carcinoma (HCC) response to therapy and to monitor for cancer recurrence. AFP elevation in HCC has been shown to correlate with poor tumor differentiation, and unfavorable prognosis.

Aims. To determine the correlation of serum Alpha feto-protein with tumor size and the number of tumors in hepatocellular carcinoma.

Materials and methods. Between 2010 and 2015 at the Vilnius University Santariškių klinikos 149 patients with diagnosed HCC were retrospectively analyzed. The criteria for inclusion were: HCC had to be confirmed by histological examination and pelvic computed tomography (CT). Those who were younger than 18 years old and had metastasis in liver from any where were excluded.

On the basis of alfa feto-protein level patients were divided in to 3 groups; Group I AFP ($\leq$ 20IU/ml), Group II AFP (20–399IU/ml), and Group III AFP ($\geq$ 400 IU/ml). On the basis of tumor size patients were also divided in to 3 groups by the diameter of the largest tumor; group A $\leq$ 2 cm, group B 2–5 cm and group C > 5 cm. Correlation of serum AFP levels with tumor size was analyzed by SPPS v.19 (SPSS Inc.) for Windows®, applying Spearman's rank correlation with r-values (r_s) of 0.01 being considered significant. A p-value < 0.05 was considered as statistically significant.

Results. Patients enrolled in study were known cases of liver cirrhosis and were complicated by development of HCC. Review of the clinical data of 149 patients male 75% (112) and female were 25% (37) with mean age of 63.6 ± 11.7 ranging from 18 to 96 years was done. AFP mean concentration was 4986.5 ± 34714.9 kU/l ranging from 0.598 to 300000 kU/l; the largest tumor mean size was 5.88 ± 6.56 cm ranging from 0.5 to 7.10 cm. There were 44% (66), 34% (51), 22% (32) cases in group I, II, III of AFP respectively. In tumor size groups, 17% (26) were in group A, 42% (62) in group B, and 41% (61) in group C. There was a weak significant correlation of serum AFP level with the largest tumor size in hepatocellular carcinoma (r_s = 0.33, p = 0.084), and with the number of tumors (r_s = 0.457, p = 0.081).

Conclusions. Our study suggests that serum AFP has a weak significant correlation with the size of tumor and the number of tumors.

SURGICALLY TREATED PATHOLOGIES OF PARATHYROID GLANDS IN PATIENTS OF PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL OVER A 12 YEAR PERIOD

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Keywords. Parathyroid glands, adenoma, hyperplasia.

Background. Parathyroid glands are part of the endocrine system, their main function is to produce parathormone and to regulate the amount of calcium in blood and within bones. Pathology of these glands can cause hyperparathyroidism, which is a condition when due to excessive activity of parathyroid glands the parathormone levels in blood elevate.

The aim of this research was to study the spectrum and dynamics of parathyroid gland pathologies from 2003 to 2015 and to determine the most common type of pathology.

Materials and methods. The research was carried out as a retrospective study of Pauls Stradins Clinical University Hospital's archive files of surgically removed parathyroid glands from January 2003 to September 2015. The researched files included clinical data – patient's age, gender, origin of pathology (primary, secondary, tertiary). The affected gland's size, location, pathologist's conclusion – diagnosis and cell morphology – were analysed from pathohystological reports.

Results. During this 12 year period, 264 parathyroid glands were surgically removed from 201 patients. The least number of cases occured in 2004 (N = 2), the most – in 2013 (N = 36). 88% (N = 177) of patient's were females, 12% (N = 24) – males. The patient's were distributed according to their age group, 52% were 51–70 years old. In 96% of cases, hyperparathyreoidism was of primary origin. 74.2% (183 cases) of discovered pathologies were adenomas, 24.6% (61) hyperplasias, 0.75% (2) carcinomas, 0.5% (1) lipoadenomas, 0.5% (1) myofibroblastic tumors. It was determined that there was a similar number of cases with adenomas and hyperplasias in 2003–2008, but in 2009–2015 adenomas were detected 4 times more often than hyperplasias. Out of adenomas, which were differentiated by the cell type of which they consisted, there was an equal number of chief cell and oxyphil cell adenomas, hyperplasias mostly consisted of chief cells. The average size of the pathological material was larger in 2009–2015 than in 2003–2008.

Conclusions. In the course of time, the number of cases has increased. In 2013 it was 18 times higher than in 2004. For females these pathologies occur 4 times more often than for males. 99% of pathologies are benign, 96% – of primary origin. The right and the left side glands are affected equally often. The most common pathologies are adenomas (74%) and hyperplasias (23%), although this proportion changes according to the year. In the earlier years the average diagnosed patient was younger than in the latest years.

PROGNOSTIC FACTORS FOR SURVIVAL IN PATIENTS
WITH HEPATOCELLULAR CARCINOMA

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Keywords. Hepatocellular carcinoma, survival, prognostic factors.

Introduction. Hepatocellular carcinoma is the third most frequent cause of death from cancer in the world. There are a lot of prognostic factors for survival but there is no general consensus on which are the most important.

Aims. To determine the most important prognostic factors for survival in patients with hepatocellular carcinoma (HCC).

Materials and methods. Between 2010 and 2015 at the Vilnius University Santariškių klinikos 149 patients with histologically diagnosed HCC were retrospectively analyzed. Data such as age, gender, etiology of cirrhosis, Child-Pugh classification, Model for end-stage liver disease (MELD) score, serum Alpha feto-protein concentration (divided into 3 groups: I ($\leq$ 20 IU/ml), II (20–399 IU/ml), and III ($\geq$400 IU/ml)), tumor size (diameter of the largest tumor) (divided into 3 groups: A $\leq$2 cm, B 2–5 cm and C > 5 cm) and the number of tumors, were recorded. Curative (liver transplantation (LT), resection (R), transarterial chemoembolization (TACE), percutaneous ethanol injection (PEI), radiofrequency ablation (RDA), combined therapy (resection+chemotherapy; resection+RDA), systemic chemotherapy with Sorafenib (S), supportive care alone (SC)) treatments were investigated. Data was analyzed by SPPS v.19. Overall survival was estimated by Kaplan-Meier survival analysis. A p-value < 0.05 was considered as statistically significant.

Results. Review of the clinical data of 149 patients male 75% (112) and female were 25% (37) with mean age of 63.6 ± 11.7 ranging from 18 to 96 years was done. Etiologically, all of the patients had HCC with cirrhosis. Cirrhotic patients had different etiologies, but most common was hepatitis C virus infection (61%). The median follow-up time from the diagnosis of HCC, was 12 months (1 months – 9 years). Resection was done to 43 (28.9%) patients, LT – 7 (4.7%), PEI – 3 (2%), TACE – 16 (10.7%), RDA – 18 (12.1%), combined therapy – 3 (2%), S – 43 (28.9%), SCA – 16 (10.7%). Mean survival (months ± standard deviation) distributed respectively: 48 ± 20.8 (PEI); 35.7 ± 25.7 (RDA); 34.3 ± 18.9 (LT); 28 ± 18.3 (combined therapy); 25.9 ± 23.6 (R); 19.9 ± 12.3 (TACE); 14.6 ± 12.9 (S); 13.6 ± 13.3 (SC). Survival was significantly poorer in patients with tumor size > 5cm (p = 5.8×10^{-10}), MELD score > 10 (p = 2.4×10^{-13}). Survival was significantly higher in patients who underwent PEI, RDA and LT treatments (p = 0.0003), or had single nodule (p = 3.17×10^{-17}), Child-Pugh class A cirrhosis (p = 4.6×10^{-19}).

Conclusions. Survival was significantly higher in patients who underwent PEI, RDA and LT treatments. Tumor size, the number of tumors, MELD score, Child-Pugh classification are the most important prognostic factors for survival in patients with hepatocellular carcinoma.

FACTORS AFFECTING RISK OF PERITONITIS IN PERITONEAL DIALYSIS PATIENTS AT A PARTICULAR NEPHROLOGY CENTRE

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Keywords. Peritoneal dialysis, peritonitis, risk factors.

Introduction. In Latvia, peritoneal dialysis is used by 19% of the chronic dialysis patients. Its most severe complication is peritonitis, which has a significant impact on the duration in the use of the method. It is important establishing the factors contributing to peritonitis in order to identify risk group patients and pay special attention in the care of such patients.

Aim of the thesis. The aim of the thesis is to determine the possible risk factors of peritonitis in the peritoneal dialysis (PD) patients at a particular Nephrology Centre.

Materials and methods. The study provided a retrospective review of all ambulatory patient cards at the disposal of PD Ward at Latvian Nephrology Centre for the period of time from 2012 till 2014. It collated data on the age, gender, body mass index (BMI) of patients, reasons of chronic kidney disease (CKD), previous PD catheter exit-site infections, use of active Vitamin D, and comorbidities: chronic obstructive pulmonary disease (COPD), coronary heart disease (CHD), chronic heart failure (CHF), and diabetes mellitus (DM). A trial group (patients with peritonitis) and a control group (patients with no peritonitis) were further sub-divided. The results were collated by means of MS Excel, and the statistic data processing was performed by IBM SPSS 20.

Results. A total of 156 patient files of patients were analysed, out of which 148 patients meeting the inclusion criteria were included in the study. In the trial group (59 patients) the average age (M = 62.5, SD = 17.5) differed from the control group (89 patients) (M = 57.5, SD = 15.5) by 5 years (p = 0.055). In the trial group, women were by 7.6% more (31 women or 52.5% versus 40 women, 44.9%) (p = 0.365, OR = 1.4, 95% CI: 0.7–2.6). In the trial group, if compared to the control group, the average BMI differed by 0.4 units – 26.8 (SD = 6.5) versus 27.2 (SD = 6.5) (p = 0.615), by 15.9% more often the reason for CKD was hypertensive nephropathy – 17 cases (28.8%) versus 13 cases (14.6%) in control group (p = 0.035, OR = 2.4, 95% CI = 1.1–5.3), by 25.2% more often the PD catheter exit-site infections (42 respondents; 47.2% opposed to 13; 22.0%) (p = 0.002, OR = 3.1, 95% CI: 1.5–6.6), by 3.4% less active Vitamin D was used (55 cases, 93.2% opposed to 86 cases, 96.6%) (p = 0.339, OR = 2.0, 95% CI: 0.5–9.7). In the trial group, if compared to the control group, by 9.7% more COPD was observed (9 cases, 15.3% as opposed to 5 cases; 5.6%) (p = 0.050, OR = 3.0, 95% CI: 1.0–9.5), by 16% more CHD was observed (26 cases, 44.1% opposed to 25 cases, 28.1%) (p = 0.045, OR = 2.0, 95% CI: 1.0–4.0), by 17.7% more CHF was observed (31 cases, 52.5% opposed to 31 cases, 34.8%) (p = 0.033, OR = 2.0, 95% CI: 1.1–4.1), by 2.7% less DM was observed (13 cases, 22% opposed to 22 cases, 24.7%) (p = 0.707, OR = 0.9, 95% CI: 0.4–1.9).

Conclusions. The study did not reveal a relation between peritonitis and the age, gender, body mass index of the patient, diabetes mellitus, and use of active Vitamin D. The study revealed a relation between peritonitis and hypertensive nephropathy as a cause for chronic kidney disease, PD catheter exit-site infections, and comorbidities: COPD, CHD, CHF.

ANTIBACTERIAL THERAPY TRENDS IN INFLAMMATORY BOWEL DISEASES: RIGA EAST CLINICAL UNIVERSITY HOSPITAL REVIEW

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

Introduction. Empirically antibacterial drugs in inflammatory bowel diseases (IBD) are used more often than suggested by the guidelines, therefore increasing the development of antibacterial resistance.

Aim. Our aim was to review patients with IBD and used antibacterial therapy.

Materials and methods. A chart review analyzing all consecutive hospitalization cases with ulcerative colitis (UC) and Crohn's disease (CD) was done during 1 year period (2014) to determine multi-resistant microorganism (MRO) presence and antibacterial therapy trends. Antibacterial therapy trends were compared to ECCO (European Crohn's and Colitis Organisation) guidelines. Original study protocol (demographic data, used antibacterial therapy), database development and non-parametric statistics were performed with SPSS 20.0. Indeterminate colitis patients were not compared with UC and CD patients.

Results. 128 IBD hospitalization episodes: 74 (57.8%) due to UC, 29 (22.7%) due to CD and in 25 (19.5%) due to indeterminate colitis were recorded during the study period. 62 (48.4%) female patients and 66 (51.6%) male patients with the mean age of 47.51 ± 20.51 years were hospitalized during the study period. The mean anamnesis of IBD was 2.31 ± 4.27 years. In 2 (1.6%) cases ESBL (extended spectrum beta lactamase) producing *Enterobacteriaceae* and in 2 (1.6%) cases *Cl. difficile* were found. In 55 (43%) cases antibacterial therapy was used: in 19 (14.8%) cases ciprofloxacin, in 45 (35.2%) cases metronidazole and in 25 (19.5%) cases ceftriaxone. In 16 (12.5%) cases combination of ciprofloxacin and metronidazole was used, in 16 (12.5%) cases combination of ceftriaxone and metronidazole was used. Also in 3 (2.4%) cases amoxicillin / clavulanic acid, piperacillin / tazobactam and cefazolin were used. 55 (69.86%) patients with UC and 11 (37.93%) patients with CD used antibiotics at least once during their hospitalization period (p = 0.002). 9 (12.16%) patients with UC and 9 (31.03%) patients with CD used Ceftriaxone (p = 0.046). No differences were found between ciprofloxacin and metronidazole therapy frequency between patients with UC and CD. Mean length of antibacterial therapy was approximately 2.65 ± 4.26 days. Mean length of antibacterial therapy in UC was 1.96 ± 4.50 days (n = 73), but 3.79 ± 3.80 days (n = 29) in CD (p = 0.003).

Conclusions
1. Patients with UC used antibacterial drugs two times more often than patients with CD, inconsistently with ECCO guideline recommendations and other studies.
2. Patients with CD used ceftriaxone three times more often than patients with UC.
3. Patients with CD used antibiotics almost 2 times longer than patients with UC, consistently with ECCO guideline recommendations and other studies.

INFLAMMATORY BOWEL DISEASE HOSPITALIZATION TRENDS IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL

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Keywords. Inflammatory bowel disease, hospitalization trends, Crohn's disease, ulcerative colitis.

Introduction. Ulcerative colitis (UC) is more common than Crohn's disease (CD) in Europe. Before there were no systematic studies about inflammatory bowel disease (IBD) hospitalization in Latvia.

Aim. Our aim was to observe the hospitalization trends (spent days in hospital) in patients with CD and UC.

Materials and methods. Chart review study. All consecutive hospitalization cases with UC and CD during 2013–2014 analyzing hospitalization time and surgeries performed. Original study protocol (demographic data, used antibacterial therapy), database development and non-parametric statistics were performed with SPSS 20.0. Indeterminate colitis patients were not compared with UC and CD patients.

Results. 246 hospitalization episodes, 118 (48%) female, 128 (52%) male patients. Mean IBD record anamnesis 2.35 ± 4.42 years. Mean days in hospital 8.68 days ± 6.41 days. Statistically significant differences were found in patient age between male and female patients ($p = 0.02$). Mean age in male patients 44.05 years ± 18.46 years ($n = 128$). Mean age in female patients 50.84 years ± 21.48 years ($n = 118$). 145 (58.9%) had UC, 59 (24%) CD, 42 (17%) indeterminate colitis. Weak positive correlation was found between age and time spent in the hospital. Age, days spent in the hospital $rS = 0.214$, $p = 0.001$ ($n = 246$). In 14 (5.7%) cases surgeries related to IBD were performed during the hospital stay, including abscess drainage and ileo-sigmoidal anastomosis.

Conclusions

Patients with UC were 2.5 times more common than patients with CD in Riga East Clinical University Hospital 2 year period similar to statistics in Europe.

Older patients, women and patients with longer IBD anamnesis spent more time in the hospital due to severe health issues regarding to IBD.

MEMBRANOPROLIFERATIVE GLOMERULONEPHRITIS: CLINICAL MANIFESTATION AND ASSOCIATION WITH COMORBIDITIES

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Keywords. MPGN, chronic kidney disease, comorbidities.

Introduction. MPGN is a rare cause of chronic glomerulonephritis that occurs mostly in children and young adults. Data from kidney biopsy register in PSCUH show that 9.9% of all biopsy confirmed GN during last 3years (n = 141) were MPGN. It is often associated with persistent HCV, autoimmune and neoplastic diseases [Longo et al.,2012]. This inflammatory glomerular disease can present clinically as nephrotic or nephritic syndrome.

Aim. To analyse the data of patients with MPGN in one centre and to investigate disease's clinical manifestation and association with comorbidities among these patients.

Materials and methods. In a retrospective study 242 appointments (42 patients) of MPGN were selected and analysed from 12077 appointments in register of the department of nephrology and from outpatient documents from 2010 to 2014. Glomerular filtration rates were calculated by MDRD from which stages of chronic kidney disease were estimated. Collected data were analysed with programs MS Excel, SPSS using descriptive statistical methods with confidence interval (CI) of 95%.

Results. 17 (40.5% CI ± 14.9) from 42 patients with MPGN were male, 25 (59.5% CI ± 14.9) female. The mean age was 46 ± 5.3 years, median – 45. 23 (54.8% CI ± 15.1) patients had comorbidities – 11 (47.8% CI ± 20.4) had metabolic disorders, 7 (30.4% CI ± 18.8) cardiovascular diseases, 6 (26.1% CI ± 18.0) neoplasms, 6 hepatitis (4 HCV [66.7% CI ± 37.7], 1 HBV, 1 drug-induced [16.7% CI ± 29.8]), 10 (43.5% CI ± 20.26) autoimmune diseases. 18 (42.9% CI ± 15.0) patients had comorbidities that have association with MPGN–neoplasms, chronic virus hepatitis and autoimmune diseases. Nephrotic syndrome was diagnosed in 21 (50% CI ± 15.1) patients, nephritic in 15 (35.7% CI ± 14.5), 4 (9.52% CI ± 8.9) had nephrotic-nephritic syndrome. Haematuria was stated in 39 cases (92.9% CI ± 7.8). Patients were divided into 5 stages of chronic kidney disease which are based on estimated GFR. In stage 1 were 12 (28.6% CI ± 13.7) patients, stage 2–11 (26.2% CI ± 13.3), stage 3–12, stage 4–6 (14.3% CI ± 10.6), stage 5–1 (2.38% CI ± 4.6). 19 (45.2% CI ± 15.1) patients had progressive renal insufficiency where GFR is < 60ml/min. Also many patients had secondary symptoms which are characteristic of chronic renal disease: hyperparathyroidism for 16 (38.1% CI ± 14.7) patients, anaemia in 15 and arterial hypertension was found in 3 1 (73.8% CI ± 13.3) patients from which 4 (12.9% CI ± 11.8) were drug-controlled.

Conclusions. MPGN-related comorbidities as autoimmune diseases, neoplasms, chronic virus hepatitis were found in 42.9% of cases. Almost half of patients (45.2%) had moderate to severe kidney damage (GFR < 60ml/min) and CKD manifestations (arterial hypertension, secondary hyperparathyroidism, anaemia). Nephrotic, nephritic or both syndromes which indicates abnormal glomerular function caused by MPGN was found in majority of patients (95.2%).

SERUM AMYLOID A LEVEL CORRELATION WITH DISEASE ACTIVITY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASES

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Keywords. Serum amyloid a, biomarker, activity, ulcerative colitis, Crohn's disease.

Introduction. Pathogenesis of Inflammatory bowel diseases (IBD) complies alterations in the immune system and inflammation cascade. Already some data shows that serum amyloid A (SAA) as inflammatory protein is elevated in IBD patients. Also, in researches SAA level is rarely and incompletely analyzed as combined tool for disease activity scores evaluation.

Materials and methods. In prospective single-center pilot study (from April to August 2015) 12 patients with UC and 9 patients with CD were included. Activity of CD was assessed by CD activity index (CDAI), defined as 151 or more as an active phase, simple endoscopic score for CD (SES-CD), defined as an inactive 0–3, active > 3, partial Mayo score defined as the inactive 0–4, the active > 4, Mayo endoscopic sub score, defined as 0–1 inactive, > 1 active. Patients were divided into four groups. Serum samples were obtained and measured on the day or within < 14 days of ileocolonoscopy procedures, patients without endoscopic examination were evaluated using CDAI and full Mayo score. The correlation of SAA with CDAI, SES-CD, partial Mayo score, Mayo endoscopic sub score and full Mayo score was evaluated using Spearman correlation analysis.

Results. 21 patient with IBD (mean age 38 years; 9 males, 12 females) were enrolled. Mean SAA level was increased in the active phase of UC patients (n = 9; 157.8 µg/dl) compared to inactive phase (n = 4; 19.75 µg/dl) and was statistically significant with full Mayo score (Spearman›s rank correlation coefficient r = 0.8; p = < 0.05). In active CD patients SAA was elevated (n = 5; 230.4 µg/dl) compared to inactive CD patients (n = 2; 4.75 µg/dl) and highly correlates with CDAI (Spearman›s rank correlation coefficient r = 1; p < 0.01). During the inactive phase of disease no significant correlations were found. No reliable correlation found between mean serum amyloid and SES-CD.

Conclusion. Preliminary results showed that the serum amyloid A is a sensitive biomarker for evaluation of disease activity in both UC and CD. SAA was significantly elevated in active ulcerative colitis and Crohn's disease phases and there is a direct correlation with full Mayo score and CDAI. Our results confirmed the high diagnostic value of this study which will be continued in the future.

COMPUTER TOMOGRAPHY ASSESSMENT OF SARCOPENIA IN PATIENTS WITH CHRONIC PANCREATITIS

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Keywords. Sarcopenia, computer tomography, chronic pancreatitis.

Introduction. Sarcopenia is depletion of skeletal muscle and it is mostly associated with catabolic clinical conditions, such as cancer, diabetes, AIDS, etc. It may have correlation with malabsorption and depletion of nutrients and, also, increased metabolic activity due to severity of the chronic pancreatitis (CP). Even the prevalence of CP is not so high, sarcopenia / malnutrition impact on patients social and financial life is significant. CT scan is considered to be a valuable tool for body composition analysis.

Materials and methods. In a prospective pilot study (from March 2014 to December 2015) 14 patients with chronic pancreatitis undergone CT imaging for diagnostic purposes. Muscle mass was measured by secondary analysis of electronically stored CT images. CT were taken within 30 days of the BMI assessment. BMI and body-surface area were calculated. The directly ascertained unit was area (cm^2) of total third lumbar vertebrae (L3) of skeletal muscle using standard program ImageJ 1.48v. Cross-sectional areas (cm^2) of the sum of all muscles and adipose tissues were calculated for each image, and the mean value for the two images was calculated. We compared body composition data by BMI and CT scan analysis of each patient.

Results. 14 patients with CP (11 men, 3 women, mean age 49.5, range 40–60) had mean value of BMI 25.06 kg/m^2. Mean value of lumbar skeletal muscle index was 65.5 cm^2/m^2 for men and 43.3 cm^2/m^2 for women. 4 out of 14 patients with CP had sarcopenia (28.5%) – 2 patient with normal BMI, 2 patients with increased BMI

Conclusion. CT is a useful method to evaluate sarcopenia in patients with pancreatic disease by using L3 skeletal muscle index. Sarcopenia is prevalent in patients with chronic pancreatitis and may be present in patients with any BMI values. Gained data give additional value for optimizing treatment; sarcopenia might be an indication for more aggressive approach with enzyme replacement therapy and nutritional support, additionally, physical exercises and non-medication rehabilitation for patients with CP.

ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH TYPE 1 DIABETES IN LATVIA

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Keywords. Type 1 diabetes, health-related quality of life, 15D instrument.

Introduction. Type 1 diabetes mellitus is a chronic disease, which is caused by autoimmune destruction of pancreatic beta (β) cells, resulting in severe insulin deficiency. Uncontrolled type 1 diabetes can dramatically increase the risk of severe life-threatening complications and it is generally considered that uncontrolled disease has significant negative impacts on patients' quality of life, that's why patient compliance is very important.

Aim. To assess health-related quality of life (HRQoL) in patients with type 1 diabetes using 15D instrument, to check which of 15 dimensions are affected most, and to measure the impact of diabetic complications to HRQoL.

Materials and methods. Study included altogether 287 patients of "LatDiane: Latvian Diabetic Nephropathy Study". Patients' biochemical indications were obtained retrospectively or sending samples of serum and urine to E. Gulbis Laboratory. To obtain the data on HRQoL 15D questionnaire was used which includes multiple-choice questions with five grades of severity on 15 dimensions: mobility, vision, hearing, breathing, sleeping, eating, speech, elimination, usual activities, mental function, discomfort and symptoms, depression, distress, vitality and sexual activity (*15D© instrument, Harri Sintonen*). The score ranges from 1 (full health, no problems on any dimension) to 0 (dead). Processing and calculations of data was carried out by using *IBM SPSS Statistics 20* programme.

Results. There were analyzed data of 287 patients – 131 men (45.6%) and 156 women (54.4%). The mean age in patient group was 37.32 ± 14.05 years and average diabetes duration was 16.47 ± 12.35 years. 15.3% of patients had diabetic nephropathy in microalbuminuria stage, 7.6% – in macroalbuminuria stage, but 2.9% – renal replacement therapy. 44.1% of patients had retinopathy, of whom 28.0% had laser coagulation. 40.2% of patients were diagnosed of diabetic neuropathy. The mean 15D score was 0.884. The most affected dimensions were distress (0.769), vitality (0.798), sleeping (0.812) and sexual activity (0.828). Distress was most affected by nephropathy, vitality also by nephropathy, sleeping was most affected by retinopathy and polyneuropathy, but sexual activity – by nephropathy and retinopathy.

Conclusion. Severity of diabetic complications and quality of life are associated in type 1 diabetic patients.

LIVER CIRRHOSIS LABORATORY PARAMETERS CORRELATION WITH ENDOSCOPIC ESOPHAGEAL VEIN ASSESSMENT

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Keywords. Liver cirrhosis, esophageal varices, portal hypertension, leukopenia, thrombocytopenia, anemia, correlation.

Introduction. In case of decompensated liver cirrhosis gastrointestinal bleeding, hypersplenism and portal hypertension can result in anemia, thrombocytopenia and leucopenia. Endoscopic esophageal vein (EV) diagnostic nowadays is a gold standard for decompensated cirrhotic patients however, taking into consideration the workload in hospital endoscopy department and financial aspects, it is important to determine criteria under which the necessity of *esophagogastroduodenoscopy* could be evaluated.

Objective. To assess laboratory diagnostic parameters of liver cirrhosis patients and to identify possible correlation with varicose veins in the esophagus.

Methodology. Retrospective analysis of liver cirrhosis patients' which have undergone upper endoscopy. The analysis was carried out by examining erythrocyte, hemoglobin, platelet and white blood cell data from patient history at Riga East Clinical University Hospital archive. Data has been compiled and statistically processed in SPSS version 20. As a result an original report and database was created.

Results. Overall, 94 liver cirrhosis patient histories with upper endoscopy reports were analyzed. 39 (41%) of them female and 55 (58.5%) male; average patient age – 56.31 years 13.44. Patient distribution by underlying etiologies as following: unspecified – 26 (27.7%), HCV – 18 (19.1%), HCV + toxic gen. – 16 (17%), VHB – 5 (5.3%), toxic – 28 (8.29), VHC + VHB – 1 (01.01%). Endoscopy results: esophageal varices (I, II, I–II, II–III, III–IV grades) in 78 (83%) patients. I grade EV extensions diagnosed to 20 (21.3%) patients, with I–II grade 28 (29.8%), with II grade 12 (12.8%), II–III grade 15 (16%), III–IV grade 3 (3.2%). There was a statistically significant correlation between the platelet count and the endoscopic esophageal varicose vein (p = 0.016; correlation rate. -,248), hemoglobin and extended EV (p = 0.028; correlation rate. -,226.). It was found that the lower the platelet count and hemoglobin level, the greater the degree of expansion of EV.

Conclusions. Platelet and hemoglobin rates statistically are significantly correlated with varicose veins in the esophagus. For patients with the following parameters upper endoscopic esophageal vein examination is mandatory.

ERYTHROPOIESIS-STIMULATING AGENT HYPORESPONSIVENESS AND RESISTANCE IN HEMODIALYSIS PATIENTS, POSSIBLE CAUSES AND CONTRIBUTING FACTORS

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Keywords. Erythropoietin, anemia, hyporesponsiveness, hemodialysis, nephrology.

Introduction. There is an increasing number of patients undergoing hemodialysis due to end-stage renal disease every year worldwide. In 2012 there were 2 million patients affected by end-stage renal disease and 89% of them were undergoing hemodialysis[1]. In Latvia there is also an increase of hemodialysis patients every year: Increase by 5.6% in 2013 (336 to 355 patients) and increase by 3.1% in 2014 (355 to 366 patients)[2]. People with end-stage renal disease who are on hemodialysis are at risk for anemia and it is a common complication. The preferred form of therapy for this kind of anemia is the use of erythropoiesis-stimulating agents (ESAs). Approximately 5–10% of patients with chronic kidney disease demonstrate hyporesponsiveness to ESAs, which is cause for greater dosage of ESAs. Such hyporesponsiveness leads to significant, mortality and health-care economic burden and represents an important diagnostic and management challenge[3].

Aim. The aims of the research are to identify ESAs hyporesponsive patients by mathematical expression, and their division into hyporesponsiveness groups (< 5; 5–15; > 15), and to find out possible causes and factors affecting hyporesponsiveness to ESAs.

Materials and methods. This is a retrospective study. Research material is medical histories of 30 patients undergoing hemodialysis at Pauls Stradins Clinical University Hospital. Regular blood test results were observed for 2 years period of time, and ESAs resistance index was calculated, based on weekly-prescribed ESAs dosage, patient's weight and hemoglobin levels every three months. There was correlation observed between ESAs resistance index and used medications. Data processing was performed with Microsoft Excel and IBM SPSS Statistics ver. 20.0.

Results. Data of 30 patients were summarized, mean age 56.63 ± 14.87 years (range 29–85), 56.7% (n = 17) of those were men. There was statistically significant negative correlation found between patients` age and EHRI (erythropoietin hyporesponsiveness index) (r = −0.44; p < 0.05. Negative correlation between EHRI and hemoglobin levels (r = −0.393; p < 0.05) was observed, simultaneously there was t positive correlation between EHRI and serum UREA level before hemodialysis procedure (r = 0.432; p < 0.05). Also there was observed negative correlation between EHRI and white blood cell level (r = −0.380; p < 0.05). There was no correlation found between EHRI and serum creatinine, ferritin levels, cholesterol and PTH levels. Patients using polystyrene sulfonate showed statistically significant higher

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[3] David W. Johnson et al. *Erythropoiesis-stimulating agent hyporesponsiveness*, NEPHROLOGY,2007;12, 321–330.

EHRI (23.14 versus 13.10; p = < 0.05), there were no significant effect on EHRI for patients using pentoxyfilline, but it was associated with higher Hb levels (11.7 g/dL versus 8.5 g/dL; p < 0.05). Other used medications like angiotensin converting enzyme inhibitors, proton pump inhibitors, angiotensin receptor blockers, had no effect on EHRI changes.

Conclusions. 93.3% (n = 28) of patients were classified in hyporesponders groups (EHRI = 5–15 and higher). Therefore higher dosage of ESAs may be used and it may lead to several cardiovascular adverse effects. Few of the main contributing factors of ESAs hyporesponsivity are inflammation, and raised serum urea level. Most of the simultaneously used medication had no effect on EHRI.

FLUID INTAKE CONTROL IN PERITONEAL
AND HEMODIALYSIS PATIENTS

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Keywords. Peritoneal dialysis PD, hemodialysis HD, ultrafiltration rate UFR.

Introduction. Fluid overload is a common and serious problem that leads to severe complications in dialysis patients and is associated with cardiovascular risk factors such as secondary hypertension and increased mortality.

Aim. The aim of this study, through the use of subjective questionnaires, is to arbitrate the fluid overload related risk factors of the cohort and to determine any correlation with the clinical and laboratory data.

Materials and methods. A prospective study took place in P. Stradins Hospital's (PSCUH) Hemodialysis and Peritoneal dialysis units from November 2015 till January 2016. Patients were questioned regarding their fluid intake habits. Clinical data was gathered using patient's history of UFR, blood pressure, weight, and duration of dialysis. Laboratory data such as hematocrit was gathered for this study. All data was collected in Excel program. Statistical analysis was done with SPSS22 using the Spearman test.

Results. In PD group 39 and HD group 52 patients filled the questionnaire. In the PD group 43.6% and 71.1% in HD group are fallowing the fluid intake restriction recommendations. The average fluid intake per day in PD group was 1.83L but in the HD group it was 1.11L. The average UFR rates were 2.41L per day in PD group, and 2.62 in HD group. 56.4% in PD and 35.6% in HD groups had arterial hypertension. There is no statistically significant correlation between fluid intake and blood pressure in PD patients (Rs = 0.21 p = 0.191). There is a moderate negative statistically significant correlation between blood pressure and the total duration dialysis received in HD group (Rs = −0.36 p < 0.05). A statistically significant positive correlation was found between the length of dialysis received, and a patients increased quantity of fluid intake in the HD group (Rs = 0.31, p < 0.05). There is a statistically significant positive correlation between hematocrit and fluid intake in HD patients (Rs = 0.55 p < 0.01) but no statistical significant correlation between hematocrit and fluid intake in PD patients (Rs = 0.23, p = 0.155).

Conclusion. According to the results, surprisingly, blood pressure does not depend on the fluid intake in PD patients and in HD patients. Blood pressure depends more on the number of times dialysis is received in the HD group, blood pressure has a tendency to lower with increased quantity of dialysis. Hematocrit reflects the fluid intake more accurately in HD patients than in PD patients.

LOW PREVALENCE OF CELIAC DISEASE IN FUNCTIONAL DYSPEPSIA AND IRRITABLE BOWEL SYNDROME

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Keywords. Celiac disease, irritable bowel syndrome, functional dyspepsia.

Introduction. There is a symptom overlap between a classical celiac disease (CD) irritable bowel syndrome (IBS) and functional dyspepsia (FD).

Aim. To analyse the prevalence of CD characteristic markers: tissue transglutaminase IgA (tTgA) and / or antiendomysial IgA group antibodies (EMA) and positive histology in patients with IBS and FD.

Materials and methods. Consecutive patients with FD and IBS in a secondary gastroenterology practice unit of Digestive Diseases Centre GASTRO were retrospectively analysed between 2002 and 2014. The diagnosis of IBS and FD was made under clinical settings by using Rome II (2002–2006) and Rome III criteria (2006–present).

Patient levels of tTgA and / or EMA were evaluated serologically. Total IgA was also measured. Four duodenal biopsies were obtained from duodenum for histopathology. Histopathology was reported according to Marsh classification. Patients diagnosed or being referred for confirmation of CD were excluded from the study.

Results. 1875 patients, 1214 (64.75%) women, 661 (35.25%) men, median age 37 years (range 18–83) have been enrolled in the study.

1558 patients were tested for tTgA, positive tTgA was found in 20 patients (1.28%), in patients with dyspepsia positive tTgA was found in 1 (0.18%) of 550 patients. Positive tTgA was found in 15 (2.8%) of 560 patients with IBS. Positive tTgA was found in 4 (0.9%) of 448 patients with IBS and FD. Positive EMA was found in 2 (1.35%) patients of 148 tested.

Number of biopsy positive cases was 15 (2.6% of biopsies investigated), most of them with Marsh I lesions (1.9% of the biopsies investigated); Marsh III lesions were found only in 4 cases (0.69% of the biopsies investigated). 11 patients with positive biopsies had negative serological markers for celiac disease. 2 (0.4%) patients with diarrhoea predominant IBS and 2 (0.46%) patients with altered type IBS had positive serology and biopsies.

The level of total IgA was measured in 1270 (68%) patients. 4 patients (0.31%) had IgA deficiency.

Conclusions. The prevalence of celiac disease in patients with FD and IBS is low. IgA deficiency could not be reason of low prevalence of CD.

16 March 2016

THE ASSOCIATION BETWEEN HISTOLOGICAL LESIONS, PROTEINURIA AND SURVIVAL OF KIDNEY GRAFTS

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Keywords. Proteinuria, kidney transplantation, graft survival.

Introduction. Renal transplantation takes an important role in the treatment of end-stage chronic kidney disease. Even small damages of the structures of kidneys, can result in proteinuria. The measurement by 24h urine collection and core biopsy remains the "gold standard" for the diagnosis of renal graft damage.

Aim. Estimate the association of severity of histological lesions in renal graft biopsies with proteinuria and survival.

Materials and methods. The study included 57 (24 (42%) male / 33 (58%) female) patients, whom core biopsy of graft has been done in year 2013. The mean age of the patients was 43 (12–71) years. For 5 (9%) patients that was second kidney graft. Biopsies were taken ~4 years after transplantation and were evaluated with the light microscope. 8 (14%) patients have lost their grafts in the period of one year after biopsy.

Spearman's test was used to assess correlation between severity of histological lesion and amount of proteinuria (estimated by protein measurement in 24h urine collection) and Kaplan-Meier test to estimate the survival.

Results. There was found glomerulitis in 20 (35%) biopsies, 14 (25%) mesangial matrix increase, 9 (16%) glomerulopathy, 13 (23%) tubular damage, 7 (12%) peritubular capilaritis, 10 (18%) interstitial inflammation, 24 (42%) interstitial fibrosis and 30 (53%) tubular atrophy, 3 (5%) arteritis and 22 (39%) chronic vascular changes, 25 (44%) with PAS-positive hyaline thickening and 35 (61%) with C4d deposits. For 6 (11%) patients was sclerosed > 30% from all glomeruli.

Proteinuria was detected in 23 (40%) recipients on biopsy day and in 22 (39%) after a year. 9 (39%) patients had nephrotic range proteinuria, 3 (13%) – moderate (1–3.5 g / 24 h), and 11 (48%) – light (< 1 g / 24 h).

On the biopsy day there was detected strong correlation between severity of proteinuria and glomerulitis (r_s = 0.443, p = 0.001), chronic glomerular (r_s = 0.474, p < 0.001) and mesangial lesion (r_s = 0.418, p = 0.001) and with chronic vascular (r_s = 0.363, p = 0.006) and glomerular lesion (r_s = 0.265, p = 0.048) after a year. The deterioration of proteinuria during a year was statistically significant correlated with severity of chronic vascular lesion (r_s = 0.362, p = 0.007). There was association in the one-year graft survival with severity of interstitial fibrosis (p = 0.03) and peritubular capilaritis (p < 0.001).

Conclusion. Histological lesions found by kidney graft biopsy are significant determinants for proteinuria and survival. Proteinuria was dependent of glomerular, mesangial and vascular, but not tubular lesions. Graft survival was determined by severity of interstitial fibrosis and peritubular capilaritis.

PATIENT-RELATED AND PROCEDURE-RELATED RISK FACTOR ANALYSIS FOR POST-ERCP PANCREATITIS

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Keywords. Gastroenterology, pancreatitis, ERCP.

Introduction. Endoscopic retrograde choledopancreatography (ERCP) is a complex endoscopic procedure that is used for bile and pancreatic duct radiographic visualization and therapeutic manipulations. According to the 2014 ESGE Guidelines pancreatitis is the most frequent ERCP complication. There are several risk factors that are associated with post ERCP pancreatitis (PEP), therefore this procedure should be used for therapeutic purposes only.

Aim. The aim of the study is to evaluate and analyze patient-related and procedure-related risk factors for PEP in patients after ERCP procedure.

Materials and methods. A total of 232 patients data were analyzed in a retrospective study on a prospective cohort basis from 2014–2015y in Pauls Stadins Clinical University Hospital with a mean age of 67.81 ± 14.76 (range 24–96y), 66.4% were female.

Results. A total of 232 patients entered the study; 154 female and 78 male. 6.1% of women and 1.3% of men developed post-procedure pancreatitis. Female patients had greater risk of developing PEP (OR = 4.78; p = 0.106). Patients were divided into 5 age groups and the highest percentage of PEP was observed in the younger age group (PEP occurred in 13.0% of patients in 35–49 age group and 12.5% in 20–34 age group; 5.1% of 65–79 age group, 1.9% of 50–64 age group and none of the patients in age group over 80 developed PEP). In patient group with previous history of pancreatitis there was a greater risk of developing PEP (OR = 2.01; p = 0.517). Analysis of procedure-related risk factors showed a greater risk of PEP in patients who had a precut sphincterotomy (OR = 1.88; p = 0.434) and pancreatic duct cannulation (OR = 7.19; p = 0.001). 3.0% of patients with a previous ERCP and 5.3% patients that did not have ERCP in their history developed PEP.

Conclusions. The analyzed patient-related predictive factors: female gender, younger age and diagnosed pancreatitis in previous medical history suggest a higher occurrence of PEP. Procedure-related predictive factor analysis revealed that patients who had pancreatic duct cannulation and precut sphincterotomy were more frequently diagnosed with PEP, however patients who had repeated ERCP did not have a higher occurrence of PEP. Gained results suggest that the procedure should be done more carefully in patients with a higher risk of developing PEP, however, a broadened patient group could give more significant results.

THE ASSOCIATION BETWEEN DIABETES MELLITUS, CANCER AND CARDIOVASCULAR RISK

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Keywords. Diabetes, cancer, cardiovascular risk.

Introduction. The prevalence of both – diabetes mellitus (DM) and cancer has increased significantly during the past decades and it has a major impact on health worldwide. Several studies have shown that DM carries an increased risk for specific types of malignant tumors. Cancer is the 2nd leading cause of death after cardiovascular diseases (CVD). Furthermore, diabetic patients are at increased risk of developing CVD that remains the leading cause of death for people with DM.

Aim. To assess the prevalence of oncologic diseases among DM patients in Latvia in 2014 and to detect whether DM patients with oncological disease do have more risk factors for CVD, higher risk for cardiovascular (CV) complications and poor glycaemic control.

Materials and methods. This retrospective cross-sectional study included medical data from 84683 diabetic patients that were registered at the National diabetes registry in 2014. All the patients who had a coexisting diagnosis of DM and an oncologic disease (group A) were recognised and compared with the DM patients with no oncologic diagnosis (group B). The data were analysed using IBM SPSS Statistics 23 and Microsoft Excel. The test of normality was used to determine whether the data is normally distributed. The test of frequencies was used to describe the groups. Crosstabulation and Pearson's Chi-squared test were used to determine the relative risks.

Results. 9.18% (n = 7778) of the registered DM patients had an oncologic disease. 1.68% (n = 131) had type 1 diabetes and 97.79% (n = 7606) – type 2 diabetes. Patients from group A were less prone to attain a BMI > 30 (RR = 0.967; CI 95% 0.945–0.990) or BMI < 18.5 (RR = 0.106; CI 95% 0.034–0.330), systolic blood pressure > 140 mmHg (RR = 0.471; CI 95% 0.446–0.497) and LDL > 2 mmol/l (RR = 0.987; CI 95% 0.976–0.999). There was no statistically significant difference in the risk of having HDL < 1.03 mmol/l or TG < 1.7 mmol/l between the groups. Group A was more likely to have creatinine > 110 mmol/l (RR = 1.571; CI 95% 1.449–1.703). Analysing the risk of CV complications, there was no statistically significant difference between both groups for having a stroke or a myocardial infarction. Patients from group A were more likely to have *angina pectoris* (RR = 1.232 CI 95% 1.150–1.320). The overall glycaemic control (HbA1c < 6.5%) was better in group A (RR = 1.375; CI 95% 1.343–1.409).

Conclusion. A significant number of DM patients (9.18%) have an oncologic disease. Our data show that DM patients with cancer tend to have less CV risk factors, but they are more prone to having *angina pectoris* than DM patients without cancer. The compensation of DM is better for the patients with oncologic comorbidity and they are less likely to be obese or underweight in comparison with the DM patients without cancer.

CLINICAL PRESENTATION AND DIAGNOSTICS OF PRIMARY BILIARY CIRRHOSIS: 10 YEAR EXPERIENCE

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Keywords. Primary biliary cirrhosis, clinical course, diagnostics.

Introduction. Primary biliary cirrhosis (PBC) is an autoimmune cholestatic liver disease, characterized by slow progression. In the prognosis of the disorder significant role plays accurate and early diagnostics.

Aim. To describe the clinical and laboratory characteristics and diagnostic aspects for PBC.

Methods. The study included data from case records of 116 patients with 270 admission episodes in Pauls Stradiņš Clinical University Hospital, Riga East University Hospital Gaiļezers and Infectology Center of Latvia from January 2004 to December 2014. Results were analyzed by descriptive statistics tools.

Results. The mean age was 60.1 ± 9.8 years. 99.6% of them were females. The general symptoms of PBC were 39.6% weakness, fatigue and daytime somnolence, 30% discomfort in the right hypochondrium, 9.6% nose and gingival bleeding and in less than 9% – nausea, weight loss, lack of appetite and dizziness.

Symptoms associated with skin were 49.3% pruritus, 26.7% icteric skin, 13.7% icteric sclera, 11.5% hyperpigmentation. Less than 10% of patients had palmar erithema, spider nevus, xanthelasma, edema, telangiectasia, Dupuytren's contracture, engorged paraumbilical veins and dark urine.

The mean elevated laboratory values were: ALT 78.7 ± 59.3 U/l, AST 96.9 ± 87.4 U/l, total bilirubin 79.9 ± 106.8 μmol/l, GGT 363.3 ± 357.62 U/l, AP 782.7 ± 589.9 U/l and total cholesterol – 8.6 ± 12.9 μmol/l. Immunological tests were positive for AMA – in 4.3% and ANA – 5.2%.

Abdominal ultrasound exam showed normal liver size in 62.6%, enlarged – 30.3% and reduced – 6.7%. Spleen was enlarged in 67.8%, normal in 32.2%. 59.2% of the patients had esophageal varices, 31.2% had at least one bleeding episode of esophageal varices.

Mean hospitalization time was 10.1 ± 13.1 days. The main causes of admission were PBC therapy – 32.6%, PBC primary diagnostics – 23.3%, liver cirrhosis and treatment failure – 19.3% and in 14.4% – to perform a disability expert-examination.

PBC diagnosis was based on percutaneous liver biopsy (PLB) results in 78.4%, 49.1% – clinical presentation, 47.4% – autoantibody test, 44% – other laboratory tests and in 3.4% – on liver and spleen computer tomography scan results.

Conclusion. 1. PBC is more common among middle-aged females. 2. Clinical manifestation of PBC is mostly associated with pruritus, fatigue, discomfort in the right hypochondrium and jaundice. 3. The levels of ALT, AST, bilirubin, GGT, AP and total cholesterol are elevated in patients with PBC. 4. PLB, clinical and laboratory findings and AMA test are the main diagnostic criteria of PBC in Latvia.

THE DIFFERENCE OF THE IGA NEPHROPATHY CLINICAL MANIFESTATIONS DEPENDING ON PACIENTS GENDER, AGE AND BMI

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Keywords. Nephrology, autoimmune disease, IgA nephropathy.

Introduction. IgA nephropathy (IgAN) is one of most common form of mesangio-proliferative glomerulonephritis, appearing in all ages, but most commonly affects males in their teens up until their late 30's. The number of female patients that develop end stage renal disease is significantly lower, while senior patients who debuted in their 60ies–70ies usually have rapid progression leading fast to the 5th stage of chronic kidney disease (CKD).

Aim. To investigate how clinical manifestations of IgAN differ depending on patients sex, age and BMI.

Materials and methods. Retrospective investigation of 34 clinical cases with IgAN confirmed by core biopsy during the last 3 years. Spearman's rho and Independent sample t test.

Results. The mean age of patients 36.6 ± 11.3 years, 62% of them males, 38% females, 61% of all with BMI > 24. Average BP of male respondents ($149/94 \pm 24/13.8$mmHg) appeared higher than the BP of female respondents ($143/85 \pm 24.5/12.7$mmHg) ($r = 0.13, p > 0.05$). Patients with increased BMI are having higher BP ($154/92 \pm 23.5/13$mmHg) than those with normal ($142/88 \pm 24/12.4$mmHg) ($r = 0.15$, $p = 0.004$). The level of hematuria is higher in younger patients ($r = -0.34$; $p = 0.05$). Anemia was detected in 36% of younger patients but only in 8% of senior patients. CKD stage correlates with respondent age ($r = 0.2$, $p = 0.03$). GFR is low in 38% females and 62% males ($r = 0.17$; $p < 0.001$). A mean amount of proteinuria in men is greater than in women: 3.62 vs 2.44 g/dL ($r = 0.12$; $p < 0.01$) and in younger patients (3.54 vs 2.48 g/dL) ($r = 0.26, p < 0.01$). Correlation between disease duration and CKD stage is positive in younger patients ($r = 0.35; p = 0.01$), but negative in senior patients ($r = -0.25$; $p = 0.04$).

Conclusion. In our study we have detected statistically significant correlation between BMI and AH. In spite of the proven fact that anemia is the result of chronic renal disease, our study revealed that younger patients more often tend to have low level of Hb even if there is a correlation between age and the stage of CKD. There is a significant difference between proteinuria range in men and women (for 48% in men favor). The amount of protein and erythrocytes leaking in the urine is for 42% greater in young patients. Males have significantly lower GFR than female. Older patients tend to have more rapid progression of CKD. There is no statistically significant correlation between BMI, gender and CKD progression speed.

THE EVALUATION OF RADIOIODINE THERAPY OUTCOME AFTER FIVE YEARS IN PATIENT WITH SUBCLINICAL HYPERTHYROIDISM

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Keywords. Radioiodine therapy, subclinical hyperthyroidism, euthyroidism.

Aim. The aim of our study was to evaluate the short-term (5 years) effect of radioiodine therapy (RAIT) on the achievement of euthyroidism, and prevention evolvement to overt hyperthyroidism.

Material and methods. We treated 800 patients, aged 22–68 years; 280 patients with multinodular goitre (MNG), and 520 patients with autonomous nodule (ATN). Malignant changes were excluded in all nodules by fine needle aspiration biopsy. All the patients had serum TSH levels < 0.1 mU/l and effective T-half measured by the use of T24 and T48 was more than 3 days at the time of treatment. The activity dose was calculated by the use of Marinelli's formula and ranged between 200 and 800 MBq. The absorbed dose (Gy) for MNG ranged between 150 and 260, and for ATN: 200–300. Follow up control was done every 6 weeks in the first year. Then every 6 months for 4 years.

Results. In general the success of treatment after 1 year was: 99% of patient with ATN and 92% of patient with MNG achieved euthyroidism. 1% of patient with ATN and 7% of patient with MNG develop hypothyroidism. 1% of the patients had persistent hyperthyroidism and received second dose of radioiodine therapy. After 3 years of RAIT 2% of patient with ATN and 8% of patient with MNG develop hypothyroidism. After 5 years of RAIT 2% of patient with ATN and 9% of patient with MNG develop hypothyroidism. In all the patients the symptoms and signs of subclinical hyperthyroidism disappeared (palpitation, tachycardia, atrial fibrillation, exercise tolerance improved, the blood pressure normalised and the quality of life improved).

Conclusions. The achievement of euthyroidism and the remission of the symptoms and signs of subclinical hyperthyroidism, were due to good diagnosis, well preparation of the patients; accurate measurement of administered activity, effective half-life, and well-organised follow up.

ACTIVITY OF RHEUMATOID ARTHRITIS ASSOCIATION WITH BODY MASS INDEX IN PATIENTS TREATED WITH BIOLOGICAL DISEASE MODIFYING ANTIRHEUMATIC DRUGS

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Keywords. Rheumatoid arthritis (RA), disease modifying antirheumatic drugs (DMARD), body mass index (BMI).

Introduction. RA is a chronic, systemic, inflammatory disease, manifest as symmetrical peripheral joints inflammation, erosions formation, cartilage and bone destruction. These processes leads to joints deformations. RA associates with high global disability, psychological and socioeconomical problems. The effect of obesity as a potential risk factor for RA development and it influence on disease course, functional ability, comorbidities and treatment efficiency widely studied in last years.

Aim. The aim of the study is to find association of increased BMI on RA activity and biological DMARD efficiency.

Materials and methods. In the retrospective study included RA patients receiving biological DMARD. For all patients BMI was calculated and patients categorized into two groups – patients with normal BMI (< 25 kg/m^2) and patients with increased BMI (> 25 kg/m^2). Data about disease duration, tender, swollen joints, C reactive protein (CRP) and patient's global activity on a visual analog scale (0–100 mm) were collected for all patients. Disease activity index DAS28 was calculated before biological DMARD and after three, six months of treatment.

Results. In the study included 20 patients, 17 were females. Mean patients age was 53.2 years. Mean BMI was 27.89 ± 6.05 kg/m^2. Nine patients had a normal BMI (< 25 kg/m^2) and 11 patients – increased BMI (> 25 kg/m^2). The mean disease activity in patients group with normal BMI before biological DMARD was 5.72 ± 0.92 but in patients group with increased BMI – 6.11 ± 0.57. Patients with increased BMI before biological DMARD has higher disease activity scores than patients with normal BMI, but not statistically significant ($p = 0.1$; OR = 2.2; 95% CI = 0.55–8.8). In third treatment month patients with increased BMI had statistically significant more tended ($p = 0.015$; OR = 1.63; 95% CI = 1.02–2.61) and swollen ($p = 0.05$; OR = 1.27; 95% CI = 0.97–1.71) joints and disease activity scores were higher in patients with increased BMI, but not statistically significant ($p = 0.15$; OR = 11.5; 95% CI = 1.04–128.01). In sixth treatment month wasn't statistically significant results of disease activity scores ($p = 0.67$; OR = 1.47; 95% CI = 0.59–3.68), swollen, tended joints and CRP.

Conclusions. The study shows no statistically significant associations between increased BMI and RA activity before biological DMARD treatment, and after three and six month of treatment. Increased BMI is associated with higher disease activity scores. Patients with increased BMI had more tended and swollen joints after three month of treatment than patients who was normal weight.

RELATIONSHIP BETWEEN DISEASE DURATION AND RESPONSE TO BIOLOGIC THERAPEUTICS IN RHEUMATOID ARTHRITIS PATIENTS

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Keywords. Rheumatoid arthritis (RA), disease modifying antirheumatic drugs (DMARD), disease duration, disease activity.

Introduction. RA is most common inflammatory arthritis and typically presents as symmetrical, peripheral polyarthritis with gradual onset. Progress of inflammations leads to erosion and destruction of cartilage and bone, causing joints deformations. Joints lesion results in physical impairment with subsequent disability within 10–20 years for patients who do not response to treatment. It is very important for early diagnosis and treatment of RA patients. Treatment is directed to control inflammation and prevent joints injury.

Aim. The aim of the study is to find effect of RA duration on biological DMARD response.

Materials and methods. In the retrospective study included RA patients receiving biological DMARD. For all patients was collected data about disease duration (years), tender, swollen joints, C reactive protein (CRP) and patients global disease activity on a visual analog scale (0–100 mm) before biological DMARD and after three, six months of treatment. Disease activity index DAS28 was calculated for all patients. Obtained data were analyzed using *MC Excel* and SPSS 21.0 program.

Results. In the study included 27 patients, 24 were females. Mean patients age was 53.4 years and disease duration – 11.9 ± 8.1 years. The minimal disease duration was three years, but maximal – 27 years. Before biological DMARD was not founded statistically significant relationship between disease duration and tended ($p = 0.135$), swollen ($p = 0.123$) joints count. But statistically significant association between disease duration and increased swollen joints count in third ($p = 0.035$) and sixth ($p = 0.007$) treatment months. Long disease duration is associated with increased tended joints count in third ($p = 0.01$) and sixth ($p = 0.0003$) treatment months. Disease activity scores not statistically significant associated with disease duration ($p = 0.1$) before biological treatment. But higher disease activity scores were associated with longer disease duration in third ($p = 0.001$) and sixth ($p = 0.0002$) treatment months. In study was not founded relationship between CRP and disease duration.

Conclusions. The study shows no relationships between disease duration and disease activity scores, swollen, tended joints count and CRP before biological DMARD treatment. But long disease duration was associated with higher disease activity scores, increased tended and swollen joints count in third and sixth treatment months. Results shown that biological DMARD not so effective in RA patients with long lasting disease. Assessing the indications, RA patients as early as possible have to be treated with biological DMARD.

HIV POSITIVE PATIENTS' HEMATOLOGIC MASKS

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Keywords. HIV positive patients, hematological disorders, anemia, thrombocytopenia, neutropenia.

Introduction. According to data from Latvian Centre for Disease Prevention and Control, the number of patients diagnosed with the human immunodeficiency virus (HIV) for the first time is continuously growing. Initially HIV can be observed as unclear hematological changes. Such research has not been done in Latvia.

Aim. To find out the changes in blood analyses of patients diagnosed with HIV and have no antiviral treatment.

Materials and methods. Retrospective, descriptive cross-referential research; the research method – quantitative research method, i. e., questionnaires. Research comprises patients from Riga East University Hospital Clinical Centre "Linezers",the Chemotherapy and Hematology Clinic and the Latvian Centre of Infectious Diseases. The research group comprises HIV positive patients aged 18 and older, whose blood analyses showed changes during the period from January 1, 2014, until December 31, 2015,but the antiviral therapy has not yet been started. Research focused on: – patients who were consulted by hematologist in connection with changes in blood analyses and also diagnosed with HIV for the first time; – patients who have been diagnosed with HIV, but have not received antiviral therapy, have visited an infectious disease specialist only during the research time, discovering changes in blood analyses then. Antiviral therapy affects blood analyses, it was eliminated in this research – changes in blood analyses must be correlated with HIV. The valid data were processed, using MS Excel and SPSS 21.0.

Results. Research comprises 76 patients aged 18–72, 38.2 % of them are women, 61.8% – men. The average age is 38.5 ± 13.8 years. Thrombocytopenia has been observed in 46 cases (60.5%), mild thrombocytopenia – in 15 cases (32.6%), moderate thrombocytopenia – in 13 cases (28.3%). Furthermore anemia is observed in 45 cases (59.2%). The most frequent degree of the anemia is mild, observed in 29 cases (64.4%). According to the laboratory classification the most frequent type of anemia is normochromic normocytic anemia – 30 cases (66.7%). Neutropenia – in 19 cases (25 %),out of those mild neutropenia has been observed in 16 cases (84.2%). A statistically significant positive correlation has been found between CD4 cell count and the amount of erythrocytes ($p = 0.036$), CD4 cell count and the amount of hemoglobin ($p = 0.003$), CD4 cell count and the amount of leucocytes ($p = 0.008$), CD4 cell count and the amount of lymphocytes ($p < 0.001$).

Conclusions. The most frequent change in blood analyses for HIV positive patients, who have not received antiviral therapy is thrombocytopenia – 60.5%, the second most frequent change is anemia – 59.2%, third – neutropenia in 25%.

EVALUATION OF RESIDUAL HEMOPOESIS IN PEDIATRIC ACUTE LYMPHOID LEUKEMIA BY MULTICOLOR FLOW CYTOMETRY

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Keywords. Acute lymphoid leukemia, flow cytometry.

Introduction. Acute lymphoid leukemia (ALL) is the most common pediatric malignancy caused by proliferation of lymphoid progenitors that replace normal marrow hemopoesis. Flow cytometry is the preferred method for phenotyping and then monitoring blast population, being rapid and highly sensitive. But there are very few published studies of cytometrically defined benign cells in bone marrow (BM) and blood of pediatric patients, although the condition of residual hemopoesis is important for its later restitution.

Aim. The aim was to evaluate normal hemopoesis in bone marrow and blood of pediatric ALL (0–17 years old) patients at diagnosis.

Materials and methods. 68 consecutive cases diagnosed in 2011–2015 were available from the Children's Clinical University Hospital database (cell count in BM and blood, primary cases or relapses). Only BM was tested in 10 cases, only blood in 12 cases, both BM and blood tests were available in 46 cases. Total myeloid cells, normal lymphocytes, neutrophils (NEU), B cells, T/NK cells and blast cells (BC) were analyzed; the populations were calculated from non-erythroid cells. Flow cytometry was performed by BD FacsCanto II with 3-laser 8-flourochrome (2+4+2) configuration, using 8-color Euroflow protocol [van Dongen et al, 2012], including orientation ALOT tube followed by 4-tube T or B protocol; 100 000 cells per tube were collected. The files were manually re-evaluated for the study by Infinicyt software. Statistics were calculated by MS Excel and IBM SPSS v.21.

Results. There were 57 primary cases and 11 relapses; B-cell ALL was diagnosed in 60 patients, T-cell ALL in 8. BM median myeloid cell count was 3.3E9/L, normal lymphocytes – 3.9E9/L, NEU 2.6E9/L, B-cells 0.7E9/L, T/NK-cells 3.0E9/L. Blood median total myeloid cell count was 1.7E9/L, normal lymphocytes 4.4E9/L, NEU 1.4E9/L, B-cells 0.7E9/L; T/NK-cells 3.4E9/L. Absolute counts of all reactive populations significantly positively correlated with blast count and total leukocyte count in BM and in blood (except NEU in blood). There was significant correlation between all populations' counts in BM and blood. Total myeloid cell and neutrophil counts both in BM and blood were significantly higher in T-cell ALL in comparison to B-cell ALL ($p = 0.01$ in all tests). Primary cases and relapses significantly differed by the counts of BM total myeloid cells ($p = 0.016$), NEU ($p = 0.018$), B-cells ($p = 0.007$) and by blood B-cells ($p = 0.007$), T-cells ($p = 0.007$), normal lymphocytes ($p = 0.004$).

Conclusions. Median absolute counts of normal leukocyte populations in BM and blood of patients with pediatric ALL at presentation were normal or even increased, in spite of marked relative reduction of residual hemopoesis. The finding may explain fast rebound of hemopoesis after highly intensive chemotherapy of pediatric ALL. The dispersion of values was very high, a larger cohort and deeper analysis is necessary to understand the phenomenon of well-preserved normal hemopoesis in ALL.

16 March 2016

THE DIAGNOSIS OF THROMBOCYTOPENIA – TO WRITE OR NOT TO WRITE

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Keywords. Thrombocytopenia, diagnosis.

Introduction. Thrombocytopenia is defined as a platelet count below the lower limit of the normal range ($150x10^9/L$) [Hoffman et al., 2013]. Thrombocytopenia is the most common coagulation disorder in the intensive care unit (ICU) [Vincent et al, 2011].

Aim. To determine the prevalence of written diagnosis of thrombocytopenia among in-patients.

Materials and methods. The retrospective cohort study was conducted in single university hospital during the period of last 4 years – 2012–2015. The study population included consecutive patients with written diagnosis of laboratory confirmed thrombocytopenia. All data were analyzed by SPSS 20.0.

Results. Thrombocytopenia was written as separate diagnosis in 89 different patients: year 2012 – 29.2% [95% confidence interval (CI) = 20.2–38.2], 2013 – 22.5% [13.5–31.5], 2014 – 16.9% [10.1–24.7], 2015 – 31.5% [22.5–41.6] which showed statistically similar proportions between years ($p = 0.194$).

Among the patients 47.2% [37.1–57.3] were males and 52.8% [42.7–62.9] were females, it showed no statistical difference between gender ($p = 0.672$). The mean patient age was 62.2 ± 17.8 [58.5–66.1] years, and patient age ranged from 15 to 95 years.

The value of thrombocytopenia varied among the patients from minimum of $1x10^9/l$ till maximum of $138x10^9/l$, but in 75% of diagnosis thrombocytopenia the value of platelets was under $78.5x10^9/l$.

The possible causes for thrombocytopenia were mentioned: unspecified thrombocytopenia – 58.4% [48.3–68.5], underlying liver disease – 30.3% [20.3–40.4], idiopathic thrombocytopenic purpura – 11.2% [4.7–17.8]. The diagnosis of cancer was mentioned in 10 patients – 11.2% [5.6–18.0]. Obvious bleeding was found in 18% [10.1–25.8], hematomas of the skin was in 11.2% [5.6–18].

Concomitant anaemia was observed in 68.5% [58.4–77.5], concomitant leukocytopenia – 14.9% [8.0–23] of patients. Positive D-dimers were found in 23.6% [14.8–32.4] of patients.

Written diagnosis of thrombocytopenia was found in 75.3% [66.3–84.3] of the non-surgical department patients and in 24.7% [15.7–33.7] of surgery profile department patients, and it is not in statistically similar proportions between departments ($p < 0.001$). In ICU were admitted 11.2% [4.7–17.8] of the patients.

Conclusions. The written diagnosis of thrombocytopenia does not show the real number of patients with thrombocytopenia. The written diagnosis of thrombocytopenia is more common in non-surgical departments in comparison to surgery profile departments. Due to importance of thrombocytopenia it seems warranted that this symptom should be more often represented in diagnosis. Our study tends to show that it is neglected.

THROMBOTIC RISK FACTORS FOR PATIENTS
WITH POLYCYTHEMIA VERA

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Keywords. Polycythemia Vera, risk factors, thrombosis.

Introduction. Polycythemia Vera (PV) is myeloproliferative neoplasm characterized by erythrocytosis. Other disease features include leukocytosis, splenomegaly, thrombosis, bleeding, microcirculatory symptoms, pruritus, and risk of leukemic or fibrotic transformation. The major causes of morbidity and mortality in PV are an increased incidence of vascular complications (i. e., thrombosis and / or hemorrhage). Major risk factors for thrombosis in PV are age of the patient (> 60 years) and previous thrombotic events. Recent data consider cardiovascular risk factors as additional risk factors. Cardiovascular risk factors are smoking, hypertension (> 140/90mm/Hg or antihypertensive therapy), hypercholesterolemia (total cholesterol > 240mg/dL or antihyperlipidemic therapy), diabetes mellitus and obesity (BMI≥30kg/m^2). The main goal of therapy in PV is to prevent thrombohemorrhagic complications. In low risk patients, this is accomplished by the use of low-dose aspirin and phlebotomy. In high risk (for thrombosis) patients, treatment with hydroxyurea is additionally recommended.

Aim. Identify and analyze the risk factors for thrombosis for PV patients.

Materials and methods. Retrospective study at Riga East Clinical University Hospital "Linezers" archive, analyzing medical records of patients with PV at period of 01.01.2013.–30.06.2015. From the medical records has been obtained information about age, gender, thrombotic event history, weight, height, waist circumference, blood pressure, total cholesterol level, diabetes mellitus and smoking history. Data processed by Microsoft Office Excel 2010 and SPSS 20.0.

Results. The study includes 145 patients (80 (55.2%) female, 65 (44.8%) male) from age 24 to 91 years old patient. 87 (60.0%) were older than 60 years. 23 (15.9%) had previous thrombotic event history. 17 (11.7%) patients had both major risk factors for thrombosis, one of them – 79 (54.5%) patients.

32 (22.1%) were obese, 11 (7.6%) – smokers, 66 (45.5%) had hypertension, 11 (7.6%) – diabetes mellitus. 43.4% patients had 1 cardiovascular risk factor, 17.9% – 2 risk factors, 1.4% – 3 risk factors.

There was no statistically significant difference (p > 0.05) between the prevalence of cardiovascular risk factor and major thrombotic risk factor existence.

Conclusions. Most of patients had at least one major risk factor, mostly age over 60 years. Cardiovascular risk factors were widespread; the most common were hypertension and obesity. Most patients had 1–2 cardiovascular risk factors. There was no statistically significant difference between the prevalence of cardiovascular risk factors and the major thrombotic risk factor existence.

III. Surgery, Oncology

16 March 2016

SOLID CANCERS DURING PREGNANCY IN LATVIA

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Keywords. Cancer, pregnancy, treatment, outcome.

Introduction. Pregnancy-associated cancer is defined as a malignancy detected during pregnancy or within 2 years of delivery. The estimated incidence of cancer diagnosed in pregnant women in developed countries is 1:1000 pregnancies and is predicted to rise as childbearing age shifts towards later reproductive age. The most common cancers associated with pregnancy are cervical and breast cancer, melanoma, lymphomas and acute leukemia. Optimal treatment involves balancing the benefit of treatment for the mother and minimizing harm to the fetus. Both surgery and chemotherapy are generally safe during pregnancy, whereas radiation therapy is contraindicated. Iatrogenic prematurity is the most common pregnancy complication. In general, however, survival does not differ from the nonpregnant population.

Aim. To clarify the situation with pregnancy–associated cancer in Latvia – common types, treatment options and effects on pregnancy.

Materials and methods. A retrospective study of pregnant cancer patients treated at "Oncology Centre of Latvia" over a seven years period from 2009 to 2015.

Results. The total number of pregnant women with cancer is 8. The common types were breast cancer (3), cervical cancer in situ (3), invasive cervical cancer (1) and kidney cancer (1). Patients' age varied between 27 and 42 years (median = 34.4). The average gestational age, when cancer was diagnosed, was 15.6 gestational weeks. All cases were diagnosed during the I or II trimester (I trimester – 2, II trimester – 6). All women have had delivery before. In 6 cases suspicion of malignancy was found out during antenatal care checkup, in 2 cases women had previous history of premalignant condition. The treatment of cancer in all cases included surgery (radical hysterectomy, electro-conization, breast sector resection, breast quadrantectomy, axillary lymphadenectomy, nephro-adrenalectomy), for breast cancer – chemotherapy (in 1 case – started before delivery, in 2 cases – started after delivery) and radiation therapy (started after delivery). Pregnancy was terminated in 2 cases – when diagnosis was invasive cervical cancer and cervical cancer in situ. For 3 women preterm childbirth was recommended due to start chemotherapy and radiation therapy as soon as possible.

Conclusions. Cancer in pregnancy poses significant challenges to both the clinician and the mother. All women after the age of 30 before pregnancy counting should be checked at least for breast and cervical health.

LUNG SQUAMOUS CELL CARCINOMA
AND IMMUNOHISTOCHEMISTRY

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Keywords. Lung squamous cell carcinoma, differentiation, grading, immunohisto-chemistry, IHC.

Introduction. Lung squamous cell carcinoma is a malignant tumor with high incidence. It has variable histological architecture indcluding keratinization, intacellular bridges, necrosis and also broad spectrum in various proportion of cell pattern. It can cause diagnostic difficulties, because squamous cell carcinoma can imitate adenocarcinoma, small cell carcinoma, large cell carcinoma, which have different treatment tactic.

Aim. The goal of the research is to determine IHC profile which is the most specific for lung squamous cell carcinoma.

Materials and methods. To research this matter was used method of microscopic examination of surgical materials with lung squamous cell carcinoma. Reaction with IHC markers we asseded as positive or negative and intensity we evaluated in 3 degrees. Staging and grading of the carcinoma was identified according to American Joint Committee on Cancer (AJCC) classification. The results were summarized using decriptive statistics.

Results. In the framework of the investigation there were researched 11 surgical materials with lung squamous cell carcinoma stained with 5 IHC markers: TTF-1, CK-7, CK 5/6, P63 and CKHMW. 2 of 11 examples had grade 1, 3 of 11 had grade 2 and 6 of 11 had grade 3. TTF-1 did not have reactions with squamous cell carcinoma. P63 had reaction with all examples without reference to grading. CK-7 reacted with 5 examples: 2 of them had G2, 3 of them had G3. CK 5/6 reacted with 7 examples, G1 had especially intense reaction. CKHMW reacted with 9 examples, 2 carcinomas with G3 did not have reaction. 5 examples had keratinization, 2 of them were G1, another 2 – G2 and 1 of them – G3. 3 examples had intercellular bridges, 2 of them were G1 and another 1 – G2. 5 examples had necrosis, 2 of them were G2 and another 3 – G3.

Conclusion. In poorly differentiated squamous cell carcinoma (G3) keratinization and intercellular bridges are rarely seen or not evident at all. The most specific marker is p63, expressing in each squamous carcinoma despite the architecture and grading, while other markers do not allow to classify cancer properly. We observed CK7 positivity in some squamous cell carcinomas wich is characteristic for lung adenokarcinoma.

INFLUENCING FACTORS OF BREAKTHROUGH PAIN FOR ONCOLOGY PATIENTS

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Keywords. Breakthrough pain, cancer pain, oncology.

Introduction. Breakthrough pain was defined as a transitory increase in pain to greater intensity in person who has relatively stable and adequately controlled baseline pain. This pain can be evoked spontaneous or be predictable. Location, severity, temporal characteristics, predictability, pathophysiology, aetiology and palliative factors can characterize breakthrough pain. Precipitating factors like cough, sneezing, movements, medical care, insomnia, meteorism and others could induce pain.

Aim. The aim of the study is to assess correlation between precipitating / influencing factors and pain intensity / frequency.

Materials and methods. All patients with breakthrough pain are being investigated in the "Latvian centre of Oncology" of Riga Eastern Clinical University Hospital. In the study prospectively were analyzed medical records and surveys of all patients (n = 17) from palliative care unit with breakthrough pain who had been hospitalized during time period from October to December 2015. Statistical data processing was carried out using SPSS software. The statistical significant correlation is with $p < 0.05$ values.

Results. 7 (41%) patients received baseline pain treatment with weak opioids and 10 (59%) – strong opioids. There was not found significant correlation ($p = 0.33$) between opioids strength and pain intensity / frequency. Patients who received weak opioids had averagely 5 pain episodes a day, but those who received strong opioids had 2–4 pain episodes. Breakthrough pain intensity was similar in both groups from 8 to 10 points.

52% of patients had somatic pain, 24% – neuropathic pain and 24% – mixed pain pathogenesis. Patients with neuropathic pain had greater pain intensity than patients with somatic pain.

There was not found significant correlation ($p = 0.06$) between reactive protein C (CRP) and pain frequency. 12 patients had elevated CRP and their pain frequency was not the same between each other. Those who have elevated CRP had more precipitating factors then patients with normal CRP. Most patients in group with normal CRP haven't any precipitating factors, there pain was spontaneous.

9 (53%) patients who had elevated leukocytes have the highest points of pain intensity (from 9 to 10 points). 1 patient (5%) who had decreased leukocytes has the smallest point of pain intensity (5 points).

Conclusion. We can conclude that the study needs more patients to get significant correlation between breakthrough pain and influencing factors. The research continues and patient number will grow.

VASCULAR DENSITY IN COLORECTAL CANCER

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Keywords. Tumor angiogenesis, colorectal adenocarcinoma.

Introduction. Researchers suggest significant correlations between tumor angiogenesis and cancer progression [*Tanigawa et al.,* 1997]. Some authors claim that a tumor is dependent on neovascularization when it surpasses a size larger than 1–2 mm^3 [*Sun et al.,* 2006]. In contrast, an inverse correlation between patient age and tumor inflammatory infiltration has been shown [*Sun et al.,* 2006]. More knowledge about tumor angiogenesis is essential for understanding the pathogenesis of tumorgenesis, thus could be targets for treatment.

Aim. The aim was to find significant relationships between tumor angiogenesis and patient age, tumor size and TNM classification.

Materials and methods. In a retrospective study twenty colorectal cancer patients were identified by archive search and histological grading on H&E stained slides was performed. For highlighting the vessels the IHC-staining of marker CD34 was used. To determine the microvessel density of the tumor (MVD), areas with highest density of staining were selected. The counting of the vessels was executed in highest magnification in each of five most vascular areas of the tumor and the average of those counts was recorded. Descriptive statistical analysis was performed including calculation of 95% confidence interval (CI), using CIA software (Altman et al., 2000). Spearman's rank correlation coefficient (SRCC) was used to determine the strength of the relationships between tumor angiogenesis and patient age, tumor size and TNM classification. P value < 0.05 was considered statistically significant.

Results. The study included 20 patients, with a mean age of 69 years 95% CI [59.6, 78.9]. The correlation between MVD and patient age (SRCC, [r] = −0.363, P < 0.05) showed a statistical significant inverse relationship. Mean MVD was 15 MV/0.2025 mm^2 95% CI [12.5, 17.5]. A positive correlation was found between MVD and lymph node infiltration (SRCC, [r] = 0.234, P < 0.05). However, no significant correlation between MVD and tumor size (SRCC, [r] = −0.095, P > 0.05) could be found. Ellipse formula was used to approximate tumor sizes, with a mean tumor volume of 104 cm^3 95% CI [53.3, 155.5]. No significant correlations could be shown between both MVD and T (SRCC, [r] = 0.294, P > 0.05) and between MVD and M (SRCC, [r] = 0.432, P > 0.05).

Conclusion. The study suggests an inverse correlation between MVD and the patient's age. A slight correlation was found between lymph node metastasis and MVD of the tumor, thus a possible cause of high lymphatic metastatic expansion might be due to increased lymphangiogenesis. No correlations between MVD and tumor size, T and M were noticed. This study considered angiogenesis as an essential cause of tumorgenesis, thus could be targets for treatment of colorectal adenocarcinoma.

THE CYTOTOXIC EFFECTS OF ESTROGEN TARGETED NANO-SILVER MOLECULES ON PLATINUM RESISTANT OVARIAN CANCER CELLS LINE (OVCAR-3)

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Keywords. Platinum resistant ovarian cancer, Nano silver molecules, cytotoxicity, AFM, SEM.

Introduction. Resistance to chemotherapy commonly compromises the treatment of many advanced cancers. Although platinum derivate cancer drugs are able to provide strong cytotoxicity and high survival rates, resistance to the platinum derivate create a big need for alternative approaches for successful treatment.

Aim. The main purpose of the present study is to investigate anticancer effects of estrogen-AgNP complex on platinum resistant ovarian cancer.

Materials and methods. OVCAR-3 platinum resistant cell line purchased from American Type Cell Collection (ATCC) was used to test our hypothesis. Fibroblast cell line (L929 cells) was used as the normal control (ATCC; Manassas, VA). OVCAR-3 cells were grown in RPMI – 1640 medium. L929 cells were grown in cell culture medium (DMEM). All cell cultures were supplemented with 1% (w/v) penicillin / streptomycin, 10% (v/v) fetal bovine serum (FBS). Cells were grown at 37°C in a 5% CO_2 humidified atmosphere. Silver nanoparticles are synthesized by using $AgNO_3$ in a chemical reaction and estrogen molecules are covered with silver nanoparticles (AgNP). In order to verify estrogen and silver nanoparticle bounding, the surface morphology of the estrogen molecules was observed by a scanning electron microscope (FEI Quanta FEG 250 SEM) operating at the accelerating voltage of 5–12 kV. Molecule size is verified by Atomic Force Microscope (AFM) (Park System XE-100E). XTT test has been used to evaluate viability of cells in cytotoxicity experiments.

Results. NMR spectroscopy analyses showed successful synthesis of silver nanoparticles. From the SEM images it can be seen clearly that silver nanoparticles were homogeneously distributed on estrogen molecules. Also AFM analyses showed that estrogen and AgNPs created a round shape complexes with 20–174 nm in diameter. While estrogen alone did not cause any effect on proliferation of ovarian cancer cells, estrogen-AgNP complex caused concentration dependent strong cytotoxic effect (IC_{50} value 36 μM). It has been observed that estrogen-AgNP complex caused statistically significantly low cytotoxic effect on (IC_{50} value 74 μM) healthy L929 fibroblast cells (p = 0.013) which may indicate the specificity of the treatment for estrogen receptor positive cells. Furthermore in repeated administrations, estrogen increased the cell proliferation of ovarian cancer cell line. But the cytotoxic effect of the estrogen-AgNP complex was time dependent and reached the highest level at 72 hours.

Conclusion. The present study suggests that we accomplished to synthesized silver nanoparticles on estrogen molecules and estrogen-AgNP complex can target estrogen receptors, which have high expression levels in ovarian cancer cells. Estrogen-AgNP complex managed to create a strong cytotoxic effect selectively for platinum resistant ovarian cancer cells comparing to the healthy fibroblast cells. Estrogen-AgNP complex seems to be an alternative in treatment of platinum resistant advance ovarian cancer.

16 March 2016

COMPARATIVE WORTH OF BONE MARROW HISTOLOGY AND CYTOLOGY IN PEDIATRIC PRACTICE

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Keywords. Bone marrow, cytology, histology, children.

Introduction. Histology (trephine biopsies) and cytology (needle aspirates) are the main tools for diagnosing tumors in bone marrow (BM). Cytology is fast and is easily combined with automatic cell counting, flow cytometry (FC) and genetics; while histology, particularly in combination with immunohistochemistry (IHC) provides information on BM structure and is considered less prone to sampling artefacts.

Aims, materials and methods. The aim of the study was to compare BM histology and cytology for diagnostic worth and time to report in pediatric patients. 284 consecutive BM analyses performed in 2013–2015 with histological and cytological samples taken simultaneously were analyzed. Clinical, histological and cytological diagnosis, results of IHC and FC and time to report were obtained from the Hospital records. MS Excel and IBM SPSS v21 were used for statistical analysis, Mann-Whitney U test was applied for differences.

Results. Diagnosis in 106 cases was acute leukemia at presentation and during treatment, in 79 – solid tumors with BM involvement; in 99 – benign conditions. Histological and cytological diagnosis differed in 36 cases (12.7%); histology was more informative in in 24 and cytology in 12 (p = 0.045). The discrepancy in 18 cases was due to one of the samples being uninformative (6.3% of all cases). Histology was not informative in 8 instances and cytology in 10; in no instance both were uninformative. Cytological and histological diagnoses differed in another 18 cases (6.3%). In 4 cases of acute leukemia IHC failed to detect residual blast population (7% from 57 blast-positive BM), thus proving histology with IHC significantly less sensitive than FC (p < 0.001). In 14 out of 19 (73.7%) cases of histologically proven BM infiltration by solid tumors, cytology with or without FC did not detect malignant cells. Median time to histological report was 9 days and to cytological report 0.5 days (p = 0.002). IHC was performed in 263 cases (92.6%) and significantly prolonged analysis time (from median 3 to 9 days, p < 0.001). FC was carried out in 120 cases (65.2%); time to report remained the same.

Conclusions. The study revealed diagnostic concordance between BM cytology and histology in the studied group (93.2% of informative samples), with the marked exception of solid tumors. Frequency of uninformative samples was the same in both **methods.** Cytology turned out to be non-applicable for detecting solid tumors in BM, even with FC. Sensitivity of cytology with FC was superior to histology with IHC in acute leukemia group. The result is not surprising, considering that multiparametric FC is the reference method for detecting small blast populations; still, there was 93% agreement. The analysis demonstrated that cytological testing was significantly faster in the study setting, particularly if IHC was used. Considering the importance of correct morphological diagnosis in hematooncology, paired use of BM cytology and histology seems to be appropriate.

E-CADHERIN, P53, CYCLIN D1 EXPRESSIONS IN GASTRIC CANCER AND PRECANCEROUS CONDITIONS

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Keywords. Normal mucosa, precancerous conditions, gastric cancer, immunohisto-chemistry.

Introduction. The number of new cases of gastric cancer was 6.7–77.9 per 100000 men and women per year depending on the region [*Hamilton et al.,* 2000]. In Latvia – 23.0/100000 in females and 32.8/100000 in males [*Latvijas vēža slimnieku reģistrs*, 2008].

Infection with H. pylori appears to play an important additional aetiological role – it leads to chronic atrophic gastritis with intestinal metaplasia. The dysplasia lies between atrophic metaplastic lesions and invasive cancer. It might be detected by immunohistochemistry but, unfortunately, there are still no specific or effective biomarkers. It is known that E-cadherin expression is smaller in hereditary gastric cancer [*Hamilton et al.,* 2000].

Aim. To determine the expression of biomarkers in normal mucosa, precancerous conditions and gastric cancer.

Materials and methods. 14 cases of gastric cancer were gathered by obtaining samples from surgery material, from which the histology slides were made and stained with haematoxylin and eosine (H&E stain). Each case has around 36 slides (H&E stain), total: 500 slides, including normal tissues, resection lines and tumour, from which 23 slides were selected (1–2 slides of each case) that were later stained with biomarkers (69 slides were stained).

Slides stained with H&E were examined and normal mucosa, precancerous conditions and cancer were discovered. Slides stained with p53 and Cyclin D1 were analysed for the amount of expression of biomarkers in percentages (%). Slides stained with E-cadherin were analysed for the amount of expression of biomarker using a scoring system similar to HER-2 biomarker, where: score 0 – no staining is observed; 1 – a faint perceptible membrane staining; 2 – a weak to moderate complete membrane staining; 3 – a strong complete membrane staining [*http://www.nordiqc.org/*].

The obtained data was analysed in Microsoft Excel and http://graphpad.com/ using the descriptive statistical method.

Results. 8% (95% CI = 0.1–35) of normal mucosa had no expression of E-cadherin, 15% (95% CI = 3–43) had the score 1, 23% (95% CI = 7–51) – score 2, 54% (95% CI = 29–77) – score 3. 7% (95% CI = 0.1–33) of precancerous conditions had no expression and 93% (95% CI = 66–99) – score 3. 7% (95% CI = 0.1–33) of gastric cancers had no expression, 7% (95% CI = 0.1–33) – score 1, 86% (95% CI = 59–97) – score 3.

The average amount of expression of p53 in normal mucosa is 4.92%, in precancerous conditions – 18.86%, in cancers – 55.00%. Whereas Cyclin D1 in normal mucosa is 4.38%, in precancerous conditions – 43.71%, in cancers – 50.64%.

Conclusions

1. Almost all cases show the relationship between gastric cancer and gastritis with dysplasia and metaplasia.
2. A big difference of p53 expression between normal mucosa and cancer was discovered, and a smaller one – between cancer and precancerous conditions, but no essential difference between E-cadherin expressions.
3. The expression of Cyclin D1 was very variable, but in almost all cases of normal mucosa it was very small.
4. In practical work we can use p53 to differentiate dysplasia from cancer.

IMMUNOBIOLOGICAL MARKERS IN MELANOMA PATIENTS DURING VIROTHERAPY

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Keywords. Melanoma, virotherapy, immunocompetent cell.

Introduction. Skin cancer is one of the most common types of malignant tumors. According to the data of the Centre for Disease Prevention and Control a total of 203 new cases of melanoma have been diagnosed in 2013. Melanoma is the most common cause of death in patients with skin cancer because of the high risk of developing metastases. After radical melanoma excision ECHO7 virus therapy should be considered because of its cytopathic and immunomodulatory activity. Analysis of immunobiological parameters during virotherapy might provide information to identify potential prognostic and predictive factors for targeted selection of candidates for virotherapy.

Aim. To evaluate the changes in immunbiological markers during one year of virotherapy and recurrence or metastases in patients undergone radical melanoma excision who had received treatment with ECHO-7 virus *Rigvir*.

Materials and methods. 70 patients with skin melanoma stage IB and II who had undergone radical melanoma excision at the REUH Oncology Centre of Latvia in 2012 were analyzed. Out of 70 patients, 40 were treated with oncolytic ECHO-7 virus, while 30 patients who did not receive the therapy were used as a control group. Data on the following indicators were collected: leukocytes, neutrophils, monocytes, lymphocytes (Ly) and CD3+, CD3+4+, CD3+8+, CD16+56+, CD19+ cell. Markers of Ly activation CD38+ and CD95+ were evaluated and CD4/CD8 ratio was calculated. Test results were collected before starting the therapy and in 1, 3, 6, 9 and 12 months during the therapy. Statistical analysis of the data was carried out using the SPSS (V.20).

Results. Study included patients aged 27–86 with the average age of 57.7 years. The incidence rate of metastases or disease recurrence in patients who received *Rigvir* was 21.4%, while in control group – 30.1% during the three years of follow-up. After 1 month of *Rigvir* therapy increase of CD16+ and CD19+ cells was observed most often (46.2% of cases) and Ly that express activation markers CD38+ and CD95+ – in 61.5% of cases. After 3-month treatment 52.9% of patients experienced increased CD19+ and CD38+ cell count in peripheral blood. 6 months after initiation of treatment CD4+Ly count was increased in 66.7% of cases, CD8+Ly – 73.3%,

CD19+Ly – 68.8%, and CD19+Ly – 75%. Cell count that expresses activation markers CD38+ and CD95+ had increased in 75% and 68.8% of patients respectively. After 9 months of treatment CD16+ and CD19+ cell count had increased in 47.7% and 58.8% of cases, but after the first year of treatment CD8+ and CD19+ cell count had increased in 58.3% of all cases. Statistically significant and strong correlations between innate immune system cells were observed in the 6th, 9th and 12th month (Neu/Mo ratio p_6 = 0.028, p_9 = 0.018, p_{12} = 0.029 by Kendall correlation).

Conclusions. In majority of patients who received *Rigvir* therapy an increase in number and activity of T Ly subpopulations, B Ly and NK was seen 6 months after initiation of treatment, indicating an intense activation of cellular immunity in both inductor and effector phases. Changes in absolute number of effector T Ly CD3+8+ and CD16+56+ during virotherapy could serve as additional predictive and prognostic indicators in melanoma patients treated with ECHO-7 virus. Risk of recurrence or metastases was considerably lower for patients that were treated with ECHO 7 virus *Rigvir* comparing to patients in the control group.

THE ANALYSIS OF SURGICALLY TREATED THYROID

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Keywords. Thyroid, nodular goiter, follicular adenoma, follicular carcinoma.

Introduction. Many pathologies of the thyroid gland are characterized by a follicular pattern, e.g., hyperplastic or adenomatoid nodules, follicular adenoma and carcinoma, follicular variants of papillary carcinoma. The diagnosis is usually straight forward, but sometimes thyroid hyperplasia and adenoma are similar histologically. Certain criteria may be used to differentiate between the two: the size of the nodule, number of nodules in the thyroid, presence of the capsule (Baloch et LiVolsi, 2007; Rosai et al., 2011).

Aim. The aim was to show common types of lesions of surgically treated thyroids and describe follicular adenomas with other thyroid lesions characterized by follicular pattern.

Materials and methods. The study was a retrospective evaluation of 1301 consecutive, surgically treated thyroid glands. Cases were collected in the archive from 2012 till 2014. The cases were characterized by patient's age, gender, type of lesion, affected lobe, its weight and structure, tumour size. Descriptive statistics was performed by SPSS software involving 95% confidence interval (CI) analysis.

Results. Identified lesions: thyroid hyperplasia 79.8% [95% CI = 77.6–81.9], nodular goiter (NG) 78.2% [75.9–80.2] of all cases, follicular adenoma (FA) 18.9% [16.8–21.1], thyroid carcinoma 29.1% [26.6–31.7], follicular carcinoma (FC) 6.9% [5.6–8.4] of all cases.

Among cases of NG *vs* cases without NG, the FA were in 18.8% [16.6–21.2] *vs* 19.4% [14.4–24.3] of cases; FC were in 4.7% [3.4–6.0] *vs* 15.2% [11.0–19.1] of cases.

Among cases of NG, FA, FC the gender distribution (female *vs* male) was: 87.4% [85.3–89.3] *vs* 12.6% [10.7–14.7], 86.1% [81.7–90.3] *vs* 13.9% [9.7–18.3], 90.2% [78.6–96.2] *vs* 9.8% [3.8–21.4] of cases and mean patients' age: 57.9 [57.1–58.8], 57.8 [55.9–59.4], 57.2 [53.2–60.4] years.

Among all cases of FA *vs* cases of FA without NG the structure of affected lobe were: homogenous 1.8% [0.4–3.5] *vs* 2.2% [0.0–7.4], uninodular 31.6% [25.4–38.3] *vs* 58.7% [45.1–71.8], multinodular 66.7% [60.2–72.7] *vs* 39.1% [27.6–54.9].

The location of FA: right lobe 46.6% [40.2–53.6], left lobe 43.6% [36.8–50.4], both lobes 7.3% [4.7–10.8], isthmus 0.9% [0.0–2.1].

Conclusions

1. The most common diagnosis in case of thyroidectomy was thyroid hyperplasia and most of them – nodular goiter.
2. Follicular adenomas were more frequent than follicular carcinomas.
3. The amount of follicular adenomas is without statistically significant difference among cases of NG or non-NG cases, while follicular carcinomas were uncommonly associated with NG.
4. Females were statistically significantly more often affected by all follicular type lesions (NG, FA, FC) than men.
5. Mean age of each patient group (NG, FA, FC) was without statistically significant difference.

ARCHITECURE OF CHROMOSOME 17 IN HER2 POSITIVE BREAST CANCER

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Keywords. Breast cancer, HER2 positive, chromosome 17.

Introduction. The majority of breast cancers are sporadic cancers that result from the accumulation of acquired and uncorrected genetic alterations in somatic genes.

Identification of these genome alterations can provide important insights into the cellular defects that cause cancer and suggest potential therapeutic strategies. A critical challenge in the genome-wide analysis of somatic copy number alterations is distinguishing the alterations that drive cancer growth from the numerous, apparently random alterations that accumulate during tumorogenesis. Chromosome 17 is one of the smallest and most densely gene-loaded human chromosomes and it is frequently rearranged in human tumors and presents a number of rearrangement breakpoint.

Aim. To determine specific copy number aberrations of HER2 positive breast cancer and its impact on tumor development.

Materials and methods. The study included 17 patients with confirmed HER2 positive breast cancer. Surgery was carried out in P. Stradins Clinical University Hospital. DNA was extracted from freshly frozen tissue material, using QIAamp DNA Mini Kit. Detection of copy number aberrations using Infininum HumanCytoSNP-DNA Analysis BeadChip Kit (Illumina, USA). Data analysis was carried out using application GenomeStudio (Illumina, USA).

Results. It was found that short and long arms differ in the type of events they harbor. Short arm was principally involved in losses whereas long arm showed complex combinations of overlapping gains and losses. Complete loss of short arm was observed in DNA of 13 patients (76.47%), that could be clinically significant because in this region is localized tumor suppressor gene P53 and candidate tumor suppressor gene HIC-1. In long arm was

found two possibly important regions of losses, in which localized DNA reparation genes BRCA1 (observed in DNA of 11 patients (64.70%)) and RDM1 (observed in DNA of 10 patients (58.82%)). Amplification of region in which localized oncogene HER2 was found in DNA of 9 patients (52.94%).

Conclusions. Four possibly important regions that could be driver events of breast cancer tumorogenesis was found in chromosome 17. It is important to continue research by increasing amount of observed patients and analyzed chromosomes to find specific changes in HER2 breast cancer.

PROLIFERATION ACTIVITY IN PRIMARY TESTICULAR TUMORS

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Keywords. Ki-67 marker, testicular tumors.

Introduction. The nuclear expression of Ki-67 is strongly associated with tumor cell proliferation and growth, and is widely used in routine pathological investigation as a proliferation marker (Li *et al.*, 2014). Higher expression of Ki-67 is proposed to be connected with increased risk for metastatic disease from testicular tumors (Datta *et al.*, 2000).

Aim. To evaluate proliferation activity in primary testicular tumors and its association with tumor histological type, volume of tumor, vascular invasion and necrosis.

Materials and methods. The retrospective study included 46 patients with primary testicular tumors operated in a single university hospital from January 2005 till December 2014. Proliferation activity was assessed with immunohistochemical marker Ki-67 with quantitative and semi-quantitative methods in tumor areas with the highest marker expression. All data were analyzed by SPSS 20.0.

Results. The following histological types of primary tumors of testis by World Health Organization classification were presented as: seminoma 58.7% [95% confidence interval (CI) 45.7–73.9], embryonal carcinoma 15.2% [6.5–26.1], mixed form of germ cell tumor 8.7% [2.2–17.4], teratoma 8.7% [2.2–17.4], Leydig cell tumor 4.3% [0–10.9], tumors of more than one histological type 4.3% [0–10.9] of all cases.

The mean proliferation fraction ± standard deviation (SD) in the tumors was as follows: seminoma 22.7 ± 15.7% [16.4–29.0], embryonal carcinoma 39.4 ± 25.8% [15.5–63.3], mixed form of germ cell tumor 16.1 ± 24.7% [0–55.4], teratoma 10.8 ± 8.3% [0–31.4], Leydig cell tumor 4.5 ± 2.1% [0–23.6] and tumors of more than one histological type 15.0 ± 17.7% [0–39.5].

Ki-67 expression shows no statistical significant difference among presented histological tumor types ($p > 0.05$), as well as no difference is shown between tumor type and absent or present vascular or lymphatic invasion, necrosis and volume of tumor ($p > 0.05$).

Conclusions
1. The highest proliferation activity among testicular tumors was observed in embryonal carcinoma but it shows no significant difference among other types of tumors.
2. Proliferation fraction shows no significant difference between presented pathomorphological findings of the primary testicular tumors.

16 March 2016

ANALYSIS OF SURGICALLY TREATED
ADRENAL GLAND

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Keywords. Adrenal gland, tumour.

Introduction. Most benign neoplastic adrenal diseases, as well as malignant tumours which cause hyperfunction of the gland, are surgically treated. However, this may not always be effective (Michalakis and Ilias, 2009).

Aim. The aim was to collect and analyse data about surgically treated adrenal glands in order to demonstrate common types of lesions and pathomorphological characteristics of different tumours of the adrenal gland.

Materials and methods. A total of 63 patients undergoing adrenal gland surgeries between January 2010 and October 2015 were identified by retrospective archive search in Pauls Stradins Clinical University Hospital. The analysed factors were: patients' age, gender, type of lesion, affected adrenal gland, number and size of lesions, haemorrhage, necrosis, invasion of adipose tissue, vascular invasion. Descriptive statistics was performed using SPSS software and McCallum Layton calculator.

Results. Patients' mean age was 52.6 [95% confidence interval = 49.7–56.7] years with range 23–76 years. Surgical treatment was performed for 24.5% [12.1–35.1] men, 75.5% [64.9–87.9] women of all cases.

The following lesions were identified:
- non-neoplastic lesions: 7.9% [2.6–14.8] of cases, including hematomas, cysts, pseudocyst, hyperplasia of adrenal cortex;
- adrenal cortical tumours: 58.7% [46.0–70.4], including 49.2% [34.9–62.4] adrenal cortical adenomas, 9.5% [3.2–16.4] adrenal cortical carcinomas;
- adrenal medullary tumours: 22.2% [12.2–31.7], including 11.1% [4.8–19.0] benign and 11.1% [4.8–19.0] malignant pheochromocytomas;
- other adrenal tumours: 3.2% [0.0–7.9] of myelolipomas cases respectively;
- secondary adrenal tumours: 7.9% [2.6–14.8] of cases, including lymphoma, metastases of renal clear cell cancer, melanoma, epidermoid carcinoma, undifferentiated soft tissue tumour.

Among primary tumours, 75.5% [62.0–84.1] were benign, 24.5% [15.9–38.0] were malignant. The left adrenal gland was affected in 62.3% [47.7–76.6], and the right adrenal gland in 37.7% [23.4–52.3] of cases. Single tumours were found in 86.8% [78.1–97.3], but multiple tumours in 13.2% [2.7–21.9] of cases. The mean size of tumours was 3.9 cm [3.3–4.9] with range 0.2–12.5 cm. Haemorrhage was found in 80.9% [66.8–94.0], necrosis – 25.5% [12.8–35.3], invasion in adipose tissue – 23.4% [12.8–35.3], vascular invasion – 19.1% [7.3–31.9]. With malignancy is associated necrosis ($p = 0.001$), invasion in adipose tissue ($p = 0.006$), vascular invasion ($p < 0.001$), but not haemorrhage ($p = 0.299$).

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Conclusions
1. Surgically treated adrenal lesions occur 3 times more often among women than men.
2. Cortical tumours were the most frequent surgically treated adrenal lesions, with a statistically significant difference.
3. Primary tumours of adrenal gland mostly are benign tumours and most of them – adrenal cortical adenomas.
4. Haemorrhage is the most frequent finding in primary tumours of adrenal gland and it is found in benign as well as malignant tumours.

DESCRIPTION AND COMPARISON OF CORTICAL AND MEDULLARY ADRENAL TUMOURS

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Keywords. Adrenal gland, cortical, medullary, tumour.

Introduction. Despite their low incidence, tumours of the adrenal gland have different clinical and histological forms of presentation (De León Morales et al., 2003). Hence, further statistical analysis and distinction between tumours of the adrenal cortex and medulla could contribute to improving the treatment options and time of diagnosis.

Aim. The aim was to collect, analyse and compare data about surgically treated tumours of the adrenal cortex and medulla.

Materials and methods. A total of 51 patients undergoing adrenal tumour dissection surgeries between January 2010 and October 2015 were identified by retrospective archive search in a single university hospital. The analysed factors were: patients' age, gender, type of tumour, number and size of tumours, necrosis, haemorrhage, invasion of adipose tissue, vascular invasion. TNM, PASS (Pheochromocytoma of the Adrenal Gland Scaled Score) and Van Slooten criteria for adrenal cortical carcinomas were assessed. Descriptive statistics was performed with SPSS software and McCallum Layton (United Kingdom) calculator.

Results. The following adrenal cortical and medullary tumours were identified:
- cortical adenomas: 60.8% [95% confidence interval = 44.5–76.8], cortical carcinomas: 11.8% [4.2–21.6]
- benign pheochromocytomas: 13.7% [2.8–31.3], malignant pheochromocytomas: 13.7% [2.8–31.3].

The following data are shown in the order: among cortical tumours *vs* medullary tumours. Patients' mean age: 53.8 [50.4–59.1] with range 25–76 years *vs* 48.3 [36.5–59.8] with range 23–73 years. Gender distribution: 21.6% [10.1–34.2] men and 78.4% [65.8–89.9] women *vs* 28.6% [8.6–55.6] men and 71.4% [44.4–91.4] women. Single tumours were found in: 86.5% [76.8–97.3] *vs* 85.7% [64.0–100] of cases. The mean size: 3.78 cm [2.7–4.6] with range 0.6–12.5 cm *vs* 3.8 [1.9–4.9] with range 0.3–8.8 cm. The mean size of benign cortical tumours was 3.2 cm [2.6–3.6], medullary – 2.4 [1.4–3.6], while malignant cortical tumours – 7.3 [3.4–12.0] and medullary – 5.1 cm [3.1–7.9]. Hemorrhage was found in: 77.8% [63.3–90.6]

vs 91.7% [66.2–100] of cases; necrosis: 20.0% [7.3–34.2] *vs* 61.5% [24.9–91.0] of cases; tumour invasion in adipose tissue: 22.2% [11.3–37.9] *vs* 38.5% [15.1–71.2]; vascular invasion: 11.1% [2.8–30.1] *vs* 42.9% [11.6–73.7].

According to TNM classification the following was found:

- cortical tumours – T2: 60.0% [17.0–100], T3: 40.0% [0.0–82.9];
- medullary tumours – T1: 14.3% [0–46.5], T2: 14.3% [0.0–46.5], T3: 71.4% [35.8–100].

Conclusions

1. Adrenal cortical tumours statistically significant more often tend to be benign rather than malignant while the feature is not observed in medullary part of the gland.
2. Adrenal cortical tumours were more frequent among women than men.
3. Regardless of the origin of the tumour, with the trend, malignant tumours tend to be larger in size than did benign tumours.

PAIN IMPACT ON THE QUALITY OF LIFE OF CANCER PATIENTS BEFORE AND AFTER PALLIATIVE CARE TREATMENT

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Keywords. Oncology, pain, Brief Pain Inventory questionnaire, palliative care.

Introduction. Cancer pain is a serious problem in medicine, because the number of patients suffering from cancer continues to grow. Chronic pain in cancer patients affects all aspects of their life – physical, cognitive, emotional, self-care, as well as social skills. In order to evaluate the pain more accurately and impartially, in number of countries "Brief Pain Inventory" (BPI) questionnaire is used, which helps to identify change in the dynamics of pain more precisely and its impact on quality of life, which is an important requirement for the effectiveness of treatment and care assessment.

Aim. Using a patient BPI questionnaire (from 0 to 10 points) compare self-assessment of pain intensity before and after analgesic therapy correction at LOC 10th palliative care unit and its impact on quality of life.

Materials and methods. Quantitative study method – questionnaires, at LOC 10th palliative care unit, at period from 01.12.2014 – 01.03.2015. Patients were asked to answer a questionnaire BPI twice: immediately after admission at LOC 10th palliative care unit and on date of discharge. For evaluating the effectiveness of treatment the scale with range from 0% to 100% was used.

Results. The study included 79 patients, 46.8% (n = 37) of them were women and 53.2% (n = 42) men, middle age of the patients was 66.19. The most frequently reported cancer: rectal – 15.2% (n = 12), stomach – 12.7% (n = 10) and lung – 10.1% (n = 8). On admission date drug therapy resulted in achieved analgesic effect score, that on average was 29.75%, but on discharge date pain reduction after received analgesic therapy in palliative care unit was on average 82.66%. Pain impact on quality of life before pain management (from 0 to

10 points): general activity – 8.94, mood – 8.95, walking – 8.95, daily work – 8.91, relations with other people – 8.24, sleep – 8.73, joy of life – 8.86. Pain impact on quality of life after pain management: general activity – 4.11, mood – 3.72, walking – 4.35, daily work – 4.42, relations with other people – 2.95, sleep – 3.62, joy of life – 3.61. Spearman's test showed statistically significant correlation between pain intensity and quality of life ($p < 0.005$), increase in pain intensity will significantly reduce the quality of life.

Conclusion. On admission date achieved analgesic effect after pain management was on average 29.75%, while on date of discharge it was 82.66%, that indicates that achievements in pain control are significantly better in the palliative care unit, than in out-patient departments. Pain reduction after received therapy in palliative care unit resulted in significantly improved quality of life.

THE ASSESSMENT OF MORPHOLOGICAL STATE OF LIVER IN EXPERIMENTAL ACUTE NECROTIZING PANCREATITIS (ANP) IN RATS

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Keywords. Acute necrotizing pancreatitis.

Background. Due to insufficient study of the morphological picture of liver in ANP, there is a need to investigate the dynamics of morphometric changes of the liver during the acute phase of ANP.

Aim. To perform morphometric assessment and study the morphological changes of liver in ANP.

Materials and methods. Morphometric study of microscopic preparations of liver were conducted after 1hour, 1–3–7–14days after surgically Modeled ANP. The following parameters were calculated, percentage of normal and degenerative (partly damaged) hepatocytes, Mitotic Index (MI), coefficient of normalization of parenchyma of the liver (CNP)–ratio of quantity of normal / degenerative hepatocytes.

Results. 1 hour after surgery there was a slight protein degeneration of hepatocytes. MI was 0.3 ± 0.058 ‰, which is 7.5 times higher than normal (0.04 ± 0.002 ‰), CNP rose to 8.70 ± 0.20 (in intact animals 7.5 ± 0.32).On the 1st day, there was a mild protein degeneration of hepatocytes in the central parts of lobuli. MI was 0.29 ± 0.064 ‰, CNP decreased slightly to 7.01 ± 0.01. On the 3rd day atrophy and degeneration of parenchymal cells were observed; MI levels increased 10.7 times as compared to normal 0.43 ± 0.071 ‰; CNP was 6.82 ± 0.01. On the 7th day there was a weak sinusoidal perfusion and dilated bile ducts MI was significantly increased (0.29 ± 0.066 ‰), and CNP increased to values in healthy animals (7.43 ± 0.02). On the 14th day there was a significant liver alterative process MI was 0.42 ± 0.061 ‰, which is10.5 times higher than in healthy animals, CNP close to normal (7.5 ± 0.01).

Conclusion. The result showed that an increase in the number of degenerating hepatocytes leads to increased mitotic activity of the liver.

ENDOSCOPIC TRANSPAPILLARY STENTING IN THE PATIENTS WITH DISEASES OF THE HEPATO-PANCREATO-BILIARY ZONE

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Keywords. Endoscopy, transpapillary stenting, cholangitis, cancer, chronic pancreatitis.

Introduction. In recent years in the hepatobiliary surgery the role of the endoscopic transpapillary stenting (ETS) has become increasingly important in the restoring of the normal bile flow in the patients with choledocholithiasis, cancer of the hepatopancreatobiliary zone (GPBZ) or with chronic pancreatitis (CP). In the elderly patients with severe diseases endoscopic transpapillary stenting is the only way to eliminate jaundice, cholangitis and to restore normal bile flow.

Aim. Is to define the indications and application range of the transpapillary stenting in patients with diseases of GPBZ.

Materials and methods. We analyzed the results of treatment of 210 patients with benign bile duct obstruction, 510 patients had cancer of GPBZ and 93 patients with CP, who were treated in the center of liver and pancreas in the Belgorod regional hospital. All this patients receive ETS as a treatment of choice.

Results. Our observations have shown that ETS among all patients was effective in 88.5% of cases. Juxtapapillary diverticula of the ampula of Vater didn't allow us to provide ETS only in 2 cases. Duodenal stenosis, which impeded us to provide duodenoscopy in our observations was observed in 16 patients, all of them had cancer of GPBZ.

Conclusion. Thus endoscopic transpapillary stenting is an effective method not only to relief the biliary hypertension and to restore the normal bile flow, but also it can be useful in the treatment of the chronic pancreatitis, pancreatic ductal hypertension, pancreatic pseudocysts and during this procedure the cancer of GPBZ can be diagnosed.

COMPARISON OF SLEEVE GASTRECTOMY AND ROUX-EN-Y GASTRIC BYPASS METHODS IN ADIPOSITY TREATMENT

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Keywords. Bariatric surgery, Laparoscopic Sleeve gastrectomy (LSG), Laparoscopic Roux-en-Y gastric bypasses (LRYG).

Introduction. Obesity (Body mass index (BMI) > 30 kg/m^2) has a negative impact on health, life quality and life expetancy being one of potentially preventable causes of death (Flegal, et al., 2005). Surgical treatment of obesity results in greater weight loss and reduction in comorbidities compared to traditional therapy (Schroeder, et al., 2011). LRYGB and LSG are the most common weight loss procedures (Zhang Y, et al., 2015). Each has its' own risks and benefits. LRYGB is considered the gold standard (Ersoz, et al., 2015). The decision which procedure to perform should be based on individual patient and surgeon factors (Brethauer, et al., 2006).

Aim. Compare LSG and LRYGB in treatment of morbid obesity in Latvia.

Materials and methods. Study included 132 patients suffering from overweight and obesity, who underwent LSG or LRYGB in three Riga hospitals in time period from January 2011 to August 2015. Case files were retrospectively reviewed. Preoperative anthropometric data, ASA degree, comorbidities, perioperative surgical outcomes were taken into account. Data was analyzed in IBM SPSS 22.0.

Results. 104 LRYGB and 28 LSG cases were analyzed. 86% (n = 113) of patients were female, 14% (n = 19) were male. Age ranged from 15 to 65 with median (ME) value 41. Patient BMI (kg/m^2) ranged from 29 to 59 with ME = 39. ME hospital stay in days for both LSG and LRYGB was 4. Operating time (minutes) ME = 94 for LSG, and 117 for LRYGB. LSG patients' BMI (kg/m^2) ME = 35.5 and 39.5 for LRYGB patients.

Complication rate in LSG was 10.7%, and 6.7% in LRYGB. Following LSG 3 cases of gastric leakage were met, but in case of LRYGB 5 cases of hemorrhage from Jejuno-Jejunal anastomosis (JJA), and one case of JJA torsion, pulmonary embolism, pneumonia, peritonitis, suture insufficiency, sepsis each were found. Most of the patients had 2–4 obesity related comorbidities, one patient had 8 comorbidities and eight patients had none. Comorbidity amount in LSG patients ME = 3, and 4 in LRYGB.

There was a statistically significant difference in Fishers' exact test (p = 0.048) regarding the risk of developing hemorrhage from JJA between patients with and without cardiovascular disease. For gastroesophageal reflux disease and JJA hemorrhage in the same test p = 0.058.

Conclusion. Both LSG and LRYGB are relatively safe procedures with low short term postoperative surgical complication risks, except for higher complication rate after LSG with gastric leakage being the most common.

16 March 2016

SSI RISK FACTORS, PREVENTION AND TREATMENT OF PATIENTS AFTER CARDIAC SURGERY

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Keywords. SSI, cardiac surgery, sternotomy.

Introduction. Superficial and deep sternotomy infections are one of the most common complication in cardiac surgery, with incidence from 0.5% to 10%. It increases patient hospitalization time, impair treatment quality, increases mortality risk and hospital expenses. SSI risk factor identification might be used for individual assignment of extra preventive measures to patients from risk groups in order to reduce the possibility of infection development.

Aim. To explore sternotomy wound SSI risk factors and look at pre, intra and post-surgery infection prevention and treatment actions.

Materials and methods. The study was performed in the Center of Cardiac Surgery at PSCUH. In the study patients, who received heart surgery with longitudinal sternotomy access during the period from 01.07.14. to 31.12.15, files were retrospectively analyzed. All patients, who had sternotomy wound infection diagnosed within 30 days after surgery, were selected for the study. A control group was created by randomly selecting patients without SSI. Statistical data processing and analysis was performed by using IBM SPSS Statistics 23 and MS Excel 2015, the group parametric data was compared by using Student's t-test, and a group of non-parametric data was compared with Mann-Whitney U test. The results are considered statistically significant for p-value ≤ 0.05.

Results. In total 35 patients were identified with sternal wound SSI within the analyzed time period. For control group 35 patients without SSI were selected. The mean age of patients in the SSI group was 67.3 ± 8.6 years and in the control group 69.2 ± 8.9 years. Distribution among genders in both groups was identical – 19 men and 16 women. The research identified that diabetes mellitus increases the chance of SSI 5.2 times and obesity increases the chance of SSI 4.2 times. Both results showed a high statistical significance level ($p < 0.01$). COPD increased the SSI risk 2.2 times and hyperlipidemia 2.3 times, also the time in ICU after operations was 2 times longer in the SSI group – 2.7 ± 6.0 against 1.3 ± 0.6 days in the control group, although these results showed a low statistical significance level ($p > 0.05$). All patients with SSI were treated with a/b therapy, 16 of them received negative pressure wound therapy at a mean duration of 12.5 ± 5.7 days with mean 1.6 ± 1.1 sponge changes.

Conclusions. The study shows, that it is very important to strictly follow all SSI preventive measures for patients with diabetes and obesity. Negative pressure wound therapy showed itself as a very effective therapy method, which removes fluid, exudates and infectious materials to prepare the wound for healing and closure, at a mean duration of 12.5 days.

BLOOD NEUTROPHIL-TO-LYMPHOCYTE RATIO AS AN INDICATOR OF URINARY BLADDER CARCINOMA GRADE AND INVASION EXTENT

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Keywords. Neutrophil-to-lymphocyte ratio, bladder carcinoma.

Introduction. According to the Centre for Disease Prevention and Control, the incidence of bladder cancer in Latvia has increased over the preceding eight years. In 2014, bladder carcinoma was among the ten most frequent malignant tumours in Latvia. It is the 7th most common cancer worldwide in men (Burger *et al.*, 2013). Grade and muscle invasion are among the key factors considering treatment plan but can be difficult to establish exactly in the biopsies. As inflammation can be relevant in cancer development, neutrophil-to-lymphocyte ratio could be used as an additional indicator of cancer spread or grade.

Aim. The aim of this study was to establish whether neutrophil-to-lymphocyte ratio (NLR) in the blood differs by grade and invasion depth of urinary bladder carcinoma.

Materials and methods. Retrospectively, all consecutive patients diagnosed with morphologically confirmed urinary bladder carcinoma (2012–2015) in a single university hospital were retrieved by archive search. Further, the identified patients were assorted into mutually exclusive study groups, depending on the tumour invasion depth (T) and differentiation grade (G): 1) non-muscle-invasive well differentiated carcinoma, Ta–T1 and G1, further referred to as low-risk carcinoma (LRCA); and 2) muscle-invasive poorly differentiated carcinoma, T2 or greater and G3, further designated high-risk carcinoma (HRCA). The laboratory tests were retrieved from medical histories. Descriptive statistics and Mann-Whitney test were applied; any differences were considered significant, if $p < 0.05$.

Results. The low-risk group comprised 91 patients at the mean age of 66.5 ± standard deviation of 11.6 years. High-risk carcinomas were diagnosed in 58 patients (mean age, 67.6 ± 10.5 years). Thus, 149 patients were enrolled in the study including 112 (75.2%) men having mean age of 67.6 ± 10.9 years and 37 (24.8%) women diagnosed at the mean age of 64.9 ± 11.9 years.

The mean NLR was 2.32 [95% confidence interval: 2.07–2.57] in LRCA, contrasting with the mean NLR in HRCA: 3.76 [2.91–4.62]. The difference was statistically significant ($p < 0.01$). The neutrophil count was lower in LRCA, namely, 4.20×10^9/L [3.84–4.56], than in HRCA patients: 5.92×10^9/L [4.71–7.13], $p < 0.01$. Consequently, HRCA showed higher total white blood cell count of 8.90×10^9/L [7.61–10.12] than LRCA: 7.04×10^9/L [6.58–7.50], $p < 0.01$.

Conclusions. Blood neutrophil-to-lymphocyte ratio significantly differs by grade and invasion depth of bladder carcinoma, so at the suspicion of bladder cancer it can be used to predict the invasion depth and grade of the tumour. Patients with muscle-invasive poorly differentiated carcinoma had higher total white blood cell count and higher absolute number of neutrophils.

DEVELOPMENT OF MALIGNANCY
AFTER RENAL TRANSPLANTATION

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Keywords. Renal transplantation, malignancy.

Introduction. Kidney transplantation is recognized as the "gold standard" for the treatment of chronic renal failure, but it has long-term complications affecting recipient survival. Post-transplant malignancies are second leading cause of death after renal transplantation. (Briggs, J. D. 2001).

Aim. The aim of this study was to analyse the characteristics and risk factors of *de novo* post-transplant malignancies in Latvian renal transplant recipients and compare data with the general population.

Materials and methods. This retrospective single-center study included 330 (178 males, 152 females, mean age 45.73 ± 14.73 [95% CI: 44.13–47.33] years) patients transplanted between January 01, 2004, and December 31, 2008 with the 5 year follow-up period. All patients were divided in two groups: group A – patients with *de novo* malignancy after transplantation and group B – patients without malignancy during the follow up period. The groups were compared for the patients age, gender, rejection incidence, number of transplantation, type and duration of immunosuppression.

Results. 22 *de novo* neoplasm cases were identified (group A – 13 males, 9 females, mean age 60.36 ± 12.96 [54.62–66.11] years). Skin cancer was identified in 5 patients (22.7%), melanoma – 3 cases, non-melanoma skin cancer – 2 cases. Hematological malignancies (leukemia, myeloma, Hodgkin lymphoma) were second most frequent types of tumors (13.6%). Other common malignancies were colorectal, central nerves system, kidney tumors (9.1% each type of cancer). Our study showed increased risk of development *de novo* cancer in Latvian renal transplant recipient compared to the general population. (the standardized incidence ratio (SIR): 5.3). 12 cases of recipient death were due to malignancy. Comparison of the group showed that such characteristics as recipient gender, number of transplantations, rejection incidence, induction with ATG type and duration of immunosuppression did not show association with an increased risk of malignancy ($p > 0.05$). A trend toward significance was observed with patient age and higher risk of development *de novo* post-transplant neoplasms.

Conclusion. *De novo* cancer incidence in renal transplant recipients was increased compared to the general population. The most common types of tumor were skin cancer and hematological malignancies. Analysed risk factors did not show statistically significant association with development of malignancy in Latvian renal transplant recipients. Possible explanation is that not one exact factor, but combination of factors increase risk of development *de novo* malignancies. Further research is needed to specify risk factors of development post-transplant tumors.

5-ALA FLUORESCENCE GUIDED HIGH GRADE GLIOMA SURGERY: SURGICAL OUTCOME AND OVERALL SURVIVAL

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Keywords. 5-ALA, high grade glioma, fluorescence guided brain surgery.

Introduction. High grade gliomas are the most common primary malignant brain tumors. The extent of tumor resection is an important prognostic factor in patient survival. 5-ALA fluorescence guided surgery helps to visualize malignant tissue and distinguish from normal brain. Studies show that gross total resection (> 98%) of the tumor is achieved only in 36% of cases after white light surgery and in 64% after 5-ALA fluorescence guided surgery. After subtotal resection median survival is approximately 9 months and after gross total resection surgery it is up to 13 months followed by adjuvant therapy. As a result, 5-ALA fluorescence guided surgery increases the extent of tumor resection and prolong survival rate among high-grade glioma patients.

Aim. Evaluate the surgical outcome, intraoperative findings and patients' overall survival after 5-ALA fluorescence guided high grade glioma surgery.

Materials and methods. Retrospective study included all patients, who underwent 5-ALA fluorescence guided surgery in Pauls Stradins Clinical University Hospital, Neurosurgery clinic between November 02, 2009, and December 23, 2015. Analysis included identification of tumor location (eloquent versus non eloquent), evaluation of postoperative result (gross total resection or subtotal resection), classification of tumor type and grade (WHO III or WHO IV) and estimation of survival rate in newly diagnosed glioblastoma cases. Statistical analysis was performed using IBM SPSS.

Results. 26 patients (15 males, 9 females) were operated during the given timeframe. The median age was 50.1 years (range 17–76 years). In all cases tumor tissues were fluorescence-positive. In 21 cases there were newly diagnosed gliomas and in 5 cases patients had second or third operation for recurrent glioma. In 10 cases out of 26 tumor location was in an eloquent area. In 21 (80.8%) cases gross total resection was achieved and only in 5 (19.2%) cases postoperative CT scan showed residual tumor tissues. Histopathological results indicated 22 patients had glioblastoma (WHO Grade IV), 2 patients – anaplastic astrocytoma (WHO Grade III) and 2 – anaplastic oligodendroglioma (WHO Grade III). According to Kaplan-Meier estimates, mean survival in primary glioblastoma was 14.7 months (95% CI: 6.1–32.8) for gross total resection and 9.3 months (CI 95%: 7.5–11.1) for subtotal resection.

Conclusions. 5-ALA is very effective tool to eliminate malignant glioma borders intraoperatively. 5-ALA fluorescence guided surgery significantly improves the extent of tumor resection which is an important prognostic factor in glioblastoma treatment. It increases gross total resection in high-grade glioma cases up to 80.8%. Tumor location in eloquent area is a factor of less radical surgical resection. 5-ALA fluorescence guided surgery increases overall survival time in newly diagnosed glioblastoma cases.

INCIDENTIAL DISCOVERY OF SOLITARY PULMONARY NODULES AND RELATED MALIGNANCY RISK ASSESSMENT IN GENERAL POPULATION

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Keywords. Solitary pulmonary nodules (SPN), lung cancer screening, diagnostic imaging, computed tomography.

Introduction. Solitary pulmonary nodules (SPN) are one of the most common thoracic radiographic abnormalities, which are visualized like spherical opacities 3 cm or less in diameter, surrounded by lung parenchyma, and not associated with lymphadenopathy, atelectasis, or pleural effusion. Nowadays SPN are detected extremely often due to increased use of diagnostic imaging. Different aetiology lesions – benign and malignant represent SPN. Adequate interpretation and analysis of radiological findings is the first and most important step for patient management and treatment choice. Inappropriate approach significantly increase mortality rate, treatment costs, unnecessary investigation rates and general healthcare system burden.

Aim. The aim of this cross-sectional study was to show frequency of SPN in general population and assess related risks actualizing unsolved healthcare problem in Latvia.

Materials and methods. During March 2015 patients admitted to Pauls Stradiņš Clinical University Hospital emergency department for non-pulmonary health issues and undergoing chest CT scan were enrolled in the study. Demographic data as sex and age, and imaging data as lesion location, size, edge, calcification and cavitation was analysed. Malignancy risk was evaluated using statistical risk prediction model / calculator (http://www.nucmed.com). Descriptive and analytical statistics (t-test) methods were applied.

Results. Our study involved 69 patients with mean age 66.8 ± 16.4 years (range 31–91 years), of which 55.5% were men. Pulmonary nodules were found in 44 patients (63.7%). Further analysis revealed that 36 patients (81.8%) had SPN and 8 patients (18.18%) had multiple pulmonary nodules. SPN discovery was not related to age ($p = 0.79$) or sex ($p = 0.29$). Inclusion of smoking into the risk model showed that ten patients (27%) had malignancy risk higher than 20% and required further investigations and follow up. Whereas 26 patients (73%) had malignancy risk lower than 20% with no potential benefit from further work-up.

Conclusions. SPN are commonly found by incidence in the majority of patients, who undergo chest CT scan for other reasons. It is important to choose an adequate management and treatment tactic to ensure high quality of provided healthcare with keeping it cost-effective.

INFLUENCE OF VACUUM ASSISTED THERAPY
ON BODY HOMEOSTASIS

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Keywords. Negative Pressure Wound Therapy, Vacuum Assisted Closure, VAC Therapy.

Introduction. Vacuum Assisted Closure (VAC), a subset of Negative Pressure Wound Therapy (NPWT), originated as an adjunct therapy to expedite wound healing. It utilises topical negative pressure to stimulate the regeneration of tissue deficiency, particularly when treating extensive open wounds. Evidence reviewed proclaims that the device results in hastened recovery, proportionately decreasing the period of care and associated complications. Nutritional deficiency is a potential risk, due to increased exudation and loss of protein rich fluid.

Aim. To assess protein loss during VAC therapy, and to estimate necessary nutritional compensation.

Materials and methods. In a prospective study, patients enrolled in VAC Therapy were invited to participate in the investigation. Wounds considered eligible for treatment were chronic ulceration – decubitus pressure ulcers, leg venous ulcers, diabetic foot ulcers, and polyaetiological lower extremity ulcers. Prototype sample containers were designed to obtain the exudate, free from contamination from the disposable storage unit. Total protein, albumin, urea, creatinine, sodium, potassium, calcium, and lactate dehydrogenase were quantitatively determined.

Results. Chi-squared tests for association were calculated by serum versus exudate mean values. At the 95% confidence interval, total protein-albumin was insignificant (p-value 0.35); however urea-creatinine and when all four variables were input, both results were significant (p-value 0.004 concurrently). As reference exudate values are yet to be standardised, discrepancies due to demographic data – sex, age, and body weight – have not been accounted for.

Laboratory measured exudate lactate dehydrogenase were markedly elevated when compared to a literature serum value of 70–250 U/L, with an average of 12393 U/L. As an indicator of wound environment cell stress and lysis, its clinical relevance is of a research interest. Exudate urea was elevated to a milder degree. Creatinine and sodium were relatively similar between serum and exudate; whereas potassium was increased and calcium decreased in the exudate.

Conclusion. Average exudate total protein content is 66 g/L, and albumin 24 g/L. VAC therapy specific protein loss may be estimated by multiplying serum albumin by 0.25. Considering there are scarce, if any, previous equivalent research, the potential for further development remains. Original collection systems were successfully implemented, and laboratory protocols advanced in reliability with each sample, both contributing to better understanding the complex science of wound healing and protein nutritional requirements.

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OPERATING ROOM STAFF FOOT TRAFFIC INTENSITY RATE AND ITS POSSIBLE CAUSES DURING INTRAOPERATIVE SURGERY PHASE

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Keywords. Surgical site infection, foot traffic rate, staff, causes, multi – profile hospital.

Introduction. Surgical site infection is a major health care concern and a serious problem in contemporary surgery all over the world. Surgical site infections increase patients' length of hospital stay, increase treatment costs as well as patient morbidity and mortality rates. Numerous studies all over the world have found a correlation between the high foot traffic rate in the operating room and the increased patents' surgical site infections. Increased traffic in and out of the operating room changes the airflow directly above the surgical site and instruments and increases the number of airborne particles and bacteria above the wound.

Aim. Find out possible causes and foot traffic intensity during intraoperative surgery phase.

Materials and methods. Structured non-participant observations were carried out and observation protocols filled. Each staff's movement in and out of the operating room was counted, possible reasons noted and type of personnel indicated. The observation was carried out in 4 operating rooms in 3 different multi – profile hospitals in the city of Riga, Latvia. The research participants were operating room staff and other healthcare staff.

Results. The results of the research in all 3 hospitals confirm that the average foot traffic intensity rate during intraoperative surgery phase in all three hospitals is 0.7 times per minute. Nurse assistants, nurse anesthetists, staff from other operating rooms and anesthesiologists were the main personnel responsible for the high foot traffic rate. Lack of surgical materials and supplies as well as social factors were the main reasons for the high foot traffic rate.

Conclusion. The most important cause for high personnel foot traffic rate is lack of hospital staff, inadequate work organization, inadequate preoperative preparation for the surgery, as well as lack of knowledge among staff and management about the high surgical site infection risk. The statistics and findings prove it is crucial to address the problem in greater depth and search for possible solutions in reducing foot traffic rate and surgical site infections.

ANALYSIS OF AXILLARY OPERATION RESULTS IN BREAST CANCER PATIENTS WHO RECIVES NEOADJUVANT CHEMOTHERAPY

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Introduction. Sentinel node biopsy is the gold standard for determining the position of the axillary lymph nodes in breast cancer patients with no clinical data on axillary lymph node metastases. Gentle axillary lymph node surgery has significantly reduced morbidity. However, in patients with clinically metastatic axillary lymph nodes, the great majority of cases are made neo-adjuvant chemotherapy, and then made a traumatic axillary lymphadenectomy.

Aim. Assess the extent of axillary surgery in breast cancer patients after neoadjuvant chemotherapy.

Materials and methods. A retrospective study which analyzed 116 cases of breast cancer, which were carried out in neo-adjuvant chemotherapy.

Results. All the cases were treated in Pauls Stradiņš Clinical University Hospital from 2009 to 2015. Data was obtained from the Pauls Stradiņš Clinical University Hospital medical records, as well as the Cancer Register. The obtained data were statistically processed and analyzed with MS Excel and SPSS 20.0.

Results. Of 116 patients 95 (81.9%) was performed lymphadenectomy, 21 (18.1%) were not carried out. Before lymphadenectomy, sentinel node biopsy during surgery or before surgery another hospitalization time was carried out in 13/95 (13.7%) cases. From conducted lymfadenectomy 30/95 (31.6%) cases pN was 0. Overall, 116 patients were pN0 49 (42.2%) cases.

Conclusions

1. Neoadjuvant chemotherapy reduces not only the primary tumor size, but also the number of metastatic axillary lymph nodes.
2. There is a need to develop and include a new approach to axillary lymph node surgery after neoadjuvant chemotherapy to reduce the number of unnecessary lymphadenectomy and its associated morbidity.

LAPAROSCOPIC VERSUS OPEN COLORECTAL CANCER SURGERY

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Keywords. Colorectal cancer, laparoscopic surgery, short-term results.

Introduction. Colorectal cancer (CRC) is among the most important European health issues of the 21st century as the 2nd most frequent cancer both by incidence and death rate. For more than two decades, laparoscopic surgery has been used to treat CRC, acquiring considerable evidence to support this practice. However, there is also significant variability among European countries in acceptance of laparoscopy, available technical and financial resources and patient survival. Therefore, results of large-scale trials must be implemented in practical use with caution and analysis of local situation.

Aim. To compare open and laparoscopic surgical approach in local CRC patients in terms of operative time, postoperative complications and mortality, hospital stay, lymph node harvest, resection margins and cancer stage.

Materials and methods. A retrospective analysis comprised 119 patients (87, open surgery; 32, laparoscopy) with either colonic or rectal adenocarcinoma, treated at a university hospital (2013–2016). All procedures were performed by two surgeons with vast experience in both open and laparoscopic colorectal surgery. The primary endpoint was operative time, postoperative complications and length of hospital stay. Secondary endpoints were lymph node harvest, resection margin status and cancer stage. Statistical analysis was performed using SPSS version 23; differences were considered significant if $p < 0.05$.

Results. Operative time showed no statistically significant differences between open and laparoscopic groups (median, 135 min [interquartile range (IQR) 110–165] vs 120 min [IQR 110–155]; $p = 0.74$). Patients undergoing laparoscopic surgery had significantly shorter hospital stay (median, 8 days [IQR 6–10] vs 9 days [IQR 8–11]; $p = 0.03$). Postoperative complication rate was 11.6% for open and 12.5% for laparoscopic surgery, lacking statistically significant difference ($p = 1.00$). Significantly more lymph nodes were harvested after open (median, 13 [IQR 9–19]) compared to laparoscopic approach (median, 10 [IQR 5–13]; $p = 0.007$). Positive resection margins were noted in 7.0% of cases in open and 3.1% in laparoscopic surgery group ($p = 0.67$). There were no differences between groups regarding localized vs metastatic tumor spread ($p = 0.84$). One death occurred after open surgery ($p = 1.00$). No conversions were necessary in laparoscopic group.

Conclusion. In hands of a skilled, experienced surgeon, laparoscopic surgery for colorectal cancer is a safe option as it does not increase operative time or the risk of positive resection margins. Laparoscopic approach reduces hospital stay and has similar rate of postoperative complications than open surgery. However, lymph node harvest was significantly lower in laparoscopic surgery group and in many cases was inadequate for proper staging. That indicates a risk of under-staging and withholding adjuvant treatment for stage III patients.

RISK FACTORS FOR POSTOPERATIVE COMPLICATIONS
AFTER HEPATIC RESECTION IN PATIENTS
WITH COLORECTAL LIVER METASTASES

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Keywords. Colorectal cancer, liver metastases, hepatic resection, postoperative complications, risk factors.

Introduction. Colorectal cancer is the second leading cause of cancer-related death in Latvia. More than 50% of patients with colorectal cancer develop liver metastases, and hepatic resection remains the first-line treatment for metastatic liver disease. Anatomical (segmentectomy, hemihepatectomy) and non-anatomical (atypical) liver resections can be performed with or without simultaneous primary tumour resection and are associated with good prognosis. Combining surgical resection with modern systemic treatment 5-year survival rate is up to 50–60% even in stage IV patients. Incidence for postoperative complications usually does not exceed 20%.

Aim. To determine and analyse potential risk factors for development of postoperative complications after hepatic resection in patients with colorectal liver metastases.

Materials and methods. Seventy-seven patients who underwent hepatic resection due to colorectal liver metastases in Oncology Center of Latvia between 2011 and 2014 were included in a retrospective study. In this period 93 liver resections were performed. Age, comorbidities, number and size of metastases, extent and duration of surgical resection, and blood transfusion were analysed in association with the rate of hepatic and extrahepatic postoperative complications within 30 days after surgical treatment. Statistical analysis of data was performed, using descriptive statistics, Pearson Chi-square test, independent samples T test, logistic regression.

Results. Mean age of patients was 63.1 ± 10.5 years (range: 37 – 89) with a slight female predominance (54.6% vs. 45.5%). Overall complication rate in 93 cases, including repeated operations, was 28.0%. There were 13 cases of perihepatic fluid collection, 10 patients with pleural effusion, five with liver failure, two cases of gastrointestinal bleeding, and one patient death. Mean age did not significantly differ between those with (Mean = 62.4; SD = 11.3 years) and without (Mean = 63.3; SD = 10.3 years) complications (p = 0.37). In women complications occurred more often than in men (34.7% vs. 20.5%, p = 0.13). Hemihepatectomy (HHE) was performed in 25 operations (26.9%); atypical resection (AR) in 60 (64.5%); eight (8.6%) patients received both HHE and AR. Simultaneous operation (SO) was performed in 21 (22.6%) cases. HHE was associated with a higher complication rate than AR (45.5% vs. 18.3%; p < 0.01). Complications were insignificantly more often in SO (38.1% vs. 25.0%, p = 0.24). Operation time was significantly longer among patients with complications (Mean = 313.5; SD = 104.5 vs. Mean = 186.7; SD = 76.5 minutes; p < 0.01). However, when assessing combined risk of HHE, SO and operation time on the complication rate, the only factor that demonstrated significant

influence was operation time (p = 0.02). Complication rate was significantly higher among patients who received perioperative blood transfusion (52.6% vs. 21.6%; p = 0.01) and those who had diabetes mellitus type 2 (54.6% vs. 24.4%; p = 0.04). The number and size of liver metastases showed no influence on the outcome (p > 0.05).

Conclusions. Intraoperative factors that demonstrated significant association with higher postoperative complication rate were extent of surgery and operation time; however, the only independent risk factor was operation time. Other factors that negatively influenced outcome were diabetes mellitus type 2 and perioperative blood transfusion.

PROGNOSTIC FACTORS OF ATRIAL FIBRILLATION FOLLOWING CORONARY ARTERY BYPASS GRAFT SURGERY

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Keywords. Postoperative atrial fibrillation, coronary artery bypass grafting.

Introduction. Postoperative atrial fibrillation (POAF) is the most common complication after cardiac surgery. In order to prevent it routine pharmacological prophylactic drugs could be administered. It is important to find those patients with an increased risk of POAF which would benefit from a preoperative antiarrhythmic treatment.

Aim. To identify the independent factors that predict POAF after coronary artery bypass graft (CABG) surgery.

Materials and methods. We performed an analysis of 620 adult patients who received CABG surgery at the Hospital of Lithuanian University of Health Sciences in the year 2014. All data were collected prospectively. Patients with preoperative chronic atrial fibrillation (duration > 3 months) or preoperative antiarrhythmic treatment were excluded. The final sample consisted of a total of 617 patients.

Statistical analysis was performed using SPSS 22.0 software package. To identify the independent factors that predict POAF after CABG, multivariable analysis using binomial logistic regression was performed. Strength of the association of variables with POAF was estimated by calculating the odds ratio (OR) and 95% confidence intervals (CI). We considered P values of less than 0.05 statistically significant.

Results. There were 429 (69.5%) male and 188 (30.5%) female patients. Mean age was 67.2 (9.4) years. 365 patients (59.2%) were more than 65 y/o. 531 (86.1%) patients undergone elective and 86 (13.9%) patients – urgent surgery. Mean No. of grafts per patient – 3.5 (0.9). Mean ischemia time was 45.8 (15.1) min and mean cardiopulmonary bypass time – 90.2 (23.6) min. Incidence of POAF was 24.1% (n = 149).

Multivariable analysis showed that independent predictors of POAF after CABG were: age more than 65 years (P = 0.008; OR 2.089; 95% CI 1.208–3.613), more than 3 grafts per patient (P = 0.042; OR 1.669; 95% CI 0.972–2.866), preoperative hypertrophy or dilation of left atrium (P = 0.002; OR 4.996; 95% CI 1.823–13.691), abnormal serum potassium level (< 3.6 or > 5.1) (P = 0.001; OR 3.317; 95% CI 1.678–6.559), AF in the past (P < 0.001; OR 10.838; 95% CI 5.28–22.247), MVR (P = 0.024; OR 7.556; 95% CI 0.964–29.376) and AoVR (P = 0.009; OR

1.937; 95% CI 1.178–3.187). In patients with AoVR, II° of regurgitation or higher was a strong independent predictor of POAF (P < 0.001; OR 15.547; 95% CI 4–60.422); similar results were achieved with MVR (P < 0.001; OR 3.161; 95% CI 1.79–5.581).

Conclusion. The most important independent factors that predict POAF after CABG were associated with structural heart defects, advanced age, history of previous AF and abnormal serum potassium levels.

ASSESSMENT OF RESECTABILITY IN PALLIATIVELY MANAGED PATIENTS WITH PERIHILAR CHOLANGIOCARCINOMA

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Keywords. Resectability assessment, perihilar cholangiocarcinoma.

Introduction. Perihilar cholangiocarcinoma is a malignant tumour of the biliary system that occurs at the bifurcation of right and left hepatic ducts, with an average incidence of 0.5–2.0/100'000 persons per year. Symptoms of cholestasis usually occur late when surgery has no influence on the outcome. Prognosis is generally poor and only a small subset of patients qualifies for surgical resection.

Aim. To assess the resectability of perihilar cholangiocarcinoma at the time of diagnosis among patients considered not suitable for surgical treatment.

Materials and methods. Forty-one palliatively managed patients with a diagnosis of perihilar cholangiocarcinoma in Rīga East Clinical University Hospital were included in a retrospective study. MRI and / or CT scan were performed for the definition of diagnosis. To assess the resectability, specific radiological criteria were analysed according to the segmental bile duct extension (the Bismuth-Corlette classification) and vascular involvement of the tumour, the presence of metastatic disease and the extent of hepatic atrophy. Paired samples T-test was used to compare direct bilirubin blood levels before and after palliative cholangiography.

Results. Twelve (29.8%) patients were found to be truly unresectable: eight had bilateral segmental ductal extension of tumour (Bismuth-Corlette type IV); five patients had metastatic disease; two patients had unilateral ductal extension with contralateral vascular involvement. Ten (24.4%) patients were found to be potentially resectable because of no evidence of radiological criteria for unresectability. In the remaining 19 (46.3%) patients there was no clear evidence regarding unresectability criteria, and retrospective radiological audit was done. In all patients, except one, palliative percutaneous transhepatic cholangiography (PTC) with biliary drainage or stenting was performed. A statistically significant (p < 0.01) decline in direct bilirubin blood levels after the procedure was noted: (Mean = 230.6;SD = 129.0) μmol/L on admission and (Mean = 151.8;SD = 93.8) μmol/L at the time of discharge. In two patients PTC was associated with bile duct perforation and one patient had pneumothorax; five patients had post-procedure cholangitis; one patient suffered from pulmonary embolism 10 days after PTC. There were three patient deaths.

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Conclusion. A high number of palliatively managed patients with perihilar cholangio-carcinoma could be potentially resectable at the time of diagnosis. However, multidisciplinary approach involving interventional radiologists, surgeons, anaesthesiologists, and hepatologists should be considered to determine the most appropriate treatment plan.

IN-VIVO INVESTIGATIONS FOR THE EVALUATION
OF ELECTROSURGERY

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Keywords. Electrosurgery, test methods, wound healing.

Introduction. The here presented results of experimental investigations are a part of structured research carried out at Center of Experimental Surgery of the University of Latvia in cooperation with MedTecResearch Germany. Radiofrequency surgery and the so called "coblation" are wide spread methods in the surgery of joints, otorhinolaryngology and spinal surgery. For the tissue effect the frequency, wave form as well as the material and the shape of electrodes have an essential meaning. The application in minimal invasive surgery and the requirements of quality control needs the elaboration of standardized test methods. After numerous in vitro experiments for the pre-validation of new electrode materials the here presented investigations are dealing with the influence of the mentioned parameters on the wound healing in pigs.

Aim. To achieve a standardized test method for the evaluation of electrosurgical techniques.

Material and methods. The experiments have been agreed by the Tierschutzkommittee Mecklenburg–Vorpommern and have been carried out with the Leibniz-Institut für Nutztierbiologie, Dummerstorf, Germany: investigations on pigs have been chosen because of the similarity between pig and human skin. In 12 young male pigs in general anesthesia in the upper neck area on both sides totally 14 skin incisions have been set by electrodes guided by a cut simulator providing a constant incision speed of 0.5 and 1.0 cm/s. As electrical generators the 4 MHz–unit CURIS (Sutter Germany) and the 600 MHz-unit EMED (Poland) have been used. Electrodes of 0.3 mm wires made of tungsten or nitinol have been compared with a conic steel electrode and an incision with a cold surgical blade. 6 pigs have been euthanized on day 6; 6 more pigs on day 12. The specimens have been stained with HE and tri-chrome-staining. The carbonization zone as well as the hyalinization zone have been measured by using an Olympus measurement program. The results are under statistical evaluation by SPSS 21.

Results. By the histological examination it could be shown that there are clear differences depending on the cutting speed as well as on the electrode material. One main result is that the new developed digital cut-simulator is able to produce comparable results for the further evaluation of electrosurgical techniques. The marginal reaction is slightly different between the 600 kHz and 4 MHz application, while the wound healing process is not significantly disturbed, if on both generators an energy is selected, which exceeds the minimal energy by about 30%.

Conclusions. The test methods developed and used the first time can be recommended as standard methods for the development of electrosurgery.

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IV. Morphology, Genetics

CONSTITUTIONAL COPY NUMBER VARIATIONS IN THE GENOME OF HEREDITARY BREAST AND OVARIAN CANCER CASES

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Keywords. Hereditary breast and ovarian cancer; copy number variations.

Introduction. Constitutional copy number variants (CNV) include inherited and *de novo* deviations from a diploid state at a genomic region. Copy number variations are typically defined as larger than 50 base pairs. These variants contribute to genetic variation and disease in humans; including breast cancer susceptibility. Although known mutations in high penetrance hereditary genes such as *BRCA1, BRCA2* and other common gene alterations are unequivocally associated with breast cancer risk in familial breast cancer cases, these accounts for only 30% of familial risk of disease. The role of copy number variants in hereditary breast and ovarian cancer susceptibility is yet to be fully discovered; however significant amount of new loci have been identified in recent studies.

Aim. To identify constitutional copy number variations with suggested impact on hereditary breast and ovarian cancer development in the selected study group.

Materials and methods. 48 nonrelated index cases were included in this retrospective case descriptive study, each case representing a breast and ovarian cancer family. Selected patients fit strong clinical criteria for hereditary breast and ovarian cancer; however they are *BRCA1/2* founder mutation negative. To detect genome copy number variations we used Illumina Human Exome BeadChips with 25 000 SNP coverage. Chips were scanned by HiScan reader (Illumina, USA) and data analysis was done with Genome Studio and program R using appropriate algorithms. Functionality of genome alteration were analyzed based on on-line accessible database DECIPHER.

Results. Copy number variations were detected in all analyzed samples. Most CNVs were detected in chromosomes 1p31-p34 and q42, 2q13-q32.2, and chromosomes 6 and X; however a few rare copy number variants turned out to be with a significant impact. Most of the detected CNVs were benign genome variations without potentially morbid genome alterations. Each altered CNVs segment was inspected for genes it harbors and gene function was searched in DECIPHER data base. According to the gene functions candidate loci for each index case were highlighted.

Conclusions. CNVs with the suggested effect on cancer development were found. The detected genome aberrations in index case should be further studied in both affected and / or healthy family members to validate impact on cancer development.

LINKS BETWEEN MITOCHONDRIAL DNA AND AGING

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Keywords. Mitochondria, heteroplasmy, mtDNA haplogroups.

Introduction. The mitochondrial theory of aging is based on the mitochondrial DNA (mtDNA) progressive mutations, which lead to cellular defects. For the vast majority of humans, at the birth all mtDNA molecules are identical (homoplasmy). Various studies have shown that with age the rate of mitochondrial mutations increases, which may result in a coexistence of more than one genotype of mtDNA within a single cell (heteroplasmy). Mitochondrial haplogroups (hgs) are defined by variations in mtDNA sequences within the maternal lineages that have accrued over thousands of years. Hgs represent different ethnic populations and reveal some potential medical conditions. Several studies have pointed to the possible relation of varied hgs and aging.

Aim. Determine if there are links between mtDNA heteroplasmy, hgs and aging in a Latvian population.

Materials and methods. Samples: human DNA (from VIGDB: Genome database of Latvian population); total n = 221, divided in 3 age groups: 20–59 age group n = 69; 60–89 n = 83; 90–100 n = 69. Detection of heteroplasmy was done by using the SURVEYOR™ Mutation Detection Kit. Hg determination was performed by PCR-RFLP analysis. MtDNA copy numbers were measured using qPCRTaqMan assay. Statistical analysis (t-test, ANOVA) was performed by the GraphPad Prism version 5 software.

Results. MtDNA heteroplasmy was found in 24.8% of samples. When age groups were compared, heteroplasmy was observed in 17.4% (20–59 age group), 32.5% (60–89 age group) and 23.2% (90–100 age group) of samples. In the 20–59 age group mtDNA relative copy number was 1.06 ru (relative units) for heteroplasmy-positive, and 0.89 ru – for heteroplasmy-negative samples (P = 0.146); in the 60–89 age group the observed values were 0.79 ru and 0.83 ru for heteroplasmy-positive and negative samples (P = 0.567); in the 90–100 age group the observed values were 1.20 ru and 0.98 ru (P = 0.109).

There was no hg which had significantly higher or lower mtDNA copy number than any other: hg HV = 1.02 ru, T = 1.02, J = 0.93, U = 0.92, V = 0.88, H = 0.88, W = 0.84 (ANOVA P = 0.4853; total n = 221). The same was observed when mtDNA copy numbers were compared in different hgs grouped by age; 20–59 age group: hg J = 1.02 ru, U = 0.99, T = 0.97, H = 0.90, V = 0.89, W = 0.66 (ANOVA P = 0.4197; total n = 69); 60–89 age group: hg W = 1.09 ru, J = 0.95, U = 0.86, HV = 0.78, T = 0.75, H = 0.74, V = 0.73 (P = 0.0125; total n = 83); 90–100 age group: hg T = 1.18 ru, H = 1.04, U = 0.92, J = 0.82 (P = 0.1004; total n = 69).

Conclusion. There was no difference in mtDNA copy number between samples with and without mtDNA heteroplasmy in our sample cohort. Contrary to the fact that heteroplasmy increases with age, it was less frequent in centenarians than in the individuals 60–89 years old. Our results indicate that hgs did not influence mtDNA copy number, and a link between harmless mutations in mtDNA and aging was not observed. But for more concrete conclusions more samples should be analyzed.

16 March 2016

DYSMORPHOLOGICAL EXAMINATION OF THE AURICLE: EVALUATION OF THE LINK BETWEEN CONGENITAL NEURODEVELOPMENTAL DISORDERS AND MORPHOGENESIS OF THE EXTERNAL EAR

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Keywords. Minor anomaly, external ear, intellectual disability.

Introduction. Auricle has a very complex structure that develops from six mesenchymal hillocks during early phases of the embryogenesis. There is a wide range of shape and size of human auricle. Most of the variations are considered normal; however, minor anomalies may be proven to be a diagnostic value of specific syndromes.

Aim. To evaluate the frequency of minor anomalies (MA) of auricle in individuals with developmental delay / intellectual disability (DD / ID) and in healthy population. To evaluate a link between auricle MA and congenital neurodevelopmental and other anomalies.

Materials and methods. Clinical features of 78 DD / ID patients presented to Centre for Medical Genetics have been evaluated. A group of 71 healthy persons (control group) went on dysmorphological auricle examination. Statistical analysis of phenotype and other clinical findings was performed using SPSS 20.0.

Results. Auricular MA were found in 41/78 (52%) patients with DD / ID and in 11/71 (16%) healthy persons ($p < 0.05$). There were 31 (76%) males and 10 (24%) females ($p < 0.05$) with auricular MA in the patients group and there was no statistically significant difference between male and female in control group. Macrotia was found in 15 (25%), protruding ears in 12 (20%), low set ears in 8 (14%) patients. The most common MA in control group was Darwin's tubercle (73%). There was no statistically significant difference between the frequency of auricular MA and chromosomal, monogenic, multifactorial and unknown causes of DD / ID. Patients with auricular MA more frequently had microcephaly / macrocephaly compared with patients without MA ($p < 0.05$). Lip and / or palate defects were also more frequent in patients with auricular MA (17% vs 3%, $p < 0.05$). High-arched palate was observed in 6 (15%) patients with MA and in none without MA ($p < 0.05$). There was no statistically significant relationship between auricular MA and anomalies of other organ systems.

Conclusion. Auricle MA are more common in individuals with DD / ID than in healthy population. The presence of auricular MA is statistically more frequent in patients who also have abnormal head size and lip and / or palate defects. The results show a possible correlation between congetintal neurodevelopmental disorders and morphogenesis of the external ear.

EPIGENETIC PROFILE OF HYPOXIA AND ANGIOGENESIS – RELATED GENES AND ITS PROGNOSTIC RELEVANCE IN PROSTATE CANCER PATIENTS

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Keywords. Methylation, angiogenesis-related genes, prostate cancer.

Introduction. Prostate cancer (PCa) is the most common cancer in men and the second leading cause of male cancer deaths in Europe. Several recent studies have suggested an association between hypermethylation of regulatory regions of hypoxia and angiogenesis-related genes and development of various types of cancer including PCa. New molecular biomarkers with high prognostic and predictive value are required to identify early stages of the disease.

Aim. The main purpose of our study was to analyze promoter methylation of the *ADAMTS12, FILIP1L*, and *EPAS1* genes in cancerous and non-cancerous prostate tissues (NPT) in order to identify potential epigenetic markers for PCa detection.

Materials and methods. DNA methylation profile was analyzed in 9 pairs of PCa and NPT samples (18 samples in total) by means of microarrays according to $\geq 212\,000$ probes localized in promoters or exons and introns of known and predicted genes. Targets for further analysis were selected from more than 1000 genes that showed significant methylation differences comparing PCa versus NPT. Promoter methylation status of selected genes was validated in 130 PCa and 35 NPT by methylation-specific PCR (MSP). Benign prostate hyperplasia (BPH) samples (N = 17) were used as an additional control group.

Results. *ADAMTS12* and *FILIP1L* promoter methylation was detected in 109 of 130 (84%) PCa samples for each gene. In NPT, methylation frequencies of *ADAMTS12* and *FILIP1L* were 2 of 35 (6%) and 4 of 35 (11%), respectively. These results showed significant differences of the methylation frequency in PCa versus NPT (P < 0.001) or BPH (P < 0.001) cases. The MSP results showed that regulatory sequence of *EPAS1* gene was unmethylated in all analyzed PCa, NPT and BHP samples. According to clinical-pathological parameters of PCa cases, only methylation of *ADAMTS12* gene promoter was significantly associated with biochemical disease recurrence (P = 0.041) or higher tumor (pT) stage (P = 0.045) and was close to significant (P = 0.057), in Gleason score 7 versus 6 cases. No statistically significant correlations were observed between *ADAMTS12* or *FILIP1L* methylation status and prostate-specific antigen (PSA) level, tumor volume, prostate mass, or patients' age.

Conclusion. Our study revealed a significant difference in methylation frequencies of the *ADAMTS12* and *FILIP1L* genes between prostate tumor and non-tumor tissues. Further quantitative research of genes' expression is required to evaluate reliability of these genes as potential biomarkers that are able to accurately distinguish indolent and aggressive PCa tumors.

THE PREVALENCE OF MTHFR GENE POLYMORPHISMS A1298C AND C677T AND THEIR IMPACT ON CLINICAL EXPRESSION OF WILSON'S DISEASE

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Keywords. Wilson's disease, MTHFR.

Introduction. Wilson's disease (WD) is an autosomal recessive disorder, its frequency is about 1 in 30,000–40,000 in most populations. Considerable phenotypic variability is observed among WD patients possessing the same type of mutations in ATP7B gene; it is suggested that the phenotypic variability in WD is due to other modifying factors. One of possible modifying factors is changed homocysteine metabolism by MTHFR gene polymorphisms C677T and A1298C. Both polymorphisms are thought to be associated with decreased MTHFR activity resulting in hyperhomocysteinemia.

Aim. To evaluate the prevalence of MTHFR gene polymorphisms A1298C and C677T in Latvia and their impact on clinical expression of WD.

Materials and methods. We genotyped 101 patients DNA, 60 patients met the inclusion criteria (Leipzig's Score, 2001) and a control group of 134 (for C677T) and 233 (for A1298C) self-reported as healthy individuals from general population of Latvia for the two MTHFR gene polymorphisms – A1298C and C677T. Genomic DNA was extracted from peripheral blood cells; the C677T and the A1298C were identified by PCR-RFLP method. Data were analyzed using the MS Excel, PLINK software.

Results. Group of 60 patients with diagnosed WD. Sex ratio of WD group – males 53% and females 47%; control group (CG) 27%:73%, median age of WD patients – 31 years. Median age of onset in WD patient group is 26.5 yr, no statistically significant relation with A1298C, C677T polymorphisms and earlier age of onset was observed. Genotypes among WD patients – A1298C – AA – 48.3%, AC – 33.3%, CC – 18.3%; C677T – CC – 48.3%, CT – 46.7%, TT – 5%. Genotypes among CG A1298C – AA – 48.1%, AC – 39.1%, CC – 12.8%, C677T – CC – 49.63%, CT – 40.74%, TT – 9.63%. Frequency of A1298C in WD patient group – 0.43; CG – 0.33 (p value > 0.05); C677T in WD patient group – 0.30; CG – 0.30 (p value > 0.05). WD patient group was divided by clinical picture – hepatic signs, neuropsychiatric signs, neurohepatic signs and presymptomatic. No statistical significance was observed between A1298C, C677T genotypes and variability of clinical picture. Approved mutations of ATP7B were included in data analysis. MTHFR polymorphisms analysed together with mutations of ATP7B – neurologic symptoms were more frequent among WD patients comparing with CG were in case of risk combination – no approved mutations in ATP7B, allele 1298C, allele 677C (p < 0.05).

Conclusions
1. MTHFR gene polymorphisms A1298C and C677T are not associated with phenotypical alterations in WD and prevalence of A1298C and C677T is not proved as more frequent among WD patients as statistical significant.
2. Risk combination for neurologic symptoms was proved.

16 March 2016

IMPACT OF *PALB2* AND *RECQL* GENETIC VARIANTS ON BREAST CANCER SUSCEPTIBILITY

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Keywords. *PALB2*, *RECQL*, breast cancer.

Introduction. Loss of genomic stability and faulty DNA damage repair mechanisms are cardinal features in cancer development and progression. Error in homologous recombination describes the mechanism of most major- and moderate breast cancer susceptibility gene mutations. One representative of the latter is *PALB2*; its encoded protein, a partner and co-localizer of *BRCA2*. Several mutations found to be associated with an increased breast cancer risk but sufficient validation for implementation into screening assays is not yet given.

As minor and low-penetrance breast cancer susceptibility genes are lately being emphasized, the recently found *RECQL* genetic polymorphisms, although rare, seem to contribute significantly to breast cancer development risk. Genetic variants can lead to RecQ helicase dysfunction, destabilization of replication forks, ultimately leading to erroneous DNA replication and damage repair, effectively increasing the likelihood of cancer development.

Aim. To estimate the prevalence of the genetic polymorphisms in *PALB2* c.509_510delGA *RECQL* c.634C > T and *RECQL* c.1667_1667+3delAGTA and their relevance to disease development in unselected Latvian breast cancer patients compared to gender matched controls.

Materials and methods. In this case control study 672 diagnosed female breast cancer patients were compared with 672 healthy and unrelated female controls, for the habitation of any of the 3 above-mentioned polymorphisms by RFLP method and confirmation of positive samples by Sanger sequencing.

Results. Preliminary results include the successful genotyping of the following number of patients. None of the 545 successfully screened breast cancer patients, nor the 474 controls was found positive for *RECQL* c.634C > T. We furthermore evaluated 461 breast cancer and 383 control group samples for the *RECQL* c.1667_1667+3delAGTA variant and confirmed one single heterozygous female in the latter. For the *PALB2* mutation we were able to evaluate the results of 624 affected and 522 control samples, identifying four heterozygous individuals. All of them were in the diagnosed breast cancer group (4/624, 0.6%) and their age corresponded (58.75) to the mean of the group (56.44), showing no early disease onset. Affected individuals showed no pattern of malignancy in family history.

Conclusion. We validated a tendency in the polymorphism in the *PALB2* gene as a contributor to breast cancer development with an OR of 7.53 (95% CI: 0.4–141). Study group sizes are to be increased to proof the trend and obtain a statistically relevant result. Our study does not yet support the relevance of *RECQL* in disease development.

FETAL CONGENITAL HEART DISEASES IN PRENATAL PERIOD IN ASSOCIATION WITH 13, 18 AND 21 CHROMOSOME TRISOMY

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Keywords. Prenatal period diagnostics, chromosomal trisomy, congenital heart disease.

Introduction. As one of the most common and the most significant risk factors for fetal congenital heart diseases are congenital genetic fetal chromosomal abnormalities such as: trisomy 21 (Down syndrome), trisomy 18 (Edwards syndrome) and trisomy 13 (Patau syndrome), etc. There is a strong association between the heart and large blood vessels structure anomalies, congenital heart diseases and genetic abnormalities that can be diagnosed in prenatal period.

Aim. To find out the most common congenital heart disease to fetus with determined 13, 18 and 21 trisomy in prenatal period.

Materials and methods. Retrospective study, at BKUS, period from 01.01.2013 – 01.01.2015. 127 patients were choosen, pregnant women, which turned to medical prenatal diagnostic center due to changes during first trimester screening, as a result the fetal karyotype were summarized and derived from invasive prenatal diagnostic techniques, such as chorionic villus sampling, amniocentesis and NiPt test with trisomy 21, 13, 18, respectively. This data was compared and summarized with fetal echocardiography data from Diagnostic cardiology center. Following data was also taken in account: nuchal transluency, nasal bone visualization, mother's prior family history, family inheritance, the occurence of congenital heart disease in the family and additional risk factors such as smoking, cases of illnes during pregnancy.

Results. The study included 127 patients, pregnant woman, middle age of the patients was 33.4 years, to whom karyotype of Down syndrome was found (trisomy 21) – 68.5% (n = 87), Edwards syndrome (trisomy 18) – 21.3% (n = 27) and Patau syndrome (trisomy 13) – 4.7% (n = 6). Processing the findings of the karyotype, following congenital heart defects were summed up: atrioventricular septal defect – 21.3% (n = 28), ventricular septal defect – 18.3% (n = 24), double outlet right ventricle – 3.8% (n = 5), tetralogy of Fallot – 1.5% (n = 2), truncus arteriosus – 1.5% (n = 2), hypoplastic left heart syndrome – 1.5% (n = 2) and transposition of magistral artery – 0.8% (n = 1), hypoplastic aortic arch – 0.8% (n = 1), etc. ductus arteriosus dependent heart diseases: Aortic coarctation, aortic stenosis, and hypoplastic aortic arch – 3.8% (n = 9). Comparing the frequency of fetal chromosomal abnormalities and fetal congenital heart diseases and norm, it was obtained, that the norm is 44.9% and the presence of congenital heart disease – 55.1%. There is a correlation between age and prenatal chromosomal abnormalities, trisomy (Fisher exact test; p = 0.027), there is a correlation between nuchal transluency in fetus and congenital heart disease frequency (Fisher exact test p < 0.001). Processing data by Mann-Whitney test, comparing pregnant women age and the prevalence of heart disease, it was obtained that if the pregnant women with a chromosomal abnormality to her fetus is younger, then heart defects are found more often, p = 0.043. The fetal outcome was summarized – 86.6% (n = 110) during prenatal pregnancy medical abortions were made, 1.6% (n = 2) spontaneous abortion, 2.4% (n = 3) the death of fetus in perinatal period, 5.5% (n = 7) were stillborn and 2.4% (n = 3) were alive and 0.8% (n = 1) died during the first year.

Conclusion. There is association between congenital fetal chromosomal abnormalities and heart diseases. To fetus with identified genetic chromosomal abnormalities, congenital heart disease will occur more frequently. Most common heart defects are atrioventricular septal defect, ventricular septal defect and double outlet right ventricle ventricle, as well as the existence of other ductus arteriousus depend heart diseases.

MORPHOLOGICAL SPECTRUM OF SURGICALLY TREATED TUMORS OF CENTRAL NERVOUS SYSTHEM

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Keywords. Oncology, CNS tumors, meningioma, glioblastoma.

Introduction. Tumors of central nervous system (CNS) account for 1–2% of all neoplasms (*Lee at al.*, 2010). Brain tumors may originate within the CNS, or they may metastasize to the brain from extracranial sites. The major types of primary CNS tumors are gliomas (i. e., astrocytomas, oligodendrogliomas, ependymomas), meningiomas and poorly differentiated neuroectodermal neoplasms (e.g., medulloblastomas). Primary brain tumors are classified into four grades (I, II, III, IV) of malignancy (*Louis et al.*, 2007).

Aim. The aim of this study was to describe morphological spectrum and age distribution of surgically treated CNS tumors.

Materials and methods. In this study, we retrospectively analyzed morphologically proven, consecutive cases of CNS tumors diagnosed during two-year period (2014–2015) in a single university hospital. Each case was characterized by histological type, grade of tumor and patient's age. Descriptive statistical analysis with calculation of 95% confidence interval (95% CI) was carried out.

Results. Archive search yielded 466 cases of CNS tumors, including 389 cases 83.5%; 95% CI = 80.1–86.9%) of primary CNS tumors and 77 (17%; 95% CI = 13.1–19.9%) cases of metastases. Meningiomas were the most common tumors comprising 35.4% (95% CI = 31.1–39.7%). Grade I (benign) meningiomas were found in 85.5% (95% CI = 80.1–90.9%), however grade II (atypical) and grade III (anaplastic) meningiomas in 12.7% (95% CI = 7.6–17.8%) and in 1.8% (95% CI = 0–3.8%) cases respectively.

160 patients (34.3%; 95% CI = 30.0–38.6) had glial tumors. Astrocytic tumors were found in 91.9% (95% CI = 87.67–96.13%), oligodendroglial tumors in 5.6% (95% CI = 2.04–9.16%) and ependymal tumors in 2.5% (95% CI = 0.08–4.92%) cases. 1.9% (95% CI = 0–4.0%) of them were grade I, 15.4% (95% CI = 9.8–21.0%) grade II, 17.3% (95% CI = 11.4–23.2%) grade III, 65.4% (95% CI = 58.0–72.8%) grade IV. In most cases glial tumors were located in frontal 30.0% (95% CI = 22.9–37.1%) and temporal 25.6% (95% CI = 18.8–32.4%) lobes.

During the research we also found 2.1% (95% CI = 0.8–3.4%) cases of B-cell lymphomas, 6.0% (95% CI = 3.8–8.2%) cases of pituitary adenomas and 5.6% (95% CI = 3.5–7.7%) cases of schwannomas. The mean patient's age with glial tumors was 53.2 (95% CI = 50.8–55.6) years with the highest mean age in patients with glioblastomas – 57.7 (95% CI = 53.8–61.3) years. However, pilocytic astrocytomas occurs in young patients – mean age 24.5 (95% CI = 23.5–25.5)

years. The mean age of patients with meningiomas was 62.0 (95% CI = 60.1–63.9) years. The oldest patient was found with glioblastoma diagnosis – 91 years old. The youngest patient was 20 years old with diagnosis anaplastic astrocytoma.

Conclusions
1) The most frequent tumor in surgical material is meningioma.
2) Glial tumors mostly are high-grade neoplasms (grade IV) with common localization in frontal and temporal lobes.
3) The highest mean age was found in patients with meningiomas and the lowest mean age in patients with pilocytic astrocytomas.

MORPHOLOGY STUDY OF SPINAL GANGLIA IN CONDITIONS OF MICROMERCURIALISM AND ITS CORRECTION WITH MILDRONAT

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Keywords. Rat, mercury chloride, micromercurialism, spinal ganglia, Unitiol, Mildronat.

Introduction. All humans are exposed to some level of mercury, which is toxic to the central and peripheral nervous systems, causing a condition known as micromercurialism. Mildronat is a clinically used anti-ischemic drug that is currently widely produced in Latvia and other CIS countries.

Aims. Study of influence of Mildronat on spinal ganglia in conditions of micromercurialism.

Materials and methods. The study was conducted on 80 pairs of white Wistar rats with the weight of 160–180 g. Laboratory animals were divided into 5 series, and each series was divided into 2 groups. In the 1st series were intact animals, in the 2nd – animals that were exposed to mercury chloride in the dose 1/100 LD_{50} intraperitoneally in the amount of 10 injections during 2 weeks and 50 injections during 10 weeks. In the 3rd and 4th series after exposure to mercury chloride animals received Unitiol and Mildronat respectively intraperitoneally (0.1 ml of 5% solution per 1 kg of weight) during 2 and 10 weeks. In the 5rd series after exposure to mercury chloride animals received Unitiol and Mildronat together. All procedures were performed according to "Principles of use of laboratory animals in biomedical research". The objects of study were afferent neurons and their surroundings in spinal ganglia. Ultrathin sections were made from small fragments of spinal ganglia according to general methods and were photographed by electron microscope.

Results. Ultramicroscopic characteristics of sensory ganglia show that after 6 weeks of exposure to small doses of mercury, a combination of Unitiol and Mildronat promotes energy-generating and synthesis processes (repair of the organization of endoplasmic reticulum and mitochondria, amount of euchromatine and nuclear pores of neurons and neurolemmocytes increased). In long-term exposure, a significant decrease in decompensation changes occurs (preservation of synthesis organelles structural organization, large mitochondria in neurons and gliocytes are seen, nuclei of neurocytes and endotheliocytes have a large number of pores, organization of the majority of myelinated nerve fibers is preserved).

Conclusions. Analysis of structural changes in sensory ganglia in mercury exposure shows that injection of the complex of Unitiol and Mildronat eliminates the appearance of mercury toxic effects in short-term exposure to greater extent than in long-term exposure. Morphological conditions improve or resemble the ones in monoprotection using Unithiol and are significantly better than in use of Mildronate only, which shows their mutual compensation effect.

THE MORPHOFUNCTIONAL CHANGES IN
THE SUBENDOTHELIAL LAYER OF VARICOSE VEINS

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Keywords. Chronic venous disease, fibronectin, laminin. varicose veins.

Introduction. Varicose veins are a common venous disease of the lower extremity. Although the mechanisms and determinants in the development of varicosities are not clearly defined, the final common pathway that leads to chronic venous insufficiency is the development of venous hypertension. The increase in venous pressure is associated with servile changes in the venous wall that leads to further venous dilation.

The aim of this study was to clarify histological changes and evaluate the expression of basal lamina components (collagen IV, laminin and fibronectin) on great saphenous veins in chronic venous insufficiency.

Material and methods. A histopathological study was conducted on 10 patients with varicose veins (2 males, 8 females). In 9 cases patients had leg oedema (CEAP class 3) and 1 patient had skin changes (CEAP class 4). All underwent lower extremity primary varicose great saphenous vein excision. Tissues were processed for histological routine staining and immunohistochemical studies of collagen IV, laminin and fibronectin. For the analysis of the positive structures semiquantitative evaluation method was used.

Results. Light microscopic examination revealed significant disorganization of the smooth muscle (SM) bundles in almost all specimens, where cells appeared elliptical rather than spindle-shaped (contractile phenotype). The highest density of *vasa vasorum* was found in the *tunica media* and *tunica adventitia* in 8 out of 10 specimens, simultaneously to the sclerotic blood vessels in 6 out of 10 specimens and neoangiogenesis in 8 out of 10 specimens. Immunostaining showed numerous (+++) expression of collagen IV below endothelial cells of vasa vasorum and moderate (++) below varicosed vein endothelium. Also numerous (+++) amount of laminin positive structures and numerous (+++) amount of fibronectin positive structures was found in varicose veins walls below the endothelial lining.

Conclusions. Varicose veins demonstrate ischemia and remodelation of the wall with compensatory neoangiogenesis. Collagen IV, laminin and fibronectin accumulation proves thickening of basal lamina and intimal changes in damaged blood vessels. The thickened basal lamina can be considered as a protective mechanism against high mechanical stress.

ENTERIC NERVOUS SYSTEM IN PATIENTS WITH RECTOCELE: RESULTS OF QUANTITATIVE IMMUNOHISTOCHEMICAL ASSESSMENT

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Keywords. Obstructive defecation syndrome, rectocele, morphology, immunohisto-chemistry.

Introduction. About a half of patients with chronic constipation suffer from obstructed defecation syndrome (ODS). The most common structural causes of ODS are rectocele and recto-anal intussusception. Patients with recto-anal intussusception display abnormalities of the enteric nervous system (ENS), and pathophysiological mechanism of rectocele is still incompletely understood.

Aim. To investigate whether there are structural ENS abnormalities in patients with rectocele and compare these results with control group.

Materials and methods. Tissue samples (n = 13) were obtained from patients undergoing rectocele repair surgery. Rectal autopsy material (n = 4) served as controls. Enteric glial cells (EGC) and interstitial cells of Cajal (ICC) were studied immunohistochemically using anti-S100 and anti-CD117 antibody, respectively. S100 was assessed in submucous (SM) and myenteric (MY) plexuses, CD117 – in submucous, myenteric plexuses and within entire muscularis externa (IM). The number of CD117-positive cells were expressed quantitatively, whereas, S100 – semiquantitatively. SPSS 20.0 and nonparametric tests were used for statistical analysis. Data were presented as medians with interquartile range (IQR). P value < 0.05 was considered as significant.

Results. Immunohistochemistry revealed that ICC-IM were significantly higher (p < 0.001) in patient group 12.00 (10.00; 15.25) when compared to control 5.00 (4.00; 6.00). Similarly, ICC-MY (10.00 (8.00; 15.00) vs. 5.00 (4.25; 5.00), p < 0.001) and ICC-SM (3.00 (2.00; 4.00) vs. 1.00 (1.00; 2.00), p < 0.001) were significantly higher in patient group. The number of S100 positive cells was significantly higher in patients in both the myenteric plexus (45.00 (30.50; 58.50) vs. 32.00 (25.00; 37.75), p = 0.001) and the submucous plexus (13.00 (9.00; 20.00) vs. 8.00 (7.00; 10.00), p = 0.001). Patients with rectocele revealed significant differences in S100 expression 0.40 (0.20; 0.76) when compared to controls 0.60 (0.30; 1.20), p = 0.008.

Conclusion. This study shows that the number of ICC in myenteric, submucous plexuses, and muscularis externa as well as the number of enteric glial cells in myenteric, submucous plexuses is significantly higher in the patients' group. We can suggest that cellular interplay between enteric glial cells and neurons is essential in patients with rectocele. An increase of ICC and EGC cells could represent a mechanism for nursing of neurons provided by glial cells including peculiarities of enteric neurotransmission, and, finally, muscle stimulation.

KI-67, CD56 AND BCL-2 EXPRESSION IN LUNG SMALL CELL CARCINOMA AND SQUAMOUS CELL CARCINOMA

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Keywords. Bcl-2, CD56, Ki-67, small cell lung carcinoma, squamous cell lung carcinoma.

Introduction. Treatment of the patient and long-term outcome depend on the tumor histology: whether a tumor is classified as a small cell lung carcinoma or as a subtype of non-small cell lung cancer (Novaes *et al.*, 2008). Immunohistochemical (IHC) staining may aid towards the distinction between the various histological types of lung cancer (Brunnström *et al.*, 2013).

Aim. The aim of the study was to assess Ki-67, CD56 and Bcl-2 expression and to evaluate their diagnostic value for distinguishing small cell and squamous cell lung carcinoma.

Materials and methods. Retrospective study included 40 cases of primary small cell and squamous cell lung cancer each that were acquired from the lung biopsy and pulmonary resection material. Ki-67, CD56 and Bcl-2 expression were evaluated by immunohistochemistry and assessed semi-quantitatively and quantitatively in tumour areas with the highest marker expression. Ki-67 expression was defined as the percent of Ki-67 positive tumor cells and divided into three grades, accordingly 1, < 50%; 2, 50–75%; 3, ≥75% (Han *et al.*, 2009). CD56 expression was divided into four grades, respectively, 1, < 25%; 2, 25–50%; 3, 50–75; 4, ≥ 75% (Kontoggiani *et al.*, 2005), and bcl-2 expression into two grades 1, < 20% and 2, > 20% (Renouf *et al.*, 2009). Data were analyzed using SPSS 16.0.

Results. Mean expression of Ki-67 in lung squamous cell carcinoma was 66% [95% confidence interval (CI) = 57.8–74.7] expression compared to higher 84% [76.7–90.4] expression in small cell carcinoma (p < 0.05). Squamous cell carcinoma grade 1 comprised 30% [18.0–45.4] of cases, grade 2 – 27.5% [16.0–42.0] and grade 3 – 42.5% [28.5–57.8]. In the small cell carcinoma 10% [3.9–23.0] of cases were grade 1, 7.5% [2.5–19.8] were grade 2 and 82.5% [68.0–91.2] had grade 3.

Mean expression of CD56 in squamous cell carcinoma was 1% [0.2–1.8], but in small cell carcinoma it showed higher expression with 81% [71.5–90.1; p < 0.05]. All cases of squamous cell carcinoma 100% [91.2–100] were grade 1. Small cell carcinoma grade 1 comprised 7.5% [2.5–19.8], grade 2 – 7.5% [2.5–19.8], grade 3 – 7.5% [2.5–19.8] and grade 4 – 77.5% [62.5–87.6] of cases.

Mean expression of Bcl-2 in squamous cell carcinoma with 4.5% [0.0–4.8] was lower than 46% [35.6–57.0] in small cell carcinoma (p < 0.05). Squamous cell carcinoma grade 1 accounted for 95% [83.5–98.6] of cases and 5% [1.3–16.5] were grade 2. Small cell carcinoma grade 1 comprised 27.5% [16.1–42.3] of cases and 72.5% [57.1–83.8] were grade 2.

Conclusions

1. Ki-67 is specific in distinguishing squamous cell carcinoma from small cell carcinoma. Higher Ki-67 expression is observed in small cell carcinoma.
2. CD56 is highly specific for small cell lung carcinoma, rather than for squamous cell carcinoma.
3. Bcl-2 has a higher tendency to be positive in small cell lung carcinoma compared to squamous cell lung carcinoma.

16 March 2016

THE ANATOMICAL CHARACTERISTICS OF
N. TRIGEMINUS BLOCKADE SITES

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Keywords. *N.trigeminus*, blockade sites, *foramen supraorbitale*, *foramen infraorbitale*, *foramen mentale*.

Introduction. Blockade of trigeminal nerve (*n. trigeminus*) is an important stage before the surgical procedures, which are connected with skin aging, congenital facial defect correction or injuries. More often a local anesthesia is carried out of places where *n. trigeminus* branches leave bone channels through the openings – *foramen supraorbitale*, *foramen infraorbitale* and *foramen mentale*. Through the literature sources these openings are projected on the same imaginary line located 2.5 cm lateral to the midline of the face. It is very important to understand and clarify some outer features that could show us the most precise location of each opening. The *foramen supraorbitale* and *foramen mentale* are palpable, but finding the exact location of *foramen infraobitale* may still be problematic.

Aim. Dissect *foramen supraorbitale*, *foramen infraorbitale* and *foramen mentale* with outgoing nerves. Verify the location of the openings on the skulls, as a reference point assuming a median line of the face. Analyze obtained results and find an indicators on a human face that would help to diagnose an exact location of these openings.

Materials and methods. A cadaver of Anatomy and Anthropology Institute and 20 exhibited skulls in Anatomy museum of J. Primanis were used. As sources of literature other studies on the subject of the PubMed database, anatomical atlases and ClinicalKey database were used.

Results. From cadaver`s facial area skin, subcutaneous tissue, *corpus adiposum buccae*, some part of muscles were removed. *A. et v. facialis, n. facialis* branches and *glandula parotidea* with *ductus parotideus* were dissected. *M. orbicularis oculi* was partly detached to expose the *foramen supraorbitale* with an outgoing *n. supraorbitalis* and *foramen infraorbitale* with an outgoing *n. infraorbitalis*. Also *m. mentalis*, *m depressor labii inferioris, m. depressor anguli oris* were partly detached to expose the *foramen mentale* with an outgoing *n. mentalis*. *Foramen supraorbitale* is located 2.5 cm, *foramen infraorbitale* – 2.4 cm and *foramen mentale* – 2.6 cm from facial midline.

On the skulls *foramen supraorbitale* is located 2.0–2.8 cm from facial midline, *foramen infraorbitale* 2.5–3.0 cm and *foramen mentale* 2.4–2.9 cm from the midline. Skull openings distance is shifted up to 0.5 cm from the literature landmarks.

There are concrete indicators that can help to find these openings with high accuracy.

Conclusion. Each individual may have a variety of projection spaces of these three openings, which can lead to have complications in cases where local anesthetics are necessary.

MORPHOLOGICAL AND CLINICAL DATA REVIEW OF PATIENTS IN WORKING AGE WITH PRIMARY MYELOFIBROSIS

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Keywords. Primary myelofibrosis, trephine biopsy, bone marrow morphology.

Introduction. Primary myelofibrosis (PMF) is a myeloproliferative neoplasm characterized by a proliferation of megakaryocytes (MKC) and granulocytes in bone marrow (BM) that in fully developed disease is associated with reactive deposition of fibrous connective tissue (Thiele et al., 2008). Mean age of PMF diagnosis in European countries is between 69 and 76 years (y), as a study of Moulard et al. (2014) shows. They also report that there is very few data about descriptive statistics and epidemiology for PMF. PMF is uncommon in younger individuals (Bose et al., 2015).

Aim. To analyse morphological and clinical characterises in patients younger than 60 y with PMF.

Materials and methods. This study is retrospective. After obtaining all patients (n = 138) with PMF from 2010 to 2015 in Riga East Clinical University Hospital's Haematology centre, in this study was enrolled 28 patients < 60 y. BM biopsy data, such laboratory tests as red blood cells (RBC), white blood cells (WBC), platelets (PLT), haemoglobin (HGB) and visual diagnostic tests were analysed. Statistical analyses were performed with software IBM SPSS Statistics.

Results. About 20.2% of all patients with primary myelofibrosis in Latvia is younger than 60 y. 17 patients (60.7%) showed the fibrotic stage in BM biopsy, but 11 patients (39.3%) had prefibrotic stage. Ratio of fibrosis grade between patients were MF0: MF1: MF2: MF3 = 17.9% (n = 5): 32.1% (n = 9): 35.7% (n = 10): 14.3% (n = 4). Age of patients ranged from 28 to 59 y, the average age of patients was (Mean ± SD) 52, 96 ± 7.79 y. Of all patients men were 57.1% (n = 16) and women – 42.9% (n = 12). The most frequent MKC type in BM was hyper lobulated, atypical as it showed in 18 (64.3%) cases of all. In 8 cases (28.6%) MKC were hypo and hyper lobulated, atypical, but in 2 cases (7.1%) they were hypo lobulated, atypical. In almost all cases MKC formed clusters (n = 26; 92.9%), but only in 2 cases (7.1%) clusters were absent. BM mean cellularity level was 78.57 ± 18.42%. RBC count was $3.56 ± 0.73 × 10^6/\mu L$, WBC count $14.84 ± 10.44 × 10^3/\mu L$, PLT count 249.71 ± 128.93 × 10^9/L, range (min–max) 59 – 469 × 10^9/L, HGB level was 102.29 ± 26.49 g/L. Splenomegaly was diagnosed in 18 cases (64.3%), but hepatosplenomegaly in 6 cases (21.4%). Organs were not enlarged in 4 cases (14.3%). The spleen size in splenomegaly was 22.77 ± 3.86 cm. The liver size in hepatomegaly was 15.87 ± 0.64 cm.

Conclusions. 20.2% of patients in Latvia disease is diagnosed much earlier than in Europe. More than a half of analysed patients had fibrotic stage of PMF. BM fibrosis grade was with mild and diffuse reticulin formation. Clinical data showed that patients had such clinical signs as hepatosplenomegaly, anaemia, and leucocytosis. PLT level ranged from normal PLT count to severe thrombocytopenia.

OVERVIEW OF MOST FREQUENT PATHOLOGIES
IN THE HEAD AND NECK REGION

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Keywords. Head, neck, age, pathomorphology.

Introduction. Head and neck region presents a wide spectrum of pathologies starting with the acute inflammation and ending with malignant tumours. Pathomorphological analysis is one of the most precise diagnostical method, that helps to select correct and more effective method of treatment, which does not harm the patient and excludes relapse risk, reduces possibility of complications.

Aim. The aim of the study is to identify the most frequent head and neck region pathologies and their incidence in different age groups.

Materials and methods. The retrospective study collected archive research cases of head and neck pathologies covering 2 year long period. The study analyzed age, gender, morphological and clinical diagnosis. Descriptive statistics with 95% confidence interval of the determination was used for processing the data (*Altman et al.,* 2000).

Results. During the retrospective study that covered 2 year period 1420 cases of head and neck region pathologies were analysed. The most common head and neck region pathology was radicular cyst 11.9% (95% confidence interval (CI) = 10.3–13.7) with similar incidence among men and women (50.3% (95% CI = 42.8–57.7) and 49.7% (95% CI = 42.3–57.2) accordingly). Second most common pathology was fibropapilloma 10.0% (95% CI = 8.6–11.7), with corellation 1:2.4 in men and women accordingly. On the third place was mucocele accounting 8.1% of cases (95% CI = 6.8–9.3) and more common in men rather than women (60.9% (95% CI = 51.7–69.3.7) and 39.1% (95% CI = 30.7–48.3) respectively).

Comparing incidence of 3 most common pathologies in the study, between gender and different age groups were obtained the following results. radicular cyst was more common in men of 51–60 year age group (24.7% (95% CI = 16.8–34.8)), whereas in women most of the cases were in 41–50 year age group (25.0% (95% CI = 17.0–35.2)). Fibropapilloma is more common in 31–40 year age group for men (19.5% (95% CI = 10.2–34.0)) and 51–60 year age group for women (24.8% (95% CI = 17.4–34.0)). Mucocele prevailed in men in 31–40 age group (25.7% (95% CI = 16.9–37.0)), but in women in 11–20 age group (22.2% (95% CI = 12.5–36.3)) and 21–30 age group (22.2% (95% CI = 12.5–36.3)) equally.

Conclusions

1. 3 most common head and neck pathologies are radicular cyst, fibropapilloma and mucocele.
2. Radicular cyst in men and fibropapilloma in women show the highest incidence in the age group of 51–60 year.

The very same pathology may present in men and women in different age groups that is why pathomorphological analysis for identification and specification of diagnosis should be done.

MORPHOLOGICAL PROFILE OF SKIN TUMOURS

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Keywords. Skin cancer, benign tumour.

Introduction. A wide scope of medical literature is devoted to skin cancer due to its increasing incidence. Non-melanoma skin cancer is considered the most common malignancy in Caucasians (Diepgen *et al.*, 2002). Malignant melanoma is the least frequent among skin cancers, but brings the worst survival (Peterson, 2015). However, few reports describe benign skin tumours, constituting the differential diagnosis of malignant skin neoplasms.

Aim. The goal of this study was to determine the morphological range of skin tumours in local patients.

Materials and methods. In a retrospective study, 1138 consecutive skin biopsies obtained by clinical indications (2013 – 2015) were retrieved by archive search. Inclusion criteria comprised presence of morphologically verified malignant or benign tumour. World Health organisation classification of skin tumours was applied. The demographic data (gender, age) were analysed. Descriptive statistical analysis was performed by IBM SPSS software.

Results. In the whole cohort (1138), patients' age ranged from 4 to 92 years. The mean age ± standard deviation was 42.88 ± 16.71 years. Among all patients, there were 36.8% [95% confidence interval: 34.0–39.6] males and 63.2% [60.4–66.0] women. Benign melanocytic tumours s. naevi constituted 38.7% [35.9–41.5] cases. The mean age of this group was 35.95 ± 13.46 years, ranging 4–80 years. Male vs. women ratio (M:W) was 27.2% [23.3–31.6] vs. 72.8% [68.4–76.7]. Basal cell carcinomas comprised 12.2% [10.4–14.3] cases and were removed at the mean age of 58.81 ± 16.07 years. M:W was 34.3% [27.1–42.8] vs. 65.7% [57.2–72.9]. Skin appendage tumours followed by frequency, comprising 10.6% [9.0–12.6] patients at the mean age of 41.74 ± 15.91 years. M:W ratio was 55.0% [46.5–63.9] vs. 45.0% [36.1–53.5]. Acanthomas were observed in 8.8% [7.3–10.6] patients at the mean age of 49.59 ± 15.66 years. Males constituted 34.3% [25.4–43.7] and women: 65.7% [56.3–74.6] of these cases. The following tumours and preneoplastic conditions also were present: fibrous, fibrohistiocytic and histiocytic tumours 8.8% [7.3–10.6], papillomas 6.8% [5.4–8.4], vascular tumours 4.9% [3.8–6.4], lipomas 3.3% [2.4–4.6], actinic keratosis and neural tumours 1.1% [0.7–2.0] each, smooth and skeletal muscle tumours 1.0% [0.5–1.8], Bowen disease 0.7% [0.3–1.4], verruca and melanomas 0.6% [0.3–1.3] each, squamous cell carcinomas 0.5% [0.2–1.2], haematological tumours 0.3% [0.1–0.8] and lymphatic tumours 0.1% [0.0–0.8].

Conclusions. Our study has highlighted the morphologically confirmed spectrum of surgically treated skin tumours in local patients. Benign tumours, mostly naevi, predominate and are observed over wide age range. However, malignant tumours are found in a significant fraction of cases. Among malignant neoplasms, basal cell carcinoma predominates but melanoma, squamous cell cancer and haematological tumours also are observed.

COLORECTAL BIOPSY MATERIAL ANALYSIS

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Keywords. Adenoma, colorectal biopsy, high-grade, low-grade.

Introduction. Nowadays colonoscopy is very important in a diagnostics of colorectal adenomas and adenocarcinomas. Adenomatous polyps (adenomas) are characterized by a relatively normal covering epithelium over a mass of elongated, bizarre shaped mucosal glands, often with goblet cells. These lesions consist of pedunculated and sessile (broad base) morphology [*Lanza et al.,* 2011]. Adenomas can be divided into three major histopathological types: tubular, villous and tubulovillous. By definition, all adenomas show at least low-grade dysplasia. Only a small proportion progress to the next level, high grade dysplasia (HGD), which is associated with larger size and villous morphology and more likely is associated with progression to colorectal cancer [*Lochhead et al.,* 2014].

Aim. The aim of our study was to analyze colon biopsy material for adenomatous polyps to find out the morphological spectrum of adenomas in Latvia.

Materials and methods. In a retrospective study 299 colorectal biopsies from one year period in hematoxylin –eosin stain were analyzed. In the research patient age, gender, adenoma type and grade of dysplasia were analyzed. Descriptive statistical analysis was performed and calculation of 95% confidence interval (CI), using CIA software (Altman et al., 2000) was done.

Results. The study included 299 colorectal biopsy material, of them 136 patients (45.5% [95%CI: 39.9–51.1]) were male, and 163 (54.5% [48.8–60.1]) female. Age of the patients ranged from 20 to 93 years, mean age was 67.6 years. The median of the age was 71. The most common adenomas in biopsy material were tubulovillous, which were found in a 45.8% [40.3–51.5] of cases. Tubular adenomas were found in 41.1% [37.5–46.8], but villous adenomas in 1.0%[0.3–2.9] of cases. In 12.0% [8.8–16.2] of cases colorectal adenocarcinoma was detected in biopsy material. High grade dysplasia was found in 178 (65.2% [59.4–70.6]) cases, low grade in 95 (34.8% [29.4–40.6]) cases. The most common localization for adenomas was sigma, where adenoma was found in a 39.1% [33.8–44.8] of cases. In rectum biopsies were done in 22.1% [17.7–27.1] of cases, in *colon ascendens* 20.4% [16.2–25.3]. Biopsies from caecum were done just in 5.4% [3.3–8.5] of cases; from *colon transversum* in 5.0% [3.1–8.1] and *colon descendens* 7.0% [4.6–10.5] of cases.

Conclusions
1. Most common type of adenoma in Latvia is tubulovillous.
2. There is statistically significant predominance of high grade dysplastic lesions in colorectal biopsy material.
3. Despite colorectal screening programme in Latvia, there is still big amount of colorectal cancer cases found in a colorectal biopsy material.

PLACENTAL MORPHOLOGY AND PERINATAL OUTCOME IN PREGNANCY INDUCED HYPERTENSION

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Keywords. Placental morphology, pregnancy induced hypertension.

Introduction. Hypertension is one of the most common complications during pregnancy and is the leading cause of maternal mortality and pre-term birth. Pregnancy induced hypertension also affects morphology of placenta which leads to changes in fetal blood supply (Salmani *et al.*, 2014).

Aim. The aim was to characterize morphological and structural changes in placenta and perinatal outcome in cases of pregnancy induced hypertension.

Materials and methods. Consecutive cases of pregnancy induced hypertension were identified by the medical documentation from Pauls Stradiņš Clinical University hospital and Riga Maternity hospital, Latvia. In particular cases placental pathomorphological examination results from Children`s Clinical University hospital and clinical history data were analyzed. All tests were performed in MS Excel 2013 and IBM Statistics 20.0.

Results. We identified 28 cases with pregnancy induced hypertension. Mean maternal age was 32.14 [95% confidence interval (CI) = 30.24–34.04] and the mean gaestational age was 33.54 [32.09–34.99] gaestation weeks. 83.33% [69.77–96.90] were pre-term births. Placental pathomorphological examination results were: 46.67% [28.51–64.83] of placentas had areas of infarction, 40.00% [22.17–57.83] of umbilical cords were attached marginally. Mean umbilical cord coiling index was 0.28 [0.22–0.34] coils/cm, 33.33% [31.52–35.14] were hypercoiled and 7.41% [5.96–8.86] were hypocoiled. Most frequent 1st minute Apgar score result was 7 (mean 5.57) [6.12–7.88]. 2 newborns (6.67% [0–15.67]) died antenataly.

Conclusions

1. In 46.67% of cases there were placentas with areas of infarction.
2. Most frequent 1st minute Apgar score result was 7.
3. 6.67% of newborns died antenataly.

REMODELING OF VALVULAR EXTRACELLULAR MATRIX IN DEGENERATIVE MITRAL REGURGITATION

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Keywords. Mitral regurgitation, extracellular matrix remodeling, immunohisto-chemistry.

Introduction. In Europe, mitral regurgitation (MR) is the second most frequent valve disease requiring surgery. Reduced incidence of rheumatic fever and increased lifespan in industrialized countries have progressively changed the distribution of aetiologies, with degenerative MR now being the most common.

Aim. The aim of the study was to analyze morphological evidence of ECM remodeling occurring in valvular leaflets and chordae tendineae of control and degenerative mitral valves, and to describe its contribution to the biomechanics of MR.

Materials and methods. 20 patients treated at the Pauls Stradins Clinical University Hospital and undergoing mitral valve replacement were selected for this study and compared with 20 samples from control group. Immunohistochemical performance was studied by semiquantitative counting of α-SMA, MMP-3, MMP-9 expression. Collagen fibers were analyzed using Masson›s trichrome stain, and elastic fibers – using Weigert›s resorcin-fuchsin stain.

Results. Both intensity and area of α-SMA expression by activated interstitial cells were more prominent in degenerative valves (Md = 3, Md = 1, accordingly) compared with control (Md = 0, Md = 0, accordingly), p = ,01. Furthermore, increased area of α-SMA expression was observed in *atrialis* layer both in degenerative (p = ,01) and control ($p < ,001$) valves. The expression area of MMP-3 in degenerative valves was larger (Md = 2) than in control valves (Md = 1), $p < ,001$. Collagen bundle disruption and loss of organization was more prominent in patients with MR (Md = 2) compared with age-matched control (Md = 1), p = ,04. In regions with active ECM remodeling we found higher intensity (Md = 2) and larger area (Md = 2) of MMP-3 expression than in regions with parallel arrangement of collagen fibers (Md = 2, Md = 1, accordingly), $p < ,001$. MMP-9 expression was significantly less prominent than expression of MMP-3 and was found only in valvular leaflets, but not in chordae tendineae. In chordae tendineae of degenerative valves we found marked accumulation of fragmented and granular in nature elastic fibers. In valvular leaflets elastic fibers accumulated in regions with collagen fiber derangement and degeneration.

Conclusions. Activated interstitial cells were more prominent in diseased valves and were found to be the source of MMP. Fragmented elastic fibers accumulated in regions with collagen fiber degeneration. These changes in collagen and elastic fiber organization are possibly the key features in biomechanics of MR. Chaotic organization of collagen fibers promotes leaflet thickening, while fragmentation of elastic fibers decreases elasticity of chordae tendineae.

EVALUATED RESECTION LINES AND MOLECULAR PARAMETERS OF INVASIVENESS IN PANCREATIC DUCTAL ADENOCARCINOMA

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Introduction. Pancreatic ductal adenocarcinoma (PDAC) is one of the most frequent malignant pathologies of the pancreas (Dal Molin et al, 2015). Treatment of this malignancy includes radiochemotherapy and surgical operation. The last one is associated with a risk of recurrence, and it is therefore important to examine resection lines using morphological and immunohistochemical (IHC) methods (Van den Broeck et al, 2009). When applying immunohistochemistry several markers associated with invasive growth of tumor and early local metastases can be used (Handra-Luca et al, 2011).

Aim. The aim of the study was to evaluate resection lines of PDAC surgical material and to reveal morphological and molecular factors associated with PDAC invasiveness.

Materials and methods. A retrospective study design was selected as appropriate. All consecutive cases of PDAC, which were morphologically evaluated by diagnostic protocol for the examination of surgical specimens containing PDAC, were identified by archive search in a single university hospital (2012–2015). The following data were studied: tumour size, tumour characteristic by pTNM parameters, tumour grade, resection lines (RL), manifestations of invasive growth. IHC was used to visualize expression of vimentin, CD44, E-cadherin and cytokeratin – high molecular weight (CKH). SPSS software was applied for descriptive and analytical statistics. Significance was considered with $p < 0.05$.

Results. The mean size of tumour: 3.1 [2.7–3.5] cm. Tumour size was > 2 cm in 85% [70.2–94.9] of cases. Positive RL: 67.5% [52.5–80.0] of cases. The most frequently involved RL: peripancreatic RL (with cancer cells in fat tissue) – 45.7% [31.5–65.5], pancreatic RL – 31.4% [17.1–48.5], peripancreatic RL (only like perineural invasion) – 20.0% [3.0–34.2], RL of common hepatic duct – 20.0% [3.0–34.2]. More than one RL was involved in 34.3% [22.9–56.8] of cases. Positive RL were associated with tumour size > 2 cm ($p < 0.01$), tumour grade ($p = 0.019$) and perineural invasion ($p = 0.029$), but were not associated with lymphovascular invasion ($p > 0.05$). Moderate correlation was found between expression of E-cadherin and CKH ($r_s = 0.556$; $p < 0.001$), but trend toward negative correlation between E-cadherin and vimentin expression ($r_s = -0.303$; $p = 0.065$). Vimentin expression was higher in cases with tumour invasion in small blood vessels ($p = 0.045$), but CD44 expression was lower in cases with tumour invasion in large blood vessels ($p = 0.033$). There were no statistically significant associations between status of RL and expression of markers.

Conclusions

1. Peripancreatic resection lines associated with direct tumour invasion in fat tissue is the highest frequency of RL positivity.
2. Resection lines are more often positive in cases where tumour size is > 2cm and in cases where perineural invasion is found.
3. Invasion in blood vessels is associated with decreased CD44 and increased vimentin expression.

LYMPHOCYTE INFILTRATION IN
AN INFLAMMATORY BOWEL DISEASE

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Keywords. Inflammation, non-specific ulcerative colitis, Crohn's disease

Introduction. The incidence and prevalence of inflammatory bowel disease (IBD) is subject to considerable variation, both between and within geographic regions, with IBD being more common in industrialized than in non-industrialized countries [*Burisch et al.*, 2013]. IBD is one of the main risk factors for developing colorectal cancer, since severe inflammation leads to tissue damage, destruction and is also associated with high-grade tissue dysplasia [*Parian et al.*, 2015; *Beaugerie et al.*, 2013]. There are still doubts about inflammation activity in IBD, depending on site of lesion [*Dranga et al.*, 2015].

Aim. The aim of this study was to evaluate lymphocyte infiltration in inflammatory bowel disease depending on the localisation of the lesion.

Materials and methods. In a retrospective study, 35 cases of inflammatory bowel disease were identified by archive search. Two slides per case were investigated: one from right side (*caecum*, *colon ascendens*, terminal part of *ileum*) and one from left side (*colon descendens*, *colon sigmoideum*, *rectum*). In each slide, three visual fields (original magnification 400x) were assessed to establish the lymphocyte count in submucosa and muscular layer in relation to other cells. Descriptive statistical analysis was performed including calculation of 95% confidence interval (CI), using CIA software (*Altman et al.*, 2000).

Results. The study included 35 IBD cases, among them 9 patients with Crohn's disease (25.7% [95% CI: 14.2–42.1]) and 26 – with non-specific ulcerative colitis (74.3% [57.9–85.8]). In general, the mean lymphocyte infiltration, including both sides, was 26.3% [22.0–30.6] in Crohn's disease and 32.9% [27.9–37.8] in non-specific ulcerative colitis. Regarding localization, in Crohn's disease lymphocytes on the right side constituted 27.2% [23.1–31.3] and on the left side 25.4% [20.7–30.2] of all cells. In case of non-specific ulcerative colitis, lymphocytes on the right side of bowel were 26.7% [22.3–31.3] and on the left side 38.9% [34.5–43.4] of all the cells.

Conclusions
1. There is no statistically significant difference between lymphocyte infiltration in Crohn's disease and non-specific ulcerative colitis.
2. Lymphocyte infiltration in case of non-specific ulcerative colitis is more pronounced on the left side then on the right side of the large bowel.

V. Infectious Diseases, Dermatovenerology, Microbiology, Immunology / Allergology

DISTRIBUTION OF TISSUE DEGENERATION ENZYMES AND THEIR INHIBITORS IN THE SKIN OF LONG-TERM PSORIASIS PATIENTS

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Keywords. Psoriasis, tissue remodeling, MMP, TIMP.

Introduction. Psoriasis is a chronic, inflammatory skin condition affecting 2% of population worldwide. Psoriasis has characteristic clinical and morphological changes in the skin. The tissue degeneration, subsequent remodeling and regeneration of extracellular matrix are ensured by matrix metalloproteinases (MMP) and tissue inhibitors of matrix metalloproteinases (TIMP). Disturbances in the presence of these enzymes affect the normal regeneration of skin and barrier function. Subsequently the overall protective role of the skin in modified.

Aim. The aim of this study was the evaluation of tissue degeneration enzymes and their inhibitors in skin affected by psoriasis.

Materials and methods. The study included 10 patients. All patients were adults between 19 and 68 years of age with clinically and histologically established diagnosis of Psoriasis vulgaris. Tissue samples were obtained from untreated inflammatory areas. Punch skin biopsy (3 mm) was performed under local lidocaine anaesthesia. Further the material was fixed in Stefanini's solution, dehydrated and embedded in paraffin. Sections made of each tissue sample were stained by hematoxylin and eosin and by immunohistochemistry for matrix metalloproteinase-2 (MMP-2, code AF 902, obtained from goat, dilution 1:100, R&D Systems, Germany), tissue inhibitor of matrix metalloproteinase-2 (TIMP-2, code sc-21735, obtained from mouse, dilution 1:50, Santa Cruz Biotechnology, Inc., USA) and tissue inhibitor of matrix metalloproteinase-4 (TIMP-4, code orb106543, obtained from rabbit, dilution 1:50, Biorbyt Limited, United Kingdom). The analysis of the obtained data was semiquantitative. For visual documentation Leica DC 300F digital camera and image visualisation programme Image Pro Plus were used.

Results. Overview sections showed both focal and diffuse inflammatory infiltrates within the papillary dermis, distinct proliferation of the keratinocytes in basal layer of epidermis, parakeratosis, and vacuolisation of glandulocytes in the sweat glands. MMP-2 positive cells ranged from few (+) to numerous (+++) in the visual field – especially the inflammatory cells (lymphocytes and macrophages) in dermis and epidermal keratinocytes. In general, moderate amount (++) of MMP-2 positive structures was found. Presence of TIMP-2 was found in nine skin tissue samples – in general there were few (+) positive structures in the visual field. TIMP-2 was present in keratinocytes and dermal connective tissue cells. Presence of TIMP-4-containing cells ranged from few (+) to numerous (+++) positive cells in the visual field in epidermal keratinocytes and moderate amount (++) in dermal connective tissue cells. All tissue samples showed predominance of TIMP positive structures over MMP-2 positive structures.

Conclusions. Increased expression of MMP-2 in dermal inflammatory infiltrates and subsequently reduced TIMP-2 and increased TIMP-4 expression are signs of unbalanced remodeling processes in skin affected by psoriasis. Possibly, the distinct presence of TIMP-4 factor affects the course of the keratinization process in psoriatic skin.

BASAL CELL CARCINOMA:
6 YEARS OF EXPERIENCE

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Keywords. Basal cell carcinoma, BCC, biopsy, diagnosis, skin cancer, surgery.

Introduction. Basal cell carcinoma (BCC) is the most common skin cancer among the white population. Despite low disease-induced mortality rates, this tumor is locally invasive and may relapse after treatment, damaging patients' quality of life, and influence an increase of health care costs.

Aim. To estimate the diagnostic accuracy of BCC at VU SK CDV during the period of 2008–2015. To evaluate different types of BCC, common skin sites of appearance in relationship with patients' sociodemographic data.

Materials and methods. A retrospective analysis of 2281 patients medical records and biopsy / surgery results was carried out. The final data analysis included patients with clinical and / or histologically determined diagnosis of BCC. Data analysis was performed with SPSS 17.0 software.

Results. A total of 720 surgical interventions for 696 patients were performed: 42.2% of biopsies, 57.8% of surgeries. BCC was diagnosed in 545 cases: the diagnosis was clinically suspected and histologically confirmed in 72.5% of cases, falsely clinically suspected in 24.3% of cases and clinically unsuspected, but diagnosed histologically in 3.2% of cases. In clinical practice, BCC was usually falsely diagnosed as actinic keratosis, squamous cell carcinoma and seborrheic keratosis. Of 522 patients with histologically confirmed diagnosis of BCC, 60.5% were women, 39.5% – men. The mean age of women – 62.1 ± 13.8; men – 66.8 ± 12.3. Of all recorded sites of BCC, tumor mostly occurred in head, trunk and chest. For patients, whose histological examination resulted in BCC with a reported type, mostly nodular BCC (67.5%) was found. Common sites included head, trunk and chest. Superficial BCC was mostly localized in the skin of trunk, infiltrative BCC – most commonly appeared in the skin of head. A significant correlation between patients' age and the type of BCC was found (p = 0.003). The incidence of nodular BCC increases with age (28–70 years), meanwhile superficial BCC is more common among younger patients (28–50 years).

Conclusions. During 6 years 545 cases of BCC were diagnosed at CDV. A quarter of clinically suspected BCC were not confirmed histologically. BCC is usually mistakenly diagnosed as actinic keratosis, squamous cell carcinoma and seborrheic keratosis. Women seek medical advice for BCC more often than men. Both genders are usually diagnosed with nodular type of BCC. The type of BCC is significantly associated with its' site in the body and patients' age. Tumors are mostly found in the areas of head, trunk and chest.

EARLY DIAGNOSIS OF SKIN DISEASES
IN FAMILY MEDICINE

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Keywords. Skin diseases, primary care.

Introduction. Skin diseases are one of the most common cause of patients seeking help in primary care with a new complaint. On the other hand, there are many chronic skin diseases that need continuous check-up. A family doctor's role is to distinguish the severity of the newly appearing skin condition, monitor the course and treatment of chronic skin conditions and refer patients to more specialised diagnostics or treatment if necessary.

Aim. The aim of this study is to acknowledge the approach of a family doctor when encountering a certain skin condition.

Materials and methods. A questionnaire of 10 randomly chosen descriptions of skin lesions was handed out to family doctors. Questions included: which out of these differential diagnosis wold be the most suitable with such a lesion, have they encountered such a patient in their clinical practice and what would their following action be.

Results. In total 50 Family doctors took part in this study. 40 of them with experience of over 15 years in family medicine. 25 of them with clinical practice in a city, 16 of them with practice in the suburbs, 3 of them with practice in a health centre and 6 of them with combined practices in a city and suburbs.

The most accurately recognised diagnoses for the applicable descriptions of skin lesions were psoriasis (100%); *Herpes Zoster* (100%); atopic dermatitis (96%), impetigo (96%), melanoma (96%), *Acne Vulgaris* (90%). Less unanimous were scabies (86%), secondary syphilis (80%), *Lupus Erythematosus* (78%), *Tinea Versicolor* (72%).

In the cases of *Herpes Zoster* (83%), scabies (55%) and impetigo (51%) the most common approach was treating a patient within the practice without the help of a dermatologist. The most common approach for *Acne Vulgaris* (65%) and Atopic Dermatitis (58%) was to start treatment and referring it to dermatologist in case of unsuccessful treatment. Psoriasis (69%), *Lupus Erythematosus* (65%) and *Tinea Versicolor* (33%) are most commonly referred to a dermatologist and then continuing the recommended treatment. For melanomas 96% of participants would refer it to an oncologist. Only 3 physicians out of 50 have encountered secondary syphilis in their clinical practice.

Conclusion. The results show that all of the described lesions are being recognised by most of the family doctors (at least 70%). The amount of years of experience in clinical practice does not affect the recognition of the most suitable skin condition to a fitting description. Patients with secondary syphilis do not go to family doctor as a first doctor of choice.

GENETIC VARIANTS OF TNF-α: ASSOCIATIONS WITH PECULIARITIES OF THE CLINICAL COURSE OF RHEUMATOID ARTHRITIS

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Keywords. Rheumatoid arthritis, polymorphisms, tumor necrosis factor.

Introduction. It is commonly known that pathogenesis of rheumatoid arthritis (RA) is closely associated with dysregulation of cytokine network. One of pro-inflammatory cytokines taking part in the pathogenesis of RA is tumor necrosis factor (TNF-α). This cytokine carries a wide range of inflammatory, catabolic and immune stimulating actions. Chronic inflammation with tissue destruction, and RA severity and activity, respectively, are supposed to be a result of increased TNF-α production.

Aim. To study features of the course of RA depending on the variant of TNF-α genotype.

Materials and methods. In order to detect polymorphisms of TNF-α gene (1031 T/C, 376 G/A, 308 G/A), PCR-RFLP was used. Specific oligonucleotides for PCR were synthesized at the National Center for Biotechnology (Astana). Processing of the connection of genotypes with the level of cytokine production and activity indexes were carried out with the help of Mann-Whitney U test.

Results. Polymorphisms of TNF-α gene in positions 1031, 376, 308 were studied, and 4 different types of genome were formed.

According to the results of the study it was revealed that the variant (variant №2), which indicates the combination of wild-type homozygotes in all points (1031T/T, 376G/G, 308G/G), was most common among RA patients. The second most frequent variant was the option with mutation in point 1031C/T at homozygotes in two other locations (variant №3). The third variant due to frequency of occurrence was the option with mutation in point 308G/A at homozygotes in the rest two investigated points (variant №1). Significant increase in ESR is revealed at variant №3 (1031C/T) during analysis of the combination of clinical and diagnostic indicators in accordance with the above variants of the genome. However, statistically significant importance was not identified in terms of DAS. At the same time, individuals with the presence of SNP were characterized by relatively low TNF-α production, whereas RA patients with heterozygote of mutant type 308G/A showed significantly increased production of this cytokine. Simultaneously, it was not accompanied with elevated ESR.

Conclusion. Homozygote of TNF-α gene "wild" type at points 1031, 376 and 308 is most common in RA patients. Individuals with the presence of TNF-α genotype 1031 (C/T), 376 (G/G), 308 (G/G) are characterized by relatively low TNF-α production. Moreover, it is noted that they have more active course of RA. Patients with the presence of TNF-α genotype 1031 (T/T), 376 (G/G), 308 (G/A) are characterized by increased TNF-α production, however, it is not accompanied with more severe and active RA.

AN ASSESSMENT OF CLINDAMYCIN AND AMOXICILLIN EFFECT ON NEUTROPHIL EXTRACELLULAR TRAPS (NETS) RELEASE

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Keywords. Amoxicillin, antibiotics, clindamycin, neutrophil extracellular traps, phagocytosis.

Introduction. Neutrophil extracellular traps (NETs) are known as a bacterial killing mechanism released from neutrophil to extracellular matrix, to bind, immobilize and kill different pathogens. They are threads of nuclear DNA and antimicrobial proteins, which formation is triggered by different physiological and nonphysiological stimulants. Some papers suggest that antibiotics, could be a nonphysiological compounds that influence NETs release.

Aim. The aim of the study was to investigate an effect of clindamycin and amoxicillin on NETs release and the phagocyte function of neutrophils.

Materials and methods. Neutrophils isolated from healthy donors by density centrifugation method were incubated with amoxicillin and clindamycin for 2 hours. Then NETs release after 3 hours incubation with phorbol 12-myristate 13-acetate (PMA) was measured. Nets were quantified as amount of extracellular of DNA in a fluorescent reader and visualized by immunofluorescent microscopy. Phagocytosis was measured by flow cytometry.

Results. Quantitative measurement showed that amoxicillin induces NETs formation and release (increase of extracellular DNA fluorescence, $p = 0.03$), meanwhile clindamycin had no influence on NETs (increase of extracellular DNA fluorescence, $p > 0.05$). Fluorescent microscopy confirmed these.

Results. Regarding to phagocyte function, both antibiotics increased bacterial uptake ($74.6 \pm 122.9\%$ and $48.1 \pm 40.7\%$ increase for amoxicillin and clindamycin, respectively).

Conclusion. Basing on our results it can be concluded that the ability of antibiotics to modulate NETs release depends on antibiotic group and is not associated with their ability to influence phagocytosis.

TOTAL SERUM AND ALLERGEN SPECIFIC IMMUNOGLOBULIN E FOR PATIENTS WITH ALLERGIES

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Keywords. Immunoglobulin E, IgE, allergen specific IgE, allergy.

Introduction. Allergy is a common cause of symptoms like irritated mucous membranes, headaches, anaphylaxis and other depending on the type of allergy a patient has. Different tests can be performed to find out the cause of these symptoms and one of them is a blood test to measure the total serum immunoglobulin E (IgE) levels. Total serum Ig is not a specific marker and can be elevated in many disorders. To discover the cause of an allergy a specific IgE level is measured. There can be a misconception that a normal total serum IgE level means the patient has no allergies.

Aim. To find out how often there are differences in allergen specific IgE while the total serum IgE is within the reference range.

Materials and methods. A retrospective research of patient test results from September till December 2015 at Pauls Stradins Clinical University Hospital Clinical Immunology Centre. The results of total serum IgE and allergen specific IgE of food and / or inhalation allergens were collected and analysed using statistical processing.

Results. The study includes 100 patients (73% female, 27% male). There are 95% of adult patients and 5% children. The average age of the patient is 45.0 ± 17.5 (mean ± SD) years for adults and 10.4 ± 3.6 years for children. For all of these patients the total serum IgE was within the reference range. The allergen specific IgE for the selected allergens was 0 for 5% percent of the patients and 95% of the patients had at least one allergen specific IgE > 0. Among these 95 patients the average number of allergens that had caused some kind of difference in the test result was 7 with the minimum of 1 and maximum of 26. In 39% of the patients at least 1 allergen specific IgE was > 0.35 kU/L (kilo unit per litre).

Conclusions. The study shows that the majority of patients have some kind of difference in allergen specific IgE while the total serum IgE stays within the reference range. This means that for a patient that has allergy symptoms the total serum IgE can show no signs of allergy and there is need to measure allergen specific IgE levels. While the diagnosis of allergies should be based on the symptoms the patient has, allergen specific IgE in many cases can show the specific cause of the allergy and help when considering treatment options and effectivity.

ECOLOGICAL, CLINICAL AND IMMUNOLOGICAL RISK FACTORS OF CONGENITAL DEFECTS OF MAXILLOFACIAL AREA

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Keywords. Children with congenital maxillofacial area, indicators of immune system.

Introduction. Of all of the deficiencies of maxillofacial area congenital cleft lip and / or palate (CLP) equal to 90%, and appear as a topical problem of dentistry.

Aim. To study the environmental, clinical, immunological risk factors affecting the birth of children with congenital maxillofacial area.

Materials and methods. The interrelations of malformations of the maxillofacial region under the influence of different types of teratogens were studied. The level of CD4, CD8 and CD16 lymphocytes was significantly lower with maxillofacial defects. The concentration of IL-1β, TNFα significantly increased and the level of IFNγ – reduced.

Results. The Department of Children's Maxillofacial Surgery of Regional Hospital in Bukhara examined 186 children with different types of cleft lip and palate. Of these, 112 –habitant of Bukhara region and 74 – Navoi area. Analyzed data from the mothers of these children. 30 children without congenital malformations and their mothers were in the control group. Age of the observed patients was from 0 to 14 years. The most frequent anomalies were congenital heart disease (CHD), the largest percentage of which comes to 2009 – 12.84%; pathology of the maxillofacial area tended to increase and in 2006 was 15.91%. The majority of surveyed children met the most serious form of pathology-pervasive unilateral cleft lip and palate (83 (44, 6%) children); isolated cleft lip II B grade observed in 7 (3.7%) children, III A grade – in 13 (6.9%) children; isolated cleft palate II A grade in 4 (2.1%) children, II B grade – in 11 (5.9%) children, III A grade in 19 (10.2%) patients, III B grade – 18 (9.6%) patients. Bilateral pervasive complete cleft lip and palate met in 31 (16.0%) patients. Hyperplasia of the thymus gland and the phenomenon of atopic dermatitis were observed in 32.7% of children, cardiomyopathy – in 31.7% of children. Condition of the immune system was investigated in 65 children who were divided into two groups depending on age. The first group – aged 0 to 1 year, group 2 – 4 to 7 years. The control – consisted of 30 healthy children of the same age. Analysis of the results of the research showed that in children with CDMFA indicators of immune system differ from that of children in the control group.

Conclusion. Analysis of research results of concentration of IgG and IgA showed that both groups of children with congenital cleft significantly reduced (P < 0.05). The concentration of IgM in children with congenital cleft group 1 IgM level was increased in 1.8-fold (P < 0.01), and the children in group 2 – 1.4 times (P < 0.05) compared to data in control group.

ANTIBIOTIC SUSCEPTIBILITY AND TREATMENT OF MOST COMMONLY ISOLATED ESBL PRODUCING BACTERIA FROM URINE: SINGLE CENTRE EXPERIENCE

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Keywords. ESBL, *Enterobacteriaceae*, antimicrobial resistance, empirical treatment.

Introduction. Extended spectrum β-lactamases (ESBL) determine resistance to β-lactam antibiotics, such as penicillins and cephalosporins, and represent a major threat among multidrug-resistant bacteria. ESBL producing microorganism incidence is increasing rapidly worldwide. Infections with ESBL producing bacteria, which can be isolated from a variety of biomaterials, can be life threatening. Therefore, empiric antibacterial therapy should be started early and based on local antibacterial resistance patterns.

Aim. To find the most common ESBL producing bacteria strain in urine samples, to determine antimicrobial susceptibility of the isolated bacteria stain and to compare empirical treatment with the antimicrobial susceptibility found during the study.

Materials and methods. All adult patients hospitalized in Riga East Clinical University Hospital from September 2013 to March 2014, who had a positive culture for ESBL producing microorganism. Patient demographical, bacterial and antimicrobial therapy data were obtained from medical charts and entered in database, using originally created study protocol. SPSS 20.0 were used for statistical analysis.

Results. 22 isolates of *Enterobacteriaceae* family were found in specimens of urinary tract infection. Most commonly isolated bacteria were *Escherichia coli* (50.0%), *Klebsiella pneumoniae* (36.4%) and *Enterobacter cloaceae* (9.1%). *E. coli* was sensitive to nitrofurantoin (81.8%), trimethoprim / sulfamethoxazole (72.7%) and piperacillin / tazobactam (63.6%), but resistant to ceftriaxone, cefotaxime (90.9%) and gentamicin (72.7%). *K. pneumoniae* was sensitive to imipenem (50%) and amikacin (37.5%), but resistant to ciprofloxacin, ceftriaxone, ceftazidime (87.5%) and nitrofurantoin (75%). *E. cloaceae* was sensitive to imipenem, piperacillin / tazobactam, meropenem and amikacin (50%), but resistant to ciprofloxacin, tobramycin and nitrofurantoin (50%). Most commonly used antibiotics against *E. coli* were – amoxicillin / clavulanic acid (45.5%) and metronidazole (36.4%), against *K. pneumoniae* – ceftriaxone (75%), ciprofloxacine (62.5%), amoxicillin / clavulanic acid (37.7%), against *E. cloaceae* – ciprofloxacin, ceftriaxone, imipenem / cilastatin and erythromycin (50%).

Conclusion. Most commonly isolated bacteria from urine are *E. coli*, *K. pneumoniae* and *E. cloaceae*. Our study revealed that most suitable antibiotics for *K. pneumoniae* should be carbapenems, for *E. coli* – nitrofurantoin and trimethoprim / sulfamethoxazole, for *E. cloaceae* – carbapenems, piperacillin / tazobactam, amikacin. In general, empirical antimicrobial therapy was not suitable and should be revised.

ANTIBIOTIC SUSCEPTIBILITY AND TREATMENT OF MOST COMMONLY ISOLATED ESBL PRODUCING BACTERIA FROM ABDOMINAL CAVITY: SINGLE CENTER EXPERIENCE

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Keywords. ESBL, *Enterobacteriaceae*, antimicrobial resistance, empirical treatment.

Introduction. Extended spectrum β-lactamases (ESBL) determine resistance to β-lactam antibiotics and represent a major threat among multidrug-resistant bacteria. ESBL producing microorganism incidence and thereby antimicrobial resistance is increasing rapidly worldwide. Infections with ESBL producing bacteria, which can be isolated from a variety of biomaterials, can be life threatening. Therefore, empiric antibacterial therapy should be started early and based on local antibacterial resistance patterns.

Aim. To find the most common ESBL producing bacteria strain in intra-abdominal material, to determine antimicrobial susceptibility of the isolated bacteria stain and to compare empirical treatment with the antimicrobial susceptibility found during the study.

Materials and methods. All adult patients hospitalized in Riga East Clinical University Hospital from September 2013 to March 2014, who had a positive clinical culture for an ESBL producing microorganism. Patient demographical, bacterial and antimicrobial therapy data were gathered from medical charts and entered in database, using originally created study protocol. SPSS 20.0 were used for statistical analysis.

Results. A total of 17 isolates of *Enterobacteriaceae* family were found in intra-abdominal infection material. Most commonly isolated bacteria were *Klebsiella pneumoniae* (47.1%), *Escherichia coli* (47.1%) and *Enterobacter amnigenus* (5.9%). *K. pneumoniae* was sensitive to ertapenem (75%), trimethoprim / sulfamethoxazole and meropenem (50%), but resistant to ciprofloxacin, ceftriaxone, gentamicin, cefotaxim, piperacillin / tazobactam (87.5%). *E. coli* was sensitive to trimethoprim / sulfamethoxazole (87.5%), gentamicin (75%) and piperacillin / tazobactam (62.5%), but resistant to ciprofloxacin, ceftazidim (87.5%) and amoxicillin / clavulonic acid (37.5%). *E. amnigenus* was sensitive to imipenem, amicacin, meropenem (100%), but resistant to ampicillin, amoxicillin / clavulonic, ciprofloxacin, ceftriaxone, gentamicin (100%). Most commonly used antibiotics against *K. pneumoniae* were metronidazole (87.5%), ceftriaxone (67.5%), piperacillin / tazobactam (50%), against *E. coli* – metronidazole (87.5%), imipenem and erythromycin (37.5%), against *E. amnigenus* – ciprofloxacin (100%).

Conclusion. Most commonly isolated bacteria from abdominal cavity are *K. pneumoniae*, *E. coli* and *E. amnigenus*. Our study revealed that most suitable antibiotics for *K. pneumoniae* should be carbapenems, for *E. coli* – trimethoprim / sulfamethoxazole and gentamicin. For *E. amnigenus* – carbapenems. In general, empirical antimicrobial therapy was not suitable and should be revised.

16 March 2016

RETROGRADE INVESTIGATION OF CLINICAL ASPECTS
OF PRION DISEASE IN LATVIA

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Keywords. CJD, Prion, Neurodegenerative.

Introduction. Prions, also known as protein contagion particles, induce slow developing infection process in human central nervous systems. Prion diseases are a family of rare, progressive neurodegenerative disorders that affect humans and animals (Belay et al.). The most common form of human prion disease, Creutzfeldt-Jakob disease (CJD) occurs worldwide. CJD affects approximately 1 in every million people, and there is no increased risk associated with dietary habits, occupation, or animal exposure (Levinson et all).

Aim. The aim of our study is to get the epidemiological information about Prion disease in Latvia and the Baltic Region between the years of 2010–2015. Also to investigate aspects of most common type of Prion disease in Latvia and to explore the awareness of prion disease in society.

Materials and methods. In our study, we have included 7 patients with proven CJD in time period 2010–2015. In addition to this, we used statistic data about Prion disease in Estonia and Lithuania. Additionally, we used standardized surveys to establish public and medical workers awareness about Prion disease. All statistical data has been processed in the program "Excel 2014".

Results. Retrospectively we analysed 7 patients with Prion disease in time period from 2010 to 2015. 4 women 57%, 3 men 43%. 57% of the patients were in an age group of > 60 years 43% had an age range of between 50–59. The patients median age was 59 years. In Latvia incidents of CJD was 1 case per 1.9 million people and in Baltic Region incidents of CJD were approximately 1 per 1.2 million in 2014. The most common type of Prion disease in Latvia is sporadic form of CJD > 85%. The main symptoms include: unstable gait 31%, slurred speech 23% and weakness in the limbs 23%. The main affected areas of brain include: basal ganglia 100%, subcortex of temporal lobe 75%, subcortex of frontal and parietal lobe 50%, putamen 50% and vermis cerebelli 50%. In the survey, we include 100 people in an age group of 19–60 years with being 23% students, 36% medical workers and 41% nonmedical workers. 57% of the respondents gave an incorrect answer about etiology of prion infection. In group of medical workers, incorrect answers accounted for 56% and in nonmedical workers for 73%.

Conclusion. Incidence of Prion disease in Latvia is close to worldwide. No specific signs and symptoms have been found for prion disease in Latvia. The diagnosing of prion disease in early stages is still difficult, the first signs are mostly nonspecific neurological signs. More often Prion disease diagnosed to people in six decade. The awareness of Prion disease in society is still very low, though the situation is better in a group of medical workers and medical students.

EVALUATION OF HUMAN HERPESVIRUS-6 INFECTION CONNECTION WITH FIBROMYALGIA

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Keywords. Fibromyalgia, human herpesvirus-6, nested PCR, real-time PCR.

Introduction. Fibromyalgia syndrome is a common and chronic disorder characterized by widespread pain, diffuse tenderness, and a number of other symptoms like fatigue, sleep disorders and depression. Disease affects 2 – 6% of the general population worldwide. Etiology and pathogenesis of fibromyalgia are still unclear. One of the possible causes could be infectious agents, like human herpesvirus-6 (HHV-6). HHV-6 is neurotropic, immunomodulating virus that belongs to *Roseolovirus* genus, *Betaherpesvirinae* subfamily and *Herpesviridae* family.

Aim. The aim of this study was to determine the possible connection between HHV-6 infection and development of fibromyalgia syndrome.

Methods. 55 patients who were diagnosed with fibromyalgia by American College of Rheumatology diagnostic criteria 1990 (53 women and 2 men, aged from 24 to 71 years) were involved in this study. Presence of HHV-6 genome sequence in blood and cell-free blood plasma DNA samples were detected by nested PCR, HHV-6 variants determination – by restriction analysis. HHV-6 load in positive samples was estimated using HHV-6 Real-TM Quant Real-TM kit (Sacace Biotechnologies). From HHV-6 positive patients peripheral blood mononuclear cells RNA was extracted, complementary DNA synthesized by reverse transcription and expression of HHV-6 genes U89/90 (immediate early gene) and U41 (early gene) detected using nested PCR.

Results. The presence of HHV-6 genomic sequence was found in 20 out of 55 (36%) patients' peripheral blood DNA samples and in 3 out of 55 (5%) cell-free blood plasma DNA samples. HHV-6A variant was found in 2/10 and HHV-6B variant in 8/10 tested blood DNA samples. HHV-6 viral load varied from less than 10 to 6104.2 copies/10^6 cells (median value 620.97 copies/10^6 cells, IQR 610.65 copies/10^6 cells). U89/90 gene expression was found in 13 out of 15 (87%) tested virus positive patients' samples, but HHV-6 U41 gene was not expressed in any of 15 samples.

Conclusion. High HHV-6 load in peripheral blood, presence of viral genomic sequence in cell-free blood plasma DNA and U89/90 gene expression suggest that HHV-6 infection might be involved in fibromyalgia syndrome development. It is necessary to investigate larger number of patients to make general **Conclusions.**

EPIDEMIOLOGY OF HBV INFECTIONS IN THE SILESIAN DISTRICT-POLAND

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Keywords. Chronic hepatitis, HBV, epidemiology.

Introduction. The main point of interest of this paper is the assessment of the scale of the problem that is hepatitis B represented by a selected HBV-infected population of patients from the Silesian District in Poland. The authors of the thesis focused on demographic structure of the recorded cases of hepatitis B in view of the general knowledge that presents hepatitis B as a disease that affects patients of all ages.

Aim. The aim of the study is the evaluation of the epidemiological prevalence of hepatitis B in the population of patients from the Silesian District in Poland in 2015.

Materials and methods. The epidemiological situation of the HBV infection among patients in Silesian District in 2015 was evaluated by a retrospective study, which involved an analysis of 225 medical records of patients treated in the Outpatient Department of Infectious Diseases at Medical University of Silesia The research evaluated recorded cases of hepatitis B in Silesian District diagnosed in the Clinic in years 1979–2015.

Results. 225 patients infected with HBV were evaluated based on their medical records collected over the years in the Clinic of Hepatitis. 59% of the recorded cases were men and 41% women. Among the general number of patients investigated, two most numerous groups have been noted: the first one among the patients aged 25–35 and the second group aged 55–65. As hepatitis B is an early detected disease, the largest groups of patients are those aged 25–30. In 24% of patients the HBV infection has been diagnosed before the age of 18. Among the group of patients aged 30 and younger, only a total of 20% have been vaccinated against HBV, however, the level of HbsAg had not been measured by any of these patients before starting the vaccination. Co-infection with HCV has been reported by 7% of the patients, 75% of which were man. The total of 80% of HBV infected patients underwent an antiviral treatment, which was 77% of male patients and 85% of female.

Conclusions. The results indicate that despite the development and accessibility of HBV prophylaxis there is still a noticeable amount of cases of an early-age infection. A significant difference has been observed in the amount of diagnosed infections between men and women aged 20–25. This may be the result of successful diagnostic evaluations of pregnant women during their routine examinations. In the group of patients aged 55–80 among people with newly diagnosed infection men are clearly predominant as well as in the group of HBV/HCV coinfections.

THE USE OF THE MODIFIED CENTOR CRITERIA SCORE ON THE ANTIBIOTIC PRESCRIBING STRATEGY OF PATIENTS DIAGNOSED WITH ACUTE GROUP A STREPTOCOCCUS PHARYNGITIS IN THE PRIMARY CARE SETTING IN LATVIA

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Keywords. Acute Group A Streptococcus Pharyngitis (GAS), Modified Centor criteria in Primary Care.

Introduction. GAS is a common self-limiting condition seen by general practitioners. Across the world, there is grave concern about the inappropriate and excessive use of antimicrobial agents in the treatment of GAS. Injudicious use leads to antibiotic resistance and associated complications. There are no treatment guidelines in Latvia. NICE (UK) recommends the use of three antibiotic prescribing strategies, no prescribing, delayed prescribing and immediate prescribing for GAS pharyngitis depending upon the severity, risk of developing complications and pre-existing comorbidities. The Modified Centor criteria can assist in the diagnosis of GAS pharyngitis in the absence of laboratory tests namely Rapid Antigen Detection Test (RADT) or throat culture. The Modified Centor criteria consists of five points: temperature > 38 degrees Celsius, absence of cough, swollen or tender anterior cervical lymph nodes, tonsillar swelling or exudate and age 3–14 years. One point is awarded for each criteria met. A higher score warrants antibiotics and lower score signals no antibiotics.

Aim. To ascertain whether a high Modified Centor criteria score determines the antibiotic prescribing strategy in the treatment of GAS pharyngitis.

Materials and methods. Retrospective analysis of 213 files of patients registered at Riga Stradins University Ambulance and outpatient clinic. Patients who were diagnosed with GAS pharyngitis on the initial visit and older than 3 years of age were included. The following data was extracted for each patient: gender, age, tonsillar exudate or swelling, tender or swollen anterior cervical lymph nodes, temperature and absence of cough. The Modified Centor criteria score (-1 to 5) was calculated for each patient. The antibiotic prescribing strategy (no, immediate or delayed) was documented.

Results. Statistical analysis performed on the 213 patient files data using IBM SPSS Statistics version 22 revealed a statistical significance between the Modified Centor criteria score and antibiotic prescribing strategy used, $p = < 0.001$. There was also a positive correlation between the Modified Centor criteria score and a positive result on the RADT, Spearmen correlation coefficient = 0.20; $p = 0.049$.

Conclusions. The higher the Modified Centor criteria score the more likely the patient was prescribed an antibiotic and vice versa. The Modified Centor criteria is a useful guide for general practitioners to use on the initial patient consultation to determine the antibiotic prescribing strategy for GAS pharyngitis in the absence of a RADT or throat culture.

NATURAL COURSE OF HEPATITIS B IN RETROSPECTIVE STUDY BASED ON PROPRIETARY MEDICAL DOCUMENTATION

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Keywords. Chronic hepatitis B, vaccination, viral load.

Introduction. Hepatitis B is a common and prevailing concern regarding the population of patients of all ages. This paper attempts to recap the course and effect of the conducted antiviral treatment in a selected population of patients suffering from hepatitis B with the consideration of their current level of serological and biochemical parameters.

Aim. The aim of the study is the analysis of the inflammatory and serological parameters of the HBV infection with correlation to the HBV viral load among patients under a systematic medical specialist control.

Materials and methods. A retrospective study was conducted by analyzing the medical documentation of 225 patients treated in the Outpatient Clinic that specializes in hepatitis B and supervises patients from the entire Silesian agglomeration. The evaluation included the recorded cases of hepatitis B in Silesian district diagnosed form 1979 to 2015 by doctors from the Department of Infectious Diseases and Hepatology.

Results. The evaluated group of patients consisted of 225 people infected with HBV. 59% of the study group were men and 41% were women. Only as little as 6 patients (2.5%) underwent an acute hepatitis B. 21 patients (9%) tested positive for an HBe antigen. No relevant differences in mean alanine aminotransferase and aspartate aminotransferase levels have been noted depending on age and gender. The increase of mean ALT levels with the duration of the infection has been observed but the differences are not statistically significant. 15% of patients had viral load over 2000 IU/ml. No essential correlation between the viral load and aminotransferases levels were detected in patients with advanced liver fibrosis.

Conclusions. The aminotransferases levels cannot be the exponent of the advancement of hepatitis B. The level of ALT within the normal range cannot lead to the resignation of the evaluation of viral replication. Our thesis presents the value of investment in the full package of serological tests for each HBV-infected patient that may be of benefit to the entire population because of an increased chance for early detection of potentially high infectivity which may lead to the persistence of high percentage of new infections in a given population. Because of a vastly diverse group of patients, in the absence of a universal system for recording each patient's individual clinical pathway and progress, the analysis of the full course of the disease from the moment of diagnosis is highly problematic.

ASSOCIATION OF ACUTE LOWER RESPIRATORY TRACT INFECTIONS WITH HUMAN BOCAVIRUS TYPE-1 AND OTHER RESPIRATORY VIRUSES IN LATVIA

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Keywords. Human bocavirus, respiratory tract infection.

Introduction. Lower respiratory tract infections (LRTIs) frequently caused by viruses are one of the leading causes of morbidity and mortality in children worldwide. Human bocavirus (HBoV) was discovered in 2005 by analyzing pooled respiratory tract samples from children with acute respiratory tract infection. So far four types of HBoV are known. HBoV type 1 (HBoV1) is a respiratory virus and has been associated with LRTIs in young children. However, the fact that HBoV1 is frequently found together with the other respiratory viruses has made it difficult to define pathogenicity of HBoV1, and its' role as a causative agent of respiratory tract infections has not been thoroughly elucidated.

Aim. Our aim was to investigate the association of LRTIs with HBoV1 and other most common respiratory viruses in hospitalized children aged one to fifty months.

Materials and methods. The prospective study was performed in Children's Clinical University Hospital of Riga, Latvia from November 2011 to June 2015. Children who were treated as inpatients for presumptive LRTI at the Department of Pediatrics were included in this study. On admission, nasopharyngeal aspirate (NPA) and nasopharyngeal swab (NS) was obtained. The presence of HBoV1 was determined in NPAs by using qualitative polymerase chain reaction. Other respiratory viruses as respiratory syncytial virus (RSV), adenovirus, parainfluenza, influenza A and human metapneumovirus (hMPV) were identified in NS by direct immunofluorescence technique.

Results. A total 50 children were enrolled in this study, 23 (46%) female and 27 (54%) male. The age of the 50 eligible patients was from 2 to 49 months [median age 13.0 (IQR 5.0–22.3) months]. At least one respiratory virus was detected in 27/50 (54%) children. HBoV1 DNA was identified in 16/50 (32%) NPAs, RSV in 11/50 (22%), influenza A in 1/50 (2%) and hMPV in 3/50 (6%) children. The age of 16 patients with positive HBoV1 DNA in NPAs was from 2 to 40 months [median age 12.5 (IQR 4.0–24.8) months] of whom 7 (43.8%) were female and 9 (56.2%) were male. HBoV1 most common was detected in age group of 12 to 24 months, 6/16 (37.5%), respectively. Among the 16 HBoV1 positive patients, co-infections were detected in 3 (18.8%) patients. One patient had co-infection with RSV and hMPV simultaneously, for the other two, RSV was positive. For calculations IBM SPSS Statistics 20 program was used.

Conclusion. In our study, HBoV1 was the most common detected respiratory virus in young children hospitalized with LRTIs, 32% (16/50) of respiratory tract samples, respectively. Only 3 (18.8%) HBoV1 positive patients had co-infections with other respiratory tract viruses. It is considerable that HBoV1 could be an etiological agent of respiratory tract infection.

THE COMPLETENESS OF THE VACCINATION PLAN UP TO 1 YEAR AGE CHILDREN WHO WERE BORN IN 2014 AND 2015 YEAR

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Keywords. Vaccination, Plan.

Introduction. Children at age under one year very susceptible to infectious diseases because their immune systems are not fully evolved, so a timely vaccination is important for child's health. Vaccination plan includes: DTaP-IPV-Hep B-Hib vaccine (Hexacima), Synflorix (pneumococcal vaccine), Rotarix (Rotavirus vaccine), and BCG vaccine.

Aim. Explore the data on completeness of the vaccination plan for children at age under 1. Determine the cause and the percentage of the occurrence for any failure or delay. Compare rotavirus vaccination in 2014 and 2015.

Materials and methods. Retrospective study performed using compiled vaccination plan protocol. Interviewed parents about the vaccination status of children. Statistical processing data in SPSS 23.0 using T-test, Chi-Square test, Kruskal-Wallis test, descriptive statistics.

Results. Research involved 130 infants–53.8% of patients were male. The average weight of infants at birth is 3648 ± 496 grams. BCG vaccine performed in 105 cases (80.8%), delayed in 20 cases (15.14%), unfulfilled in 5 cases (3.8%). There is no significant difference in performance of the BCG vaccine in 2014 and 2015 ($p = 0.820$). There was no significant association between birth weight and of compliance of BCG vaccine ($p = 0.358$). The first Hexacima vaccine among infants wasn't carried out timely in 79.2% of all cases. First Hexacima vaccine didn't performe in 8.8% and delayed in 70.4% cases.. Main reason for non-vaccination was parents' refusal (45.5%), neurologist recommendation (18.2%). Main reasons for delayed first Hexocima vaccine was neurologist recommendation (86.4%) and acute infections (9.1%). The average time delay of Hexacima first vaccine is 1.6 ± 0.2 month. The first Synflorix vaccine was not carried out timely in 88.6% of cases (24.4%) isn't performed and 64.2% – delayed. Main reasons for delayed first Synflorix vaccine is neurologist recommendation (75.6%), acute infections (19.2%). Main reason for non-vaccinating first Synflorix vaccine is parents' refusal (77.3%). There were significant differences in the Rotarix vaccination in 2014 and 2015 ($p < 0.001$). First Rotarix vaccine used in 5.3% of cases in 2014, but in 2015 used in 58.5% of cases.

Conclusions. Only 3.8% of BCG vaccination not fulfilled. Compliance of BCG vaccine don't associated with birth weight. There were no significant differences of the performance of BCG vaccination in 2014 and 2015. The main reason for Hexacima and Synflorix vaccine delay is neurologist recommendations. There are significant differences in the usage of Rotarix in 2014 and 2015. In 2015, there were more Rotarix vaccinated cases.

CLINICAL, EPIDEMIOLOGICAL AND LABORATORY CHARACTERISTICS OF PATIENTS WITH INFLUENZA HOSPITALISED IN RIGA EAST UNIVERSITY HOSPITAL STACIONARY "INFECTOLOGY CENTER OF LATVIA" DURING THE 2014 / 2015 INFLUENZA SEASON

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Keywords. *Influenza virus, flu, morbidity data.*

Introduction. Influenza, commonly known as "the flu", is an acute viral infectious disease caused by an influenza virus. It has 3 types affecting people – type A, B or C. In Latvia, seasonal influenza viruses cause annual epidemics peaking during winter and can affect anybody in any age group. Typical symptoms include high fever, muscle pains, cough, headache, sore throat and fatigue. Complications and worsening of previous health problems occur frequently and, in severe cases, can lead to lethal outcome. It is a vaccine preventable disease, but since the influenza virus envolves rapidly, every year a new vaccine is developed.

Aim. Based on the information in medical histories, find the average illness duration, hospitalization length, vaccination status, complications, laboratory characteristics and types of influenza virus.

Materials and methods. Retrospective analysis of medical history data of patients, who were hospitalised with influenza in "Infectology Center of Latvia" during the 2014 / 2015 influenza season. Data were processed using MS Excel.

Results. Medical history data of 250 patients with influenza were analysed. 215 of them were laboratory confirmed with influenza virus RNA in nasopgaryngeal smear using real-time PCR, 35 patients had their diagnosis based on clinical and epidemiological background. 175 (81%) of laboratory confirmed cases showed type A influenza virus, 42 (19%) – type B. The peak incidence of type A virus was from December until February – 93% of all analysed cases during these months, but the highest morbidity with type B occurred in March – 85%. Among all patients 140 (56%) were female, 110 (44%) – male. The mean age of all patients – 54.4 years (SD ± 21.6). The average duration of illness – 7.3 days (SD ± 4.2), mean hospitalization length – 4.9 days (SD ± 3.6). 2 (0.9%) patients had their vaccination against influenza done this season. 144 (57.6%) patients had positive epidemiological anamnesis. In 136 (54.4%) cases complications were observed – 2 patients were treated in the ICU, in 72 (53%) cases pneumonia was diagnosed clinically and radiologically, 47 (35%) patients had bronchitis, 7 (5%) – sinusitis, 10 (7%) patients had deteriorating chronical condition. Laboratory results show lowered lymphocyte count in 161 (64%) cases.

Conclusion. Results show that type A was dominant during the period of December – February, but type B prevalence was in March. Epidemiological results of this study prove influenza is highly contagious viral disease, causing complication in majority of cases, therefore vaccination is strongly recommended.

IMPLEMENTATION OF ANTIMICROBIAL STEWARDSHIP PROGRAM AT A TERTIARY CARE HOSPITAL

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Keywords. Antimicrobial stewardship, hospital care.

Introduction. The published data about the antibiotic (AB) use in Latvian hospitals indicates a permanent growth of resistant isolates. It has been reported that antimicrobial stewardship programs (ASP) promote rational use of AB.

Aim. To review the process of implementing ASP at a divison of 321-bed tertiary care hospital.

Materials and methods. Data about the systemic AB use were collected for the period between 1 January 2012 and 31 December 2014. Data on issues of AB (g) were converted to defined daily doses (DDD) and expressed to 100 bed-days (BD). Statistical analysis was performed using SPSS 20.0 software.

Results. A total of 35 AB were registered during the research period, there had not been observed significant differences in the amount of BD/year (mean: 8055.7 ± 310.6) and in the amount of cases/year (mean: 867.7 ± 60.3). A total of 96 dosage forms were registered, from them 57 (59.4%) dosage forms were parenteral and 39 (40.6%) were oral. The total consumption of the used AB, expressed as DDD, had decreased from 10032.6 (2012) to 7766.1 (2014), ($p > 0.05$), an intensity had decreased from 120.4 DDD/100 BD (2012) to 95.7 DDD/100 BD (2014), ($p > 0.05$). Combinations of penicillins (J01CR) were the most consumed (12212.6 DDD; 47.6%) and most intensively used (151.3 DDD/100 BD; 47.6%) AB. The consumption of combinations of penicillins (DDD) had decreased from 4409.3 (2012) to 4211.1 (2014), ($p > 0.05$), an intensity had decreased from 52.9 DDD/100 BD to 51.9 DDD/100 BD ($p > 0.05$). The most consumed and most intensively used AB were ampicillin and enzyme inhibitor (e. i.) (J01CR01; 5862.5 DDD (22.9%); 73.3 DDD/100 BD (23.1%)), piperacillin and e. i. (J01CR05; 2624.3 DDD (10.2%); 32.9 DDD/100 BD (10.3%)) and sulbactam (J01CG01; 2545.0 DDD (9.9%); 30.6 DDD/100 BD (9.6%)).The consumption of ampicillin and e. i. (DDD) had increased from 1185.0 (2012) to 2412.5 (2014), ($p > 0.05$), intensity of ampicillin and e. i. had increased from 14.2 DDD/100 BD (2012) to 29.7 DDD/100 BD (2014), ($p > 0.05$). The consumption of piperacillin and e. i. (DDD) had increased from 208.6 (2012) to 1448.6 (2014), ($p > 0.05$), intensity of piperacillin and e. i. had increased from 2.5 DDD/100 BD (2012) to 17.9 DDD/100 BD (2014), ($p > 0.05$). The consumption of sulbactam (DDD) had decreased from 2535.0 (2012) to 10.0 DDD (2013), ($p > 0.05$), intensity had decreased from 30.4 DDD/100 BD (2012) to 0.1 DDD/100 BD (2013), ($p > 0.05$).

Conclusions. Implementation of pharmacist-led ASP may be useful to evaluate the use of AB and to distinguish the potential risk factors of AMR. Further research would be needed to review the results of microbiological tests, thereby to determine, whether a colleration between more intensive use of AB and higher rates of resistant isolates exists.

ANALYSIS OF PATIENTS WITH MENNINGORADICULONEURITIS AT THE RIGA EAST CLINICAL UNIVERSITY HOSPITAL

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Keywords. Lyme neuroborreliosis, meningoradiculoneuritis, Bannwarth syndrome.

Introduction. Lyme disease is the most common tick-borne illness in Europe. Neurologic involvement occurs in up to 15%. (Marques,2015). Meningoradiculoneuritis is most common neurological syndrome (68%).(Oschmann, 1998). The following three criteria should be fulfilled for definite, and two of them for possible Lyme Neiroborreliosis: (i) neurological symptoms; (ii) cerebrospinal fluid (CSF) pleocytosis; (iii) *Borrelia burgdorferi*-specific antibodies produced intrathecally (Guidelines, 2010).

Aim. To analyze patients with meningoradiculoneuritis, evaluate clinical findings, diagnostic and therapy strategy in Riga East Clinical University Hospital from January 2010 to December 2015.

Methods. In this study total amount of meningoradiculoneuritis diagnosis code were encrypted 35 case records. 15 of all case records were incorrect, included 3 case records with tick-borne encephalitis, 5 with Lyme disease in first stage, and 5 with Lyme arthritis. With necessary diagnosis were encrypted 20 case records. Results were analyzed by descriptive statistics tools.

Results. Patient age ranged from 29 to 82 years (mean $57 \pm SD = 15$). 50% of them were females, 50% males. Mean count of bed days for one patient were $16 \pm SD = 6$. The mean time from symptoms started till hospitalization was $25 \pm SD42$ days (from 1 to 180 days, 10 (IQR 5–25)). 20% were admitted with diagnosis poliradiculitis, 20% – acute cerebrovascular disorders, 15% – spodylosis, 10% – multiple sclerosis. 30% noticed tick bite, 20% from all patient noticed Erythema migrans. Mean time from tick bite to symptoms were 2 month. The most often symptoms or clinical findings were sensory disturbances in legs or arms (65%, n = 13), radicular pain (55%, n = 11), night pain (10%, n = 2), headaches (20%, n = 4), ataxia (25%, n = 5), n. facialis palsy (30%, n = 6, bilaterally – 5%). 70% of patient had more than 3 symptoms. Lumbar puncture was performed in 80% of cases. Lymphocytic pleocytosis was in 93%, IgM and / or IgG ELISA were positive or doubtful in 90%, but on Westernblott in 60% (100% postive of all what has been done), intrathecally in 25% of cases. General therapy were antibiotics – i/v Ceftriaxoni 2g per day or p/o Doxycyclini 200mg per day, one patient was allergic to Ceftriaxone. Days of therapy ranged from 5 – 29 days (mean $17 \pm SD7$).Ceftriaxone was prescribed in 59%, Doxycycline in 24%, both in 17% of cases. Simptomatic therapy – Nonsteroidal anti-inflammatory drugs were prescribed in 60%, narcotic analgesics in 30%, Ipidacrin in 60%, Mannitol in 40%, Corticostreroids in 50% of cases.

Conclusions. 1. *B. burgdorferi* causes 25% cases of meningoradiculoneuritis. 2. Meningo-radiculoneuritis is more common among middle-aged patient. 3. Clinical manifestation is mostly associated with sensory disturbance in legs or arms, radicular and night pain, headaches, ataxia and n. facialis palsy. 4. All patients with meningoradiculoneuritis have to been checked for *B. burgdorferi* – specific antibodies produced intrathecally. 5. Specific therapy mostly included antibiotics – Cefriaxone and Doxycycline.

HIGH RISK HUMAN PAPILLOMAVIRUS INFECTION IN LATVIAN FEMALE RENAL TRANSPLANT RECIPIENTS

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Keywords. Papillomavirus, renal transplantation, immunosuppression.

Introduction. According to the literature high risk human papillomavirus (HR-HPV) is the most common cause of cervical cancer development. Due to long term immunosuppressive therapy renal allograft recipients has a higher risk of developing HPV infection and associated malignancies.

Aim. to investigate frequency of HR-HPV infection in female renal allograft recipients.

Materials and methods. In this investigation 23 female kidney recipients positive on HPV infection (age 28 – 68) were enrolled and examined progressively. Peripheral EDTA-blood samples and cervical swabs were collected from each patient 2 weeks, 6 months and 12 months after transplantation.

Polymerase chain reaction (PCR) with consensus primers was used for initial detection of wide range HPV types. Commercial HPV High Risk Screen Real-TM Quant qPCR kit was used for quantitative detection of 12 types of HR-HPV (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, and 59) in recipients' HPV positive DNA samples. Commercial ELISA kit was used for detection of HR-HPV L1-capsid's antibody (IgG) in recipients' plasma.

Results. Majority of recipients (39%; 9/23) were positive already 2 weeks after renal transplantation (RT), additionally three recipients became positive 6 months (52%; 12/23) and four recipients (69%; 16/23) 12 months after renal transplantation. qPCR results showed that most of patients (63%) had either HR-HPV type 51 or type 56. Specific typing confirmed that one patient was infected with HR-HPV 18 and one patient had HR-HPV 16. In two patients co-infection with two different HR-HPV types was found.

HR-HPV L1 IgG antibodies in plasma were detected in 38% (6/16) of recipients positive on HR-HPV sequences in cervical swabs and in 57% (4/7) of recipients negative on them. All IgG positive patients had these antibodies from the beginning of the study.

There was important connection between viral load in cervical swabs and HR-HPV L1 IgG antibodies in the plasma. 50% (3/6) of IgG positive patients developed detectable viral load only 12 months after RT and 33% (2/6) of them had virus clearance within half a year. Furthermore, IgG positive patients showed only clinically insignificant HR-HPV viral load. There are 7 patients who had shown viral load increment during the study and 6 of them were IgG negative.

Conclusion. HR-HPV L1 IgG antibodies could be used as a prognostic marker for virus clearance from the host. Reduced humoral immunity during immunosuppressive therapy may play an important role in development of HR-HPV infection and its clearance, however further investigation is required.

THE VARIETY OF ORAL MICROBIOME SPECIES IN SUPRAGINGIVAL AND SUBGINGIVAL BIOFILMS IN SMOKELESS TOBACCO (SNUS) USERS

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Keywords. Smokeless tobacco, snus, biofilm.

Introduction. Snus is a moist smokeless tobacco product that is usually used in small sachets or in loose form and placed under the upper or lower lip. On average, daily snus users use snus sachets every 3 hours during the day, resulting in a use of 3 packages of snus per week. In Sweden, more than one million people use snus daily, even though snus is banned in the European Union (EU). There are many young people in Latvia who use snus daily. In Sweden, 21% of men and 2-% of women use snus. There are many studies that have been done in Sweden, but no publications have been done in Latvia. Smokeless tobacco use can be attributed to periodontal diseases, like gingivitis, periodontitis and periodontal abscess, as well atherosclerosis, rheumatoid arthritis and many other illnesses.

Aim. The aim of the paper is to determine the content of supragingival and subgingival biofilms from smokeless tobacco (snus) users and to compare it with biofilms that are taken from non-tobacco users.

Materials and methods. A questionnaire on social and health factors was made. Patient saliva and periodontal biofilms were collected. Periodontal biofilms were examined using the ParodontoSreen RT-PCR method. Salivary microbiome was tested by Giemsa stain method, phase-contrast and light microscope.

Results. The study involved 20 patients, 50-% of whom were smokeless tobacco (snus) users and 50-% of whom were non-tobacco-users. The average age was 21.9 ± 3.8. 60-% of smokeless tobacco users used snus without any breaks all day long, 20-% used snus a few times a day, 20-% used snus a few times a week. Of all the patients, 70-% brushed their teeth twice a day, and only 30-% brushed their teeth once a day. 35-% of all patients admitted using dental floss every day, but 65-% people did not floss at all. *Entamoeba gingivalis*, which is associated with huge biofilms, generalized calculus on teeth and caries was found in the saliva of 5 snus users. Snus users had higher *Tannerella forsythensis*, *Treponema denticola* and *Aggregatibacter actinomycetemcomitans* referent interval / unit of measurement than it should be for healthy periodontal condition (5.40 vs. 5.00; 4.90 vs. 3.50; 4.40 vs. 4.00), but in the control group no difference was found.

Conclusion. Smokeless tobacco users have *Tannerella forsythensis*, *Treponema denticola*, *Aggregatibacter actinomycetemcomitans* and *Entamoeba gingivalis* in their saliva and supragingival and subgingival biofilm samples compared to non-tobacco users. It is significant that these microorganisms will cause periodontal diseases, caries and other health problems, highlighting that the average age was 21.9.

Staphylococcus aureus CARRIAGE DIFFERENCES, CARRIAGE RISK FACTORS AND RESISTANCE TO ANTIMICROBIALS AMONG THE 1ST AND 6TH YEAR MEDICAL STUDENTS IN VILNIUS UNIVERSITY, FACULTY OF MEDICINE

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Keywords. *Staphylococcus aureus*, carriage, risk factors.

Introduction. *Staphylococcus aureus* is a gram-positive bacterium responsible for the most hospital infections. The 6th year medical students have a constant contact with hospital environment as compared to the 1st year students.

Aim. Our main objective was to determine whether studying medicine increases the risk of *S. aureus* carriage among students. Moreover, we aimed to identify whether carriers have MRSA, what other risk factors may influence the carriage and which antimicrobials isolated strains of *S. aureus* are susceptible to.

Materials and methods. A cross-sectional study was conducted at Vilnius University faculty of Medicine to identify *S. aureus* carriers. Nasal and pharyngeal swabs were collected from 112 of the 6th year medical students. Samples were cultured on Mannitol-salt agar and blood agar. Smooth yellow mannitol fermenting colonies which were gram-positive cocci by microscopy and Staph latex agglutination test, DNase, catalase, coagulase positive were identified as *Staphylococcus aureus*. After *S. aureus* identification antibiotic resistance was evaluated according to CLSI and EARSS recommendations. Susceptibility was tested for oxacillin (1μg), cefoxitin (30μg), rifampin (5μg), kanamycin (30μg), clindamycin (2μg), erythromycin (15μg), streptomycin (10μg), norfloxacin (10μg), fusidic acid (10μg), penicillin (10U), ciprofloxacin (5μg) and tetracycline (30μg) by disk diffusion method; the *E test* was used to detect the resistance to vancomycin and gentamicin. Participants were provided with a questionnaire on expected *S. aureus* carriage risk factors. Results were compared with the identical study in 2012 with the 1st year medical students. Microsoft Excel, R and SPSS v.20 were used for the statistical analysis of the data. χ^2 test was applied to describe two-way tables.

Results. There were 112 medical students, from which 85 (75.9%) were women and 27 (24.1%) were men. 51 (45.53%) students were confirmed positive for *S. aureus*: 33 (64.7%) women and 18 (35.29%) men. Significant *S. aureus* carriage difference between the 1st and the 6th year medical students was not found (45.3% vs 45.5%). *S. aureus* carriage is related to having a family member who works with preschool children (OR = 11.16; CI 1.51–82.35; p = 0.0064) and sex (OR = 3.15; CI 1.17–8.88; p = 0.015): males have a higher chance of being *S. aureus*-positive. Resistant *S. aureus* strains were identified to clindamycin (5.88%), erythromycin (9.8%), streptomycin (37.25%), fusidic acid (1.96%), penicillin (80.39%). Resistance to other antibiotics mentioned above did not occur. The 6th year medical student group revealed

erythromycin-resistant *S. aureus* strains, which were not found in the 1st year student group. The former group's erythromycin resistant *S. aureus* strains were more abundant in students who were hospitalised for a longer period than 7 days (p = 0.00218).

Conclusions. Studying medicine is not a risk factor for *S. aureus* carriage. There is a 3-fold more chance of *S. aureus* carriage for men and 11-fold more if your family member works with preschool children. Some isolated *S. aureus* strains were resistant to clindamycin, erythromycin, streptomycin, fusidic acid and penicillin. However, none MRSA strains were isolated.

NASAL AND DERMAL CARRIAGE OF
STAPHYLOCOCCUS AUREUS

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Keywords. *Staphylococcus aureus*.

Introduction. *Staphylococcus aureus* is a gram-positive, aerobe or facultative anaerobe, non-motile, catalase and coagulase positive, non-spore forming cocci. *S. aureus* is a common microorganism that causes suppurative infections and toxinoses, it can also be found in healthy individuals, as well as in the environment. If *S. aureus* colonizes mucous membranes and the nasopharynx it is called *S. aureus* carriage. *S. aureus* usually colonizes the nasal cavities, armpits and inguinal folds. Approximately 30% of healthy humans carry. S. aureus, 20% of them are persistent carriers, 70% are intermittent carriers, and 10% are non-carriers. Carriers mostly do not develop infections. Carriage of *Staphylococcus aureus* plays a key role in the epidemiology of staphylococcal infections mostly because carriers are constant source of infection.

Aim. Determine the factors that affect nasal and dermal carriage of *S. aureus*.

Materials and methods. Samples were taken from nasal mucosa and the dorsal surface of the hand and grown in Petri dishes on Baird-Parker agar. Results were obtained by quantitatively counting the visible black *Staphylococcus aureus* colonies with a clear halo. The age, sex, smoking habit and anamnesis of suppurative infections of respondents were assayed.

The data was analyzed using Microsoft Excel and GraphPad using Fisher's Exact test.

Results. 150 samples from 75 healthy individuals were taken. The age of respondents ranged from 18 to 58 years (mean age: 27). 50 (67%) of the respondents that took part in the study were female and 25 (33%) were male. 33% (n = 25) of all respondents carry *S. aureus* in nasal mucosa and on the dorsal surface of the hand. 44% (n = 11) from these were female and 56% (n = 14) – male. Statistical analysis proved (p = 0.0096) that men are more likely to be *S. aureus* carriers. 26% (n = 20) of all respondents do not carry *S. aureus* neither in nasal mucosa or dorsal surface of the hand. S. aureus carriage in nasal mucosa only was found in 29% (n = 22) of all respondents. 32% (n = 8) of them were male and 28% (n = 14) – female. Statistical analysis proved (p = 0.0455) that men are more likely to carry *S. aureus* in nasal mucosa. 63% (n = 14) of all respondents that carry *S. aureus* in nasal mucosa only (n = 22) are persistent carriers. The carriage of S. aureus on the dorsal surface of the hand only was found in 9.3% (n = 7) of the cases. 40% (n = 30) of all respondents were smokers, 33% of them (n = 10) carry *S. aureus* in nasal mucosa and on the dorsal surface of the hand. When comparing the carriage

of *S. aureus* between smokers and non-smokers statistical analysis suggests (p = 0.8075) that the carriage is not affected by smoking. There is no notable connection between *S. aureus* carriage and anamnesis of acne vulgaris or pharyngitis. 41% (n = 31) of all 75 respondents have had tonsillitis. 52% (n = 16) of them carry *S. aureus* in the nasal mucosa and on the dorsal surface of the hand. 25% (n = 19) of respondents that have had pneumonia 45% (n = 9) carry *S. aureus* in the nasal mucosa and on the dorsal surface of the hand.

Conclusions
1. There is a connection between the respondent sex and the carriage of *S. aureus*.
2. Most individuals that carry *S. aureus* in the nasal mucosa are also carriers on the dorsal surface of the hand.
3. Carriage of *S. aureus* is not affected by smoking.
4. Carriers of *S. aureus* do not have higher risk of suppurative infections.

VI. Psychiatry,
Psychotherapy / Psychosomatics,
Neurology, Rehabilitology

16 March 2016

16 March 2016

OF STENT-RETRIEVER THROMBECTOMY IN THE TREATMENT OF ACUTE ISCHEMIC STROKE

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Keywords. Stent-Retriver thrombectomy, Acute ischemic stroke.

Introduction. Among patients with acute ischemic stroke, less than 40% regain functional independence when treated with intravenous tissue plasminogen activator (t-PA) alone. Thrombectomy with the use of a stent retriever, in addition to intravenous t-PA, increases reperfusion rates and may improve long-term functional outcome.

Aim. Prove that the stent retriever role in the treatment of ischemic cerebrovascular accident can reduce disability and improve long-term functional outcome.

Methods. We randomly assigned eligible patients with stroke who were receiving or had received intravenous t-PA to continue with t-PA alone (control group) or to undergo endovascular thrombectomy with the use of a stent retriever within 6 hours after symptom onset (intervention group). Patients had confirmed occlusions in the proximal anterior intracranial circulation and an absence of large ischemic-core lesions. The primary outcome was the severity of global disability at 90 days, as assessed by means of the modified Rankin scale.

Results. 196 patients underwent randomization. In the intervention group, the median time from qualifying imaging to groin puncture was 57 minutes, and the rate of substantial reperfusion at the end of the procedure was 88%. Thrombectomy with the stent retriever plus intravenous t-PA reduced disability at 90 days over the entire range of scores on the modified Rankin scale (P < 0.001). The rate of functional independence (modified Rankin scale score, 0 to 2) was higher in the intervention group than in the control group (60% vs. 35%, P < 0.001). There were no significant between-group differences in 90-day mortality (9% vs. 12%, P = 0.50) or symptomatic intracranial hemorrhage.

Conclusion. In patients receiving intravenous t-PA for acute ischemic stroke due to occlusions in the proximal anterior intracranial circulation, thrombectomy with a stent retriever within 6 hours after onset improved functional outcomes at 90 days.

NEW DISCOVERIES IN EXPLODING HEAD SYNDROME

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Keywords. Parasomnia, rare sleep disorder, exploding head syndrome.

Introduction. Exploding head syndrome (EHS) is a rare parasomnia, characterized by a sudden, loud noise or a sense of an explosion in the head occurring at sleep onset or upon awakening. The prevalence of EHS is unknown. It seemed to be more common in older people, however recent study with college students showed, that EHS may be more common in younger individuals than initially believed.

Aim. To determine prevalence of EHS among medical students, analyze its characteristics and its link to other disorders.

Materials and methods. A cross-sectional study with 338 4th to 6th year medical students, who completed a modified exploding head syndrome interview questionnaire was done. Characteristics of EHS in this group, its link to head trauma, depression and anxiety disorders were analyzed. Also, the results were compared to the largest and most recent EHS study. Statistically significant data was considered when $p < 0.05$.

Results. Out of 338 responders 26 (8%) matched EHS criteria, 25 (7%) experienced multiple (> 1) EHS episodes. The highest prevalence was found among 5th year medical students (12%), who also had the most frequent episodes per year ($M = 9$). A slightly higher prevalence was found among men (10.6%) compared to women (6.7%). 19 years was the median of the age of onset and the median of a single episode duration was 1.75s.

The majority of respondents $n = 8$ (31%) experienced moderate level of fear. The study found that the fear level directly correlates with sound intensity ($p = 0.009$). After dividing respondents into three groups based on time of EHS occurrence, we found out that the group with EHS episodes at sleep onset and upon awaking experience > 10 episodes per year ($p = 0.008$), also feel more distress ($p = 0.001$).

Traumatic brain injury was more common among students with EHS ($p = 0.0002$), as well as depression ($p = 0.04$).

Comparison of two studies showed that EHS was twice as common in American students, and they had more frequent episodes than Lithuanian students. However determined level of fear, suffering and effect on quality of live was very similar in both studies.

Conclusions. EHS among Lithuanian medical students is less common (8%) than American psychology students (16%). There is no significant difference of EHS prevalence among the sexes. EHS leads to moderate level of fear, which directly correlates to the level of sound intensity. The group experiencing EHS episodes at sleep onset and upon awaking suffers greater distress and experiences more EHS episodes per year. We established that head trauma and depression is more common among people who have EHS.

DIAGNOSTIC APPROACH AND TREATMENT OF DIZZINESS IN GENERAL PRACTICE

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Keywords. Dizziness, vertigo, family medicine.

Introduction. Dizziness is one of the most common neurological symptoms. It affects approximately 20% – 30% people in the general population (Eid, 2015). This symptom is nonspecific and includes a broad differential diagnosis (Chan 2009). Appropriate diagnosis and treatment can significantly improve quality of life (Chawla, 2006).

Aim. To analyze diagnostic methods suitable for dizziness type recognition in general practice and describe treatment options.

Materials and methods. The study included questionary of 80 patients with dizziness who visited their general practitioner from October 2015 till November 2015 in Riga and Resekne. Results were analyzed via descriptive statistics methods.

Results. Most of the patients with dizziness symptom visited their general practitioner (GP), in 79.7%. 50.6% visited neurologist, 20.3% otorhinolaryngologist. Other mentioned specialists were cardiologist, ophthalmologist, psychiatrist. Variety of diagnostic tests were made by GP for the patients with dizziness: blood pressure 83%, electrocardiography 73%, blood biochemical parameter testing 73%, neck vessel duplex scan 71%, blood counts 70%, neurological examination, specific for dizziness 40%, head computer tomography (CT) scan 37%, echocardiogram 32%, head magnetic resonance imaging 29%, auditory system examination 25%, vision organ test and cervical spine X-ray 22%, Holter monitor, electroencephalogram and CT neck angiography 8%. No diagnostic tests were made for 5% of the patients. Majority of the patients had different comorbidities. Most common were cervical spondylosis 67.5% and arterial hypertension 60%. Just 5% did not have any comorbidities. Most of the patients were taking drugs that cause dizziness as a side effect daily, such as beta-blockers and analgesics. Only 22.8% did not use such drugs. Prescribed treatment from dizziness was betahistine 57%, antihypertensive drugs 26.6%, calcium antagonists 11.4% and in less than 10% – sedatives, homeopathic remedies, antidepressants and antiepileptic drugs. Vertigo rehabilitation was conducted only in 6.3% of cases. 27% of the patients answered that treatment removed dizziness totally, 50.6% that it reduced symptoms, 5.2% got no benefit of treatment and 16.9% did not use any treatment.

Conclusions. 1. In case of dizziness most of the patients visit their general practitioner. 2. Diagnostic of dizziness requires extensive physical and instrumental examination and is complicated by patient comorbidities and received therapy. 3. Treatment of dizziness comprises several models according to its type and mainly reduces symptoms totally or partly if admitted. 4. Vertigo rehabilitation is considered to be the most effective treatment method however GP need more practical skills to perform this treatment.

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FATIGUE IN MULTIPLE SCLEROSIS PATIENTS

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Keywords. Multiple sclerosis, Fatigue, depression.

Introduction. Fatigue is one of the most common and debilitating symptoms reported by multiple sclerosis (MS) patients. The mechanisms and factors that underlie the development of fatigue are poorly understood, and objectively it is hard to evaluate its presence.

Aim. In this research, we compared the level of fatigue in Latvian MS patients to a healthy control group from the Latvian population, and investigated if lifestyle habits, disability and depression influence the level of fatigue.

Materials and methods. The *Fatigue Severity Scale* (*FSS-9*), the *Patient Health Questionnaire 9* (*PHQ-9*), and a questionnaire about lifestyle habits including alcohol consumption, smoking, physical activity, pet ownership, education and sleep habits were given to 63 healthy Latvians via an electronic questionnaire. Exclusion criteria included diagnosis of MS, chronic fatigue syndrome and other acute or chronic diseases that may cause fatigue. 44 MS patients were given the same questions via personal interview. The diagnosis of MS was based on McDonalds criteria (2010). Clinically significant depression was considered if the *PHQ-9* value was ≥10. The disability level of MS patients was evaluated by using *Expanded Disability Status Scale* (*EDSS*). The collected data were analyzed in *SPSS* and *Excel*.

Results. 44 MS patients with relapsing remitting MS between the age of 20 to 69 years (42.9 ± 12.05) were included in the research. The median disease duration was 6.7 ± 6.45 years and median *EDSS* score was 2.0 ± 1.70. 25 (55%) of MS patients were fatigued based on a *FSS-9* cutoff value of 3.9 (the average *FSS-9* score of the control group). There was a positive correlation between fatigue and depression (r = .479; p = .001), fatigue and *EDSS* (r = .434; p = .003), and *EDSS* and depression (r = .387; p = .01). A point biserial correlation test showed a weak correlation between smoking and fatigue (r = 0.293; p = 0.05). There was a weak correlation between fatigue and the amount of alcohol consumed while drinking (r = 0.314; p = 0.04).

Conclusion. More than half of MS patients reported fatigue. There is a positive correlation between fatigue, depression and disability level in MS patients. The level of fatigue was not associated with sleep habits, pet ownership, or physical activity, but did correlate loosely with smoking and alcohol consumption. This leads us to the conclusion that lifestyle habits have little impact on fatigue in MS patients, and that it depends more on disease related disability and depression.

POSTENCEPHALITIC SYNDROME AFTER TICK-BORNE ENCEPHALITIS

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Keywords. Tick-borne encephalitis, postpolio syndrome, post tick-borne encephalitis syndrome.

Introduction. Like poliomyelitis, tick-borne encephalitis is an acute viral infection that affects the human nervous system. Postpolio syndrome (PPS) is a neurologic disorder characterized by new and progressive muscular weakness, pain, and fatigue 15 – 30 years after the acute paralytic poliomyelitis. The majority of patients suffers from increasing difficulties to perform activities of daily living and significantly reduce quality of life. In recent years, there have been reports of the development of a similar syndrome in tick-borne encephalitis cases, but so far no major studies have not been performed.

Aim. To evaluate fatigue level and quality of live in patients with history of tick-borne encephalitis with manifestation of meningoencephalitis.

Materials and methods. In the research there were included in Riga Eastern Clinical University Hospital "Gailezers" hospital unit 7 from 1991–1998 hospitalized patients with tick – borne encephalitis with manifestation of meningoencephalities who have had disease at least 15 years ago. From 59 patients selected by using medical documentation 11 could be included in the research. In the control group there were included 12 participants without history of neurological infectious diseases. For evaluation were used *Fatigue Severity Scale*, *The Short Form (36) Health Survey* (patient-reported survey of patient health). Data were collected and analysed with *Microsoft Excel.*

Results. The average age of patients with tick-borne encephalitis was 65.9 years (min – 50, max – 90), 54.5% (n = 6) women, 45.5% (n = 5) men. The average age of control group was 68.7 years (min – 51, max – 85), 69.3% (n = 9) women, 30.7% (n = 4) men.

Fatigue severity scale results, using Z score test, showed no statistically significant difference between group of patients and control group (p = 0.85737).

A statistically significant difference exists between the patient group and the control group in the following SF-36 sections – physical role functioning (*Mann-Whitney U, p = 0.02034*), general health perceptions (*Mann-Whitney U, p = 0.00024*) and mental health (*Mann-Whitney U, p = 0.01732*).

A statistically significant difference does not exists between the patient group and the control group in the following SF-36 sections – physical functioning (*Mann-Whitney U, p = 0.2187*), emotional role functioning (*Mann-Whitney U, p = 0.48392*), fatigue (*Mann-Whitney U, p = 0.5552*), social role functioning (*Mann-Whitney U, p = 0.59612*) and bodily pain (*Mann-Whitney U, p = 0.64552*).

Conclusions. There is difference between patient group and control group comparing their general health perceptions, physical role functioning and mental health.

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There was no significant difference comparing following sections: physical functioning, bodily pain, fatigue, emotional role functioning, social role functioning between patient group and control group.

For more precise conclusion the research should be continued, patient group must be enlarged and groups could also be compared from the neurological aspect.

WERNICKE'S ENCEPHALOPATHY ASSESSMENT OF ETIOLOGY, CLINICAL PRESENTATION, DIAGNOSTIC METHODS AND OUTCOME

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Keywords. Wernicke's encephalopathy, etiology, thiamine treatment.

Introduction. Wernicke's encephalopathy is a serious neurological disease concerned with B1 vitamin deficiency. Autopsy studies have shown that Wernicke lesions were present in 1.4% of general medical patients, increasing to 12.5% in known "alcoholics" and to 35% in "alcoholics" with cerebellar damage. Etiology mostly is associated with chronic alcohol abuse, but there are other non-alcohol condition causes too. Main symptoms include mental state, oculomotor and cerebellar function disorders.

Properly and immediately started treatment with thiamine has important influence on outcome and reduces risk of mortality.

Aim. Investigate patients group, which have diagnosed Wernicke's encephalopathy by analyzing etiological factors, clinical presentation, diagnostics methods and outcome.

Materials and methods. Retrospective study was performed during the period from 01.01.2011. till 30.09.2015 in Pauls Stradins Clinical University Hospital Clinic including all 40 patients with diagnosis of Wernicke's encephalopathy.

Data collection was based on original questionnaire form concluding information about patients' gender, age, disease etiology, typical neurological symptom characteristics, visual diagnostic methods, and other organ functional status, detailed therapy assessment and outcome.

Data was processed in IMB SPSS, Microssoft Exel.

Results. The most common etiological factor is recognized as chronic alcohol abuse in 80% (32) of cases, malnutrition 7.5% (3), combination of alcohol abuse and malnutrition 2.5% (1) and other causes 10% (4).

The incidence of oculomotor symptoms – eye movement disorder 20% (8), nystagmus 35% (14), eye movement disorder and nystagmus 22.5% (9), ataxia 72.5% (29) and disturbances in consciousness 30% (12), psychomotor excitation – 17.5% (7).

Computed tomography was done 51.4% (19) and it was positive 5.2% (1). MRI was done 27% (10) and 70% (7) of confirmed diagnosis with applied MRI.

Statistically significant correlation between first day of B1 therapy administration and duration period of patients' presence in hospital was not found (r = 0.071, p = 0.676). Thiamine therapy has no correlation with patients' discharge time due to comorbidity state, but it certainly has important positive effect on neurological symptoms in 82.5% (33) of patient, independent of them 69.7% (23). There are 50% (20) of independent patients who started therapy earlier and were discharged but with late therapy only 7.5% (3). In 12.5% (5) thiamine therapy was considered as late. The average duration period in hospital is 9.025 days.

Conclusions. Investigation confirmed the effectiveness in reducing of neurological signs but significant correlation between early thiamine therapy administration and decrease in patients' duration time in hospital wasn't proved.

DIFFERENCES OF COGNITIVE FUNCTIONS IN PATIENTS WITH SEVERE LEFT-/RIGHT-SIDED OR BILATERAL CAROTID ARTERY STENOSIS BEFORE REVASCULARISATION THERAPY

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Keywords. Carotid stenosis, MoCA (Montreal Cognitive Assessment) scale, cognitive functions.

Introduction. Carotid artery atherosclerosis accounts for approximately 10% of ischemic strokes. Stroke is a well known cause of a cognitive impairment, while the information, whether severe carotid artery stenosis (> 70%) causes cognitive impairment is quite controversial. Also it is little known of what type of cognitive dysfution left- or right-sided stenosis can cause and whether there are differences in cogntive funtionality between unilateral and bilateral carotid stenosis.

Aim. The aim of our study was to compare cognitive dyfunctions in patients with severe left- or right-sided or bilateral carotid artery stenosis.

Material and methods. This study included 84 patients with severe carotid artery disease who were referred for carotid artery endarterectomy to Pauls Stradiņš Clinical University Hospital. The patients were divided into three subsequent groups: those with only left-sided stenosis (26), those with only right-sided stenosis (29) and those with bilateral carotid stenosis (25). Cognitive functions were assessed using MoCA (Montreal Cognitive Assessment) scale, that ranges from 0 to 30 points and includes eight domains: visuospatial / executive (5), naming (3), attention (3), calculation (3), language (3), abstraction (2), memory (5) and orientation (6). The data were analysed using IBM SPSS v.22 software and a comparative analysis using independant-samples T test was made. Tests were considered statistically significant at $p < 0.05$.

Results. Alltogether there were 30 female and 50 male patients with a mean age of 67.9 ± 11.4 years. Although the differences in mean MoCA score (24.37, 24.46 and 23.04 respect. for right-, left-sided and bilateral stenosis) had no statistical significance, the comparement of memory skills between stenosis of the left and right sides ($p < 0.023$), left side and bilateral stenosis ($p < 0.02$) and comparement of attention between right side and bilateral stenosis ($p < 0.012$) was statistically significant.

Conclusions. Bilateral carotid artery stenosis could have a worse impact on cognitive functioning compared to a monolateral stenosis. Right-sided stenosis might have more negative influence on patient's memory than left-sided stenosis, while left-sided stenosis might worsen patient's attention more than right-sided stenosis.

CLINICAL EPIDEMIOLOGICAL CHARACTERISTIC
OF DIZZINESS

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Keywords. Dizziness, vertigo, non-vertiginous dizziness, life quality.

Introduction. Definition of dizziness includes unpleasant, disturbing and false subjective perception of person's own body and / or surrounding movement, imbalance and stability disorder with complex and multifactorial pathogenesis. Due to present symptoms and their severity, dizziness can affect patient's life quality by exerting influence on physical, functional and emotional sphere.

Aim. The aim was to determine proportion of patients with complaint of dizziness in Pauls Stradins Clinical University Hospital and to give clinical characteristic of different types of dizziness influencing on patients' life quality.

Materials and methods. Prospective study was conducted during the period from 01.11.2015. to 30.11.2015 in Pauls Stradins Clinical Univeristy Hospital, departments of Neurology, Neurosurgery, Otolaryngology and Emergency department. The research involved persons who had complaints of dizziness: 20 patients from hospital departments and medical history data of 263 patients ambulatory discharged – of the Emergency department. In the hospital departments patients were interviewed and offered to fill in Patient's Card and Dizziness Handicap Inventory Questionnaire. The Patient's Card consisted of two parts (Patient's and Doctor's). The Patient's part included information about various subjective symptoms of dizziness. The Doctor's part included physical, laboratory and image diagnostic information from medical histories. Data from medical histories of ambulatory discharged patients who reported dizziness sensation was reviewed and collected in Doctor's part of the Patient's Card. The analysis of obtained data was processed by using Microsoft Excel program.

Results. Percentage of patients with dizziness in total hospital flow is 4.1%. From all patients in the Neurology Department those with dizziness symptom were revealed in 5.4% and Neurosurgery Department (3.1%), Otolaryngology Department (2.8%). Percentage of patients with dizziness distribution in hospital departments is the following: Neurology Department (62%), Neurosurgery Department (19%), and Otolaryngology Department (19%). In the hospital departments dizziness distribution according to the types presented non-vertiginous dizziness (38%), vertigo (57%): central vertigo (29%), peripheral vertigo (29%). Results of Dizziness Handicap Inventory Questionnaire are the following: mild handicap (35%), moderate handicap (15%), severe handicap (30%), without handicap (20%). Emotional impact on disability was the most frequent (69.5%), followed by functional impact (63.5%) and physical impact (51.5%). Data obtained from the Emergency Department presented patients with dizziness in total Emergency department flow (9.1%). The most common was non-vertiginous dizziness (86.9%), but vertigo (13.1%). The largest percentage of those with dizziness complaint was with cardiovascular disease (22.1%), neurological disease (18.3%) divided in vertigo (32.7%) and non-vertiginous dizziness (32.7%), patients with more than one diagnosis (16.4%). Other diagnoses included head injuries (12.6%), not elsewhere classified symptoms (8.4%) somatoform disorders (7.3%), therapy diagnosis (5.7%), alcohol intoxication (2.3%), musculoskeletal diseases (1.9%), otolaryngology diagnosis (1.1%), cerebrovascular diseases (1.5%), gynecologic diagnosis (1.1%), surgical diagnosis (0.8%).

Conclusions. According to Emergency Department's data, patients with dizziness complaint have various diagnoses that reveal various etiological factors, complicated pathogenesis of dizziness symptom and point out that the problem is multidisciplinary and it requires detailed examination. Dizziness has various effects (emotional, functional and physical) on life quality.

EXTERNAL VENTRICULAR DRAINAGE AND ITS COMPLICATIONS

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Keywords. Neuroinfection, meningitis, ventriculitis.

Introduction. External ventricular drainage (EVD) is one of the most important and frequently performed life saving procedures in neurosurgery. This is performed in many cases of acute brain injury. Nevertheless it may be associated with several complications.

Aim. The aim of this study was to find out complication rates, type of complications that occur, complication causing microorganisms and indications for EVD. To observe for a correlation between duration of drainage and rate of complication, and to observe a correlation between Glasgow Coma Scale (GCS) and clinical outcome.

Materials and methods. 150 patients who underwent EVD between 2007 and 2012 were included in this retrospective study. Patient files from both Stradiņš Clinical University Hospital as well as Riga East Clinical University Hospital were examined. The data were analyzed using Microsoft Excel and SPSS statistics.

Results. The average age of patient who underwent EVD was 57.7 years. The most common diagnosis of patients who underwent EVD; Rupture of aneurysm in 67 case (44.7%), Spontaneous intracerebral haematoma 38 case (25.3%), Cerebral contusion / Severe brain injury 19 cases (12.7%), Tumors 13 cases (8.7%), Arteriovenous malformation 11 case (7.3%), Abscess 1 case (0.7%), Vasculitis 1 case (0.7%). Common aneurysm location; a. communicans anterior 18 (24.3%), a. carotis interna 15 (20.3%), a. cerebri media 12 (16.2%). Complications occurred in 44 cases (29.3%), of these 44 cases Meningitis was identified in 38 cases (86.4%), 2 cases of Ventriculitis (4.5%) and 4 cases of both Meningitis and Ventriculitis were identified (9.1%). Acinetobacter baumannii was identified as the commonest microorganism causing neuroinfection in 13 cases (40.6%) and Coagulase negative staphylococcus in 8 cases (25%). For patients with neuroinfection the average duration of EVD was 8.3 days and for patients without neuroinfection the duration was 6.7 days. Of the 85 cases (57.7%) of mortality for 62 cases (72.9%) GCS at admission to hospital was ≤8.

Conclusion. Neuroinfection is a common complication of EVD. For patients with longer EVD there is increased risk to get neuroinfection. Patients with GCS ≤8 at admission to hospital are associated with greater mortality rates. Currently different methods are being researched in order to reduce infection and mortality rates. For example changing the drain catheter as a form of prophylaxis has not been effective. Several small studies have proven that intraventricular fibrinolysis had been effective for patients with intraventricular bleeding. This is due to faster resolution of blood clot and lesser risk of drain occlusion.

DEEP BRAIN STIMULATION WITH MICROELECTRODE RECORDING EFFECTS ON MOTOR AND NONMOTOR SYMPTOMS IN PATIENTS WITH PARKINSON'S DISEASE: A PROSPECTIVE CONTROLLED TRIAL

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Keywords. Parkinson's disease, Deep Brain Stimulation, Microelectrode Recording.

Introduction. Many authors believe that Microelectrode Recording (MER) is essential for precise electrode placement for Deep Brain Stimulation (DBS) in patients with Parkinson's disease (PD); however, others argue that MER requires longer surgeries thus leading to a wide range of postoperative complications.

Aim. The aim of the present study was to evaluate the clinical benefits of chronic bilateral DBS of the Subthalamic Nucleus (STN) in patients with PD.

Patients and methods. In a prospective nonrandomized trial we evaluated the efficacy of treatment in 89 adults with PD. Patients were assigned to receive STN-DBS with MER («MER+» – 30), STN-DBS without MER («MER-» – 30), and standard treatment («control» – 29). The primary outcomes were relative changes from baseline in the scores on rating scales at 6, 12, and 24 months. Statistical analysis was performed using Statistica 13.0 (STATSOFT).

Results. The mean pre and post-treatment scores were compared for each group. Both the MER+ and MER- groups showed a significant improvement in motor function while the control group demonstrated deterioration. The changes from baseline in the scores on the UPDRS III in the off-phase were -57.5% (MER+), -36.3% (MER-), +9.5% (control), and -51.4%, -26%, +20.8% respectively in the on-phase ($p < 0.02$). Worsening of cognitive function was in all groups; however it was less severe for the control group.

Conclusion. Patients with PD treated with STN-DBS using MER had significantly more improvement in motor function. However there was no significant difference in cognitive function between the MER+ and MER- groups.

STROKE THERAPY REAL TIME WINDOW
AT PAUL STRADINS UNIVERSITY HOSPITAL
IN 2015 COMPARED WITH 2014

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Keywords. Stroke, Therapeutic time window, Door-to-Needle.

Introduction. The time window between onset of stroke and in-hospital thrombolysis has to be kept as short as possible. To prevent unnecessary time delay, current guidelines recommend a Door-to-Imaging time (DTI) ≤25 minutes and a Door-to-Needle time (DTN) ≤ 60 minutes in acute ischemic stroke patients eligible for thrombolysis.

Aim. Evaluation of the current status and development of therapeutical time window of thrombolysed patients at Paul Stradins University Hospital (PSUH) after in-house training.

Methods. Retrospective audit of 113 recorded times of thrombolysed patients between January and October 2015 at PSUH, analysed and compared with study results from the same hospital in the same 10 month time interval in 2014 with reference to the guidelines of the American Stroke Association.

Results. In 2015, the median Onset-to-Door time (OTD) was 93 minutes (IQR 73–135), the median DTI was 40 minutes (IQR 32–50), and the median DTN was 90 minutes (IQR 77–102) at PSUH. The median time values of the same time intervals in 2014 were 5 minutes longer (p < 0.05) in DTI and 12 minutes longer (p < 0.001) in DTN. The OTD did not change significantly (p = 0.278).

Conclusion. The results from PSUH did not comply with the current guidelines, although there was a reduction in the in-hospital time windows and an overall reduction in median DTN of 12 minutes.

TITLE: DEPRESSION AND QUALITY OF LIFE IN GERMAN MEDICAL STUDENTS AT FOREIGN UNIVERSITIES

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Keywords. Depression, Medical Students, Intercultural Psychosomatic, Migration, Quality of Life, Q-les-Q-Sf, PHQ-9, Mental Hygiene, Mental Health.

Aim. With a significantly higher prevalence than the average population, medical students are at risk for depression and a poor quality of life. Studying abroad is an additional source of stress. Medical students studying abroad are facing multifactorial stressors: new culture, new language and a new educational environment. This study aims to find a significant increase in depressive symptoms and a decrease in quality of life in German medical students at foreign universities.

Methods. A total of 230 students were investigated with the online-based standardized psychologial questionnaires: Q-Les-Q-SF (sensitive measurement of the degree of enjoyment and satisfaction) and PHQ-9 (Depression). Following European countries were investigated: Latvia (L), Hungary (H), Rumania (R), Bulgaria (B) and Lithuania (Li).

Results. The overall prevalence of clinical relevant depressive symptoms was found to be 23.5%. The prevalence rate of mild depressive symptoms was found to be 40.2%. All in all mild depressive symptoms were found in 40.2% of the students, moderate depressive symptoms were 14.2%, moderate-severe depressive symptoms were 6.6% and severe depressive symptoms made up 2.7%. In Women moderate-severe and severe depressive symptoms were found twice as often. In L the prevalence of clinical significant depression among their students was found to be 15.5%, in H 46.7%, in R 14.8%, in B 0% and in Li 50%. These values are influenced by the small sample size. The small sample size of B and Li may change the results. The Quality of Life decreases with the intensity of the depressive symptoms.

The mean Quality of Life was 54.86.

Conclusions. With a 2.4 times higher prevalence of depressive symptoms than the German general populations German medical students are at a significantly higher risk of depression. At all foreign universities the quality of life decreased in regard of the severity of the depressive symptoms. With different universities being observed, a different level of depression and quality of life is measured in the students. Due to smaller numbers of students in Rumania, Bulgaria and Lithuania we see a minor limitation in our results. Further investigations of the reasons for depression should be investigated in other studies.

RESEARCH ON THE USAGE OF MATERIALS
OF PORNOGRAPHIC CHARACTER

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Keywords. Pornography addiction, sexual behaviour.

Introduction. Pornography addiction is the compulsive need to watch pornographic resources, inability to self-limit. Sexual contacts replacement with watching virtual pornography is the basis for the development of addiction. Consequences – from the imprint on the sexual health and relationships up to sexual addiction and deviation.

Aim. To research if it is possible to detect sexual addiction, deviations, and impact of pornography on the various aspects of life for individuals with pornography dependence.

Materials and methods. Questionnaire consists of sociodemographic information and variety of questions about evaluation of pornography dependency (ISST), personality features and relationship satisfaction status. Data statistically processed in Microsoft Excel and SPSS 20 using Spearman's rank correlation coefficient and population descriptive statistics. Prospective – cohort study.

Results. 184 questionnaire respondents. Minimal age 18 years, maximal age 60 years; median 24.5 years. Spearman's rank correlation between the family status and pornographic material usage frequency ($p = 0.169$), between existence of permanent sexual partner and pornographic material usage frequency ($p = 0.423$), between score in ISS test and satisfaction with own social life and work ($p = 0.254$), purposefulness in different areas of life ($p = 0.644$), and difficulties in forming romantic relationships ($p = 0.348$) didn't establish statistically credible correlation. Statistically significant correlation exists between score in ISS tests and satisfaction with own sexual life ($p = 0.009$). Coefficient of correlation is $r = -0.191$, which indicates indirect negative correlation, namely, tendency exists for less satisfaction with own sexual life for people with larger ISS test scores. Spearman's rank coefficient correlation analysis between pornographic resource usage frequency and satisfaction with own sexual life established statistically credible correlation ($p = 0.032$). Correlation exists between the usage frequency of pornographic resources and the satisfaction with own sexual life ($r = -0.158$).

Conclusion. Having sexual partner, family status, satisfaction with social status, and ability easily to create romantic relationships are not associated with watching pornography. Satisfaction with personal sexual life is connected with the frequency of pornography watching and pornography dependency.

PREVALENCE OF ALEXITHYMIA AMONG PATIENTS
IN HOSPITALS OF LATVIA

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Keywords. Alexithymia, TAS-20.

Introduction. Alexithymia is defined as inability to recognize and describe emotions, difficulty expressing feelings and limited understanding of what causes them. Also, alexithymia is linked to hypersensitivity to physical sensations. Studies show that about 8–10% of population is affected by alexithymia, the degree of alexithymia was found to be influenced by age, but not by gender. Alexithymia has two dimensions – *cognitive dimension*, where trouble to identify, interpret and verbalize feelings occurs and *affective dimension*, where difficulties arise in reacting, expressing, feeling and imagining. Identifying alexithymia in expressivity is important because many individuals with it have somatic complaints due to prolonged states of emotional and concomitant physiological arousal reducing the likelihood that these individuals will respond to conventional treatments for physical comorbidities.

Aim. The aim of our study was to determine prevalence of alexithymia among patients from different hospitals of Latvia and determine possible link with age and gender.

Materials and methods. In study participated 336 patients, 15 surveys were incomplete. Further were analyzed 321 surveys. Internationally validated Toronto-Alexithymia scale 20-item questionnaire (TAS-20) (Bagby, R. M., Parker, J. D. A. & Taylor, G. J. (1994)) adapted in Latvian and Russian was used in this research. Statistical data were analyzed using IBM SPSS v.22.

Results. The study included 321 (129 (40.2%) male / 192 (59.8%) female) patients. The mean age of the patients was 58.7 years (SD ± 17.7). Alexithymia was diagnosed for 105 (32. 7%) and possible alexithymia for 65 (20.2%) patients. Average score on TAS-20 was 52.7 (SD ± 13). Average score in externally-oriented thinking subscale was 20.4 (SD ± 4.9), in difficulty describing feelings subscale and in difficulty identifying feelings subscale the average score was 13.9 (SD ± 4.4) and 18.4 (SD ± 7) points respectively. Using Spearman`s test statistically significant correlation between patients age and received points in TAS-20 scale was found (r_s = 0.128, p < 0.05) The same result was found in externally-oriented thinking subscale (r_s = 0.153; p < 0.01). In difficulty describing feelings subscale and in difficulty identifying feelings subscale no statistically significant correlation was found. There was no association of gender estimated by χ^2 test (χ^2 = 0.084; Df = 1; p = 0.772).

Conclusions. Results show that alexithymia is more common among patients in hospitals than the average population (based on other studies about prevalence of alexithymia in general population), thus confirming that people with alexithymia are more likely to suffer from somatoform disorders and physical comorbidities. Therefore, when facing a patient with somatoform disorders, clinician should think about and, when necessary, exclude alexithymia. Like other studies have shown, our research proves statistically significant correlation between alexithymia and age.

SOMATIC SYMPTOMS AND EMOTIONAL
WELL-BEING IN CHILDREN

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Keywords. Children, family, somatic symptoms, art therapy.

Introduction. Recent research suggests that more children worldwide now experience somatic symptoms than in the past (Santalahti et al 2005), so it is essential to clarify potential risk factors and causes. Somatic symptoms are often misunderstood and diagnosed incorrectly (Kinder et al 2004). Drawing is the method of self-expression, which always has some information about the child's mental well-being. Children use drawings to express emotions that might not be easily articulated through their limited language skills at certain point during their development. (Sharon A. Brusic et al 2015). Parents' support encourages confidence and safety in their child, creates interest and wish to get to know the environment and improve their skills.

Aim. The aim of the study was to find out the most frequent somatic symptoms in children and to analyze children's emotional wellness in their family.

Materials and methods. In the study was used a questionnaire, divided in the following parts: nonverbal criteria such as communication style and physical contact with a parent; somatic symptoms; a family drawing and questions for the child. Drawings were analyzed by means of art therapy diagnostics assessment.

Results. In this study were involved 29 children, 17 of them were boys and 12 – girls. All of them communicated boldly – willingly took part in the conversation and answer the questions. During the questionnaire only 4 children had close physical contact with a parent. 28 of 29 children had one or more somatic symptoms. The most frequently observed somatic symptoms were stomachache and headache. 22 children answered "yes" to the question: "Does your mum often embrace you?" 5 of them answered that they did not want their mum to embrace them more often. Children's drawings can be seen that in 3 families of 29 all family members were joined hands. 19 of 29 drawings children were drawn themselves as a similar same gender parent, but in 3 drawings it was not possible to determine.

Conclusions. 55% children had not close physical contact with a parent and answered that they want their mother to embrace them more often, but in the drawings all family members were drawn separated to each other. All of them had one or more chronic somatic symptoms.

CORRELATION BETWEEN XENOPHOBIA AND ANXIETY; CONTACT WITH IMMIGRANTS AS A FACTOR OF XENOPHOBIA LEVEL

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Keywords. *Xenophobia, anxiety, contact with immigrants.*

Introduction. Xenophobia is an irrational fear, hatred and mistrust of foreigners and strangers. Mostly this term is applied in terms of different culture, nationality and race. It is characterized by paranoid suspects of foreigner's evil intentions, which is a type of anxiety. Studies advocates the contact hypothesis (Allport 1954) that personal interaction between members of different ethnic groups is associated with lower levels of xenophobic attitude towards immigrants.

Aim. The aim of our study was to determine how person's trait anxiety and contact experience with immigrants is related with xenophobic attitude in population of Latvia.

Materials and methods. Xenophobia was measured using 9-item xenophobia scale (van der Veer, Ommundsen, 2011), trait anxiety was measured using The State-Trait Anxiety Inventory (STAI) (Spielberger, 1983). We measured and analyzed xenophobia levels, anxiety levels and correlation between xenophobia and anxiety in 4 research groups using IBM SPSS Statistics v22. Group 1 – respondents who have had only negative or more negative than positive contact with immigrants. Group 2 – respondents who have had equally positive and negative contact with immigrants. Group 3 – only positive or more positive than negative contact. Group 4 – have never had contact with immigrants.

Results. A cross sectional study was conducted among 491 respondents from 18 to 82 years old including 149 (30.4%) male and 341 (69.6%) female in January 2016. The mean age of respondents was 33.9 years. Mean score on xenophobia scale (points 9 to 54) was 37.3 ± 9.5. In 4 research groups results were: group 1 (N = 25, 5.1%) xenophobia mean rank 313.82; group 2 (N = 33, 6.7%) mean rank 253.68; group 3 (N = 45, 9.2%) mean rank 143.04; group 4 (N = 387, 78.8%) mean rank 252.30 (Kruskal-Wallis Test $p < 0.05$). Group 1 anxiety mean rank 234.82; group 2 mean rank 163.86; group 3 mean rank 242.56; group 4 mean rank 253.49 (Kruskal-Wallis test $p < 0.05$). No correlation between xenophobia and anxiety in groups 1 and 2 ($p > 0.05$). Significant correlation in groups 3 ($p < 0.05$, Spearman's Rho = 0.36) and 4 ($p < 0.05$, 0.14).

Conclusions. There is a significant, but very weak correlations between xenophobia and anxiety in respondents groups who have never had contact and who have had positive contact with immigrants. Negative contact increases xenophobic attitude, whereas positive contact decreases xenophobic attitude. Negative contact experience and anxiety both are significant factors in development of xenophobic attitude. For better results a count of respondents who have had contact with immigrants should be increased.

ALEXITHYMIA AND PATIENTS' SELF-EVALUATION OF WELL-BEING

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Keywords. Alexithymia, well-being, TAS-20.

Introduction. Alexithymia is a specific disturbance in psychic functioning characterized by difficulty identifying feelings, difficulty describing feelings, externally oriented thinking, and a limited imaginal capacity. Alexithymia is linked with the weakness of cognitive emotional processing and stronger awareness of bodily sensations. Alexithymia is considered a risk factor for psychiatric and psychosomatic disorders as well as a potential risk factor to somatic diseases.

Aim. To detect possible connection between presence of alexithymia and patient's self-evaluation of well-being.

Materials and methods. In the study participated 335 patients, 15 surveys were incomplete. Further were analyzed 320 surveys. Respondents were 15 to 92 years old (mean 58.71 ± 17.99), 59.1% women and 40.9% men. Alexithymia was assessed by validated Latvian and Russian versions of internationally recognized TAS-20 score. Well-being was evaluated by patients with 11-point numeric rating scale (NRS-11), with 0 representing 'the worst' and 10 representing 'the best'. Statistical data was processed in IBM SPSS v22 Statistics.

Results. Study has shown that 46.9% (150 patients) of sample don't have alexithymia, 20.3% (65 patients) possibly have alexithymia and 32.8% (105 patients) have alexithymia. Kruskall-Wallis test showed that the distribution of well-being evaluation is not the same in groups of alexithymic and non-alexithymic patients. Spearmans correlation coefficient (-,248) shows that well-being negatively correlates with alexithymia ($p < 0.01$). Patients with alexithymia generally evaluated their well-being lower (mean 4.37 ± 2.65) than patients without alexithymia (mean 5.72 ± 2.14).

Conclusion. Alexithymia is linked to lower self-evaluation of well-being. It might be explained by the stronger awareness of somatic symptoms in the alexithymic patients, which leads to the tendency to notice and report physical symptoms.

ELECTROLYTES VALUES IN FIRST TIME PSYCHOTIC PATIENTS

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Keywords. Electrolytes, adolescence, first psychotic episode.

Introduction. First time psychotic episodes require careful scrutiny of their possible causes, cause psychotic behaviour might not only be a manifestation of psychiatric illnesses, but also masked somatic conditions including electrolyte disturbances which, if unrecognized in time can put patients in critical condition.

Aim. To determine frequency of potassium and sodium disorders in first time psychotic patients. Also to examine possible association between sodium and potassium disorders and other sociodemographic data.

Materials and methods. Retrospectively 197 case files of patients with first psychotic episode (ICD-10 diagnoses: F20, F22 and F23) from 2010 to 2014 we examined, it included 38 children and adolescents under 18 and 159 young adults of 18 or older. After excluding patients who had not been tested for blood plasma potassium and sodium, 59 of patients were left. Case files were explored for sociodemographic data (sex, age, comorbidities, and etc.) and concentrations of sodium and potassium. Data evaluation was made by using IBM SPSS statistics 20 edition.

Results. Analysis showed that there was 44.1% man and 55.9% woman. Of those there was 22.0% under age of 18 and 78.0% adults, mean age 33.03 years. First episode of psychosis manifested with diagnosis of ICD-10: F20 30.5%, F22 10.2%, and F23 59.3%. Associated diseases were investigated most of patients had none (59.3%). Mostly people lived in urban environment 78.0%. Likewise we found that more patient lives with partner or parents 69.5% than alone. Normal level of potassium was detected for 79.7%, and abnormal level for 20.3% of those there was lower level of 16.9% and higher level 3.4%. The lowest result of potassium concentration was 2.7mmol/l, and the highest 5.6mmol/l. Moving on normal level of sodium was found for 69.5% patients and abnormal levels for 30.5% of those there was lower level for 28.2% and higher for 1.7% of patients. The lowest result of sodium concentration was 120mmol/l, and the highest 148mmol/l. In addition we found no statistically significant association between age groups (under age of 18, and 18 and older) and potassium concentration as well as sodium concentration groups (normal and abnormal) ($r = 0.268$, $r = 1.000$, $p > 0.05$). No significant results were found between sex and potassium concentration as well as sodium concentration groups ($r = 0.851$, $r = 0.271$, $p > 0.05$).

Conclusion. First time psychotic patients tend to have more normal level of potassium was (79.7%) and sodium (69.5%) than abnormal (20.3%; 30.5%). No statistically significant association between sodium and potassium disorders and age, sex groups was found.

ALEXITHYMIA AND PATIENTS' SELF EVALUATION OF PAIN

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Keywords. *Alexithymia, pain, psychosomatic medicine.*

Introduction. Alexithymia is characterized with difficulty identifying feelings, difficulty describing feelings, externally oriented thinking and a limited imaginational capacity. This emotional deficiency may result in physical symptoms or disease such as fibromyalgia or hypertension. As seen in other studies alexithymics are prone to have pain even if there is no clinically-verified tissue damage.

Aim. To detect possible connection between presence of alexithymia and patients' self evaluation of average pain during last month.

Materials and methods. 335 patients took part in this study. Validated Latvian and Russian versions of internationally recognized TAS-20 self report scale was used to evaluate alexithymia. Level of average pain during last month was assessed with visual analogue scale which consisted of 11 points (0 representing no pain and 10 – worst possible pain). Data were analyzed using IBM SPSS v22.

Results. Patients were 15–92 years old (mean 58.71 ± 18.00), of them 40.9% men and 59.1% women. 15 surveys were incomplete and were not included in further study. Data indicated that 46.9% (150 patients) were not alexithymic, 20.3% (65 patients) possibly had alexithymia and 32.8% (105 patients) were alexithymic. Independent Samples Kruskall-Wallis Test showed that the distribution of pain was not the same across the categories of TAS-20 scale results ($p < 0.01$). Further calculations showed that mean score of the pain evaluated by non-alexithymic patients was 3.83 ± 2.22, but by alexithymic patients it was 4.75 ± 2.40. Spearmans correlation coefficient (0.185) showed that the pain correlates positively with alexithymia ($p < 0.01$).

Conclusion. Study shows that alexithymic patients have greater pain than those who are not alexithymic. It could be explained by the fact that patients' attention is focused on somatic symptoms instead of emotions therefore resulting in greater pain.

MÜLLER – LYER AND OPPEL – KUNDT ILLUSIONS MANIFESTATION AMONG THE PEOPLE WITH SCHIZOPHRENIA SPECTRUM DISORDERS

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Keywords. Schizophrenia; Müller-Lyer figures; Oppel Kundt figures.

Introduction. Various studies have reported differences in early visual processing, gain control and integration for patients with schizophrenia spectrum disorders (SSD). Although the Müller-Lyer (ML) optical illusion is one of the most studied of all illusions among healthy individuals and has an extensive psychophysical explanation for its manifestation, there are just a few studies carried out with individuals affected by SSD. Oppel-Kundt (OK) illusion is even less studied and is believed to form via cortical processing. We decided to study the illusion to get more insight in visual cognitive functions for patients with SSD.

Aim of the study. To investigate the ML and OK illusions manifestation among the people with SSD.

Material and methods. In the prospective study were included 19 patients, who were diagnosed with SSD and matched comparison group (CG) without any mental, neurological diseases or visual impairment. Stimuli used in experiments consisted of three pairs of the ML wings arranged according to the Brentano pattern and OK figures consisted of white spots presented horizontally against a black background. Using computerized equipment 40 ML stimuli were presented in monitor with various sizes (from 10° to 350°) of the inner corners. Subject's task was to place the central part of the figure in the middle between the outer ones. In OK figures the subjects were asked to adjust the unfilled part of the stimulus to be equal in length to the filled (referential) one. The number of the filling spots in the referential interval varied from 0 to 19. Participants repeated ML and OK experiments for 10 times, on different days.

Results. When comparing SSD group with CG for OK we found statistically significant difference when zero or one point were in referential line. For ML figures differences were found for 12 corner values. Patients tended to make larger mistakes for corners < 90° and > 330°.

Conclusion. Although we found that patients with SSD tended to make smaller mistakes when evaluating OK figures with no illusionary effect and larger susceptibility when one point is involved, but without any manifestation differences with 2 to 19 dots in referential line. For ML figures patients tended to make larger mistakes for more acute and obtuse corners.

HEART RATE VARIABILITY IN ADOLESCENTS WITH ATTENTION-DEFICIT / HYPERACTIVITY DISORDER

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Keywords. Attention-deficit / hyperactivity disorder, heart rate variability, inhibition.

Introduction. Attention-Deficit Hyperactivity Disorder (ADHD) is diagnosed by age-inappropriate symptoms of inattention and / or hyperactivity-impulsivity. Converging evidence has shown that ADHD might be due to problems with inhibitory control – the ability to suppress impulsive, ongoing or disrupted responses. The Neurovisceral Integration Model (Thayer and Lane, 2000) suggests a neural network integrating attentional, affective and autonomic responses, dedicated to goal-directed behavior and adaptation. In this network inhibitory processes are crucial for response selection, and their effectiveness is positively correlated with vagally mediated heart rate variability (HRV). HRV, the variance in consecutive heart beat intervals, is determined by influence from the excitatory sympathetic and inhibitory parasympathetic (vagal) branches of the autonomic nervous system (ANS) on the sinoatrial node. In ADHD, HRV seems to be altered compared to typically developing comparison groups. However, previous studies have shown inconsistent findings of which of the ANS branches that are altered. The Neurovisceral Integration Model stresses the importance of the Vagus nerve. Thus, as symptoms of ADHD seem to fit well within the theoretical framework of the model, we hypothesized in the present study that the ADHD group would show lower vagally mediated HRV compared to a control group.

Aim. To investigate vagally mediated HRV in adolescents with ADHD.

Materials and methods. The study is part of a longitudinal study of children with ADHD. Heart rate was recorded in a five-minute resting condition with ECG when they participated in the second wave of the study. The adolescents with ADHD and controls were then between 11 and 16 years old. The heart rate data were artifact corrected before subjected for analyses with Kubios HRV. Activity in the high frequency band (HF) of R-R-intervals, a measure of vagally mediated HRV, was calculated. The HRV data was log-transformed in order to be normally distributed, and an independent samples t-test was performed with ADHD / no ADHD as grouping variable and HRV frequency band measures as test variables.

Results. Preliminary analysis of a subgroup of the participants (ADHD, n = 33, controls, n = 32) was performed. The ADHD group showed significantly lower activity in the high frequency band (p = 0.038) compared to the control group.

Conclusions. Preliminary analyses suggest that adolescents with ADHD have a low parasympathetic activity compared to a control group. In accordance with the Neurovisceral Integration Model, this correlates with low inhibition of a neural attentional, affective and autonomic network, and thus reduced capability of goal directed behavior and adaptability.

THE INFLUENCE OF MEDICAL STUDIES ON KNOWLEDGE OF AND ATTITUDES TOWARDS PEOPLE WITH MENTAL ILLNESS

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Keywords. Mental illness, stigmatization, influence of studies.

Introduction. Mental illness is truly common in society nowadays. Such patients also have a higher risk of somatic problems, therefore mental health knowledge and proper behavior are necessary for every doctor. For this reason, it is useful to evaluate education of medical students in this field.

Aim. To evaluate and compare knowledge of and attitudes towards mental illness between last year medical students and last year postgraduate students.

Materials and methods. With authors permission "The Attitudes to Mental Illness questionnaire" was adapted to anonymous internet survey. The questionnaire contains following parts: demographic information, knowledge and attitudes assessment. 272 students from Vilnius University (VU) and Lithuanian Health Science University (LHSU) took part in the survey during 2015 March. 99 of them met the inclusion criteria (last year medical students from both universities, last year non-biomedical postrgraduate students from VU). Analysis used SPSS statistical software. Results were considered statistically significant when $p < 0.05$.

Results. The mean of age of respondents: 24.15 ± 0.75. Participant groups: IA – VU medical students n = 29 (29.30%); IB – LHSU medical students n = 38 (38.38%); II – postgraduate students n = 32 (32.32%). Group I stands for all medical students n = 67 (67.68%). The average score of Understanding and tolerance of mental illness between groups: 19.96 ± 2.59 in I, 17.22 ± 5.30 in II (p = 0.001); comparison of medical students: 28.48 ± 2.18 in IA, 19.55 ± 2.83 in IB (p = 0.147). The average score of Stigma related knowledge (inversely associated with stigmatization level): 21.90 ± 3.05 in I, 14.41 ± 7.42 in II (p = 0.000). The average evaluation of the question about Integrating people with mental illness into the community: 38.09 ± 5.01 in I, 24.94 ± 7.41 in II (p = 0.000). The average Identification of types of mental illness sroce: 24.33 ± 1.95 in I, 22.34 ± 4.00 in II (p = 0.011); comparison of medical students: 31.86 ± 4.71 in IA, 28.74 ± 4.86 in IB (p = 0.010).

Conclusions. Medical students from both universities are more tolerant and understanding and have a better knowledge of mental illness than non-medical students. Stigmatization is more common between postgraduates. Medical students have better attitudes towards integration of people with mental illness, especially, VU medical students. The particular education influences not only knowledge, but also attitudes towards mental illness.

HABITS OF ALCOHOL USAGE AND SYMPTOMS OF DEPRESSION AMONG PATIENTS IN THE UNIT OF ADDICTION DISORDERS OF RIGA CENTRE OF PSYCHIATRY AND ADDICTION DISORDERS

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Keywords. Alcohol use disorder, alcoholics, depression.

Introduction. Depression and alcohol use disorder often co-occur. Nevertheless, one of the disorders stays underdiagnosed.

Aim. To assess drinking habits among patients in Riga Centre of Psychiatry and Addiction Disorders and their correlation with depressive episodes in the past.

Methods. The study included a total of 72 (N) inpatient male and female alcoholics in the unit of Addiction Disorders with diagnosis codes F10.0, F10.2, F10.8 (ICD-10). A questionnaire of socio-demographic data, Composite International Diagnostic Interview (CIDI) I part and The Mini International Neuropsychiatric Interview (M.I.N.I.) depression module were used to gather the data. Crosstabulation with multiple variables, Fisher's Exact Test, Mann – Whitney U Test were applied ($p < 0.05$).

Results. Of all the patients 62.5% (N = 45) were male and 37.5% (N = 27) were female alcoholics. The mean age of all patients was 47.0 ± 12.0 Mdn $(Q_1;Q_3)$ = 45.0 (36.3; 56.0). Mean years of education were 12.3 ± 2.3 Mdn $(Q_1;Q_3)$ = 12.0 (11.0; 14.0) and most of patients had secondary vocational education, 36.1% (N = 26). Mean daily alcohol unit was 15.3 ± 9.8 Mdn $(Q_1;Q_3)$ = 13.2 (7.9; 18.2). Mean age when patient first drank five alcohol units in single drinking occasion was 22.5 ± 9.3 Mdn $(Q_1;Q_3)$ = 19.0 (17.0; 25.0). Depressive episodes in the past were found in 40.3% (N = 29) and recurrent episodes were found in 18.1% (N = 13) of patients. Low socio-economic status correlation was statistically significant with higher alcohol consumption both smaller ($p = 0.02$) and higher units ($p = 0.002$) and more frequent consumption of vodka ($p = 0.004$) compared to other types of alcohol. Frequency of consumption five and ten alcohol units and correlation with depressive episodes in the past or with recurrent depressive episodes during lifetime wasn't statistically significant. Neither was correlation between consumption of amount of daily alcohol unit and depressive episodes in the past or recurrent depressive episodes in lifetime. Statistically significant correlation was between depressive episodes in the past and unsatisfied outcome of therapy ($p = 0.006$).

Conclusion. Depression affects many people with alcohol use disorders although we did not find statistically significant correlation with alcohol consumption frequency and quantity. Nevertheless, clinical evaluations on presence of depression for all patients who have alcohol use disorders are needed. Further studies are necessary to determine the causal effects between alcohol use disorders and depression.

DUAL DIAGNOSIS OF SCHIZOPHRENIA
AND DEPRESSION IN CLINIC

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Keywords. Schizophrenia, depression.

Introduction. Paranoid schizophrenia (PS) (F.20.0-F,20.9) has some similar symptoms to other psychiatric illnesses. One of the syndrome that can be found in patients of schizophrenia is depression. Symptoms that need more attention in these patients are negative symptoms: anhedonia, silence, sleeping or appetite disorders. These symptoms are also similar to depression. It is researched that 30% of patients with PS also have severe depression syndrome. Schizophrenia patients have 2–3 times higher risk of premature death and suicide attempts, that leads to consider a link to depression.

Aim. The aim of this study was to eliminate the frequency of depression among the patients of PS currently being treated in a psychiatric hospital.

Materials and methods. Patient interviews were conducted by using a set of questionnaires. Patient health questionnaire 9 (PHQ9) and The Calgary Depression Scale for Schizophrenia (CDSS) was used to identify the degree of depression in PS patients.

Results. 50 participants took part in this research; 29 female and 21 male. In total, 11 participants did not have depression, 19 had mild, 20 had severe depression. Of women 20.69% (n = 6) did not have depression; 24.14% (n = 7) had mild, 55.17% (n = 16) had severe depression. 23.81% (n = 5) of male participants did not have depression, 57.14% (n = 12) had mild, 19.05% (n = 4) had severe depression. It is important to emphasize that 44.83% (n = 13) of female respondents in comparison to 23.81% (n = 5) of male patients having had a suicide attempt. There was positive correlation between PHQ9 and CDSS results (r^2 = 0.64), that shows double approval for the diagnosis. From typical antipsychotics the most common one used is *Haloperidoli* (86%), men 90.48% (n = 19), women 82.76% (n = 24). From atypical, majority had used *Clozapini* 64% (n = 32), men = 76% (n = 16), women 55.12% (n = 16) and *Quentiapini* 12% (n = 6; f. = 3;m. = 3). *Modistens depo* is used by 66.67% men (n = 14), but only 3.45% (n = 1) by women.

Conclusions. Depression as illness was not diagnosed in the patients involved in this study. More attention has to be paid to the diagnosis and cure of depression symptoms. This study concludes that 78% of studied patients have depression (either mild = 38% or severe = 40%). Of female respondents, 55.17% have severe, 24.14% have mild depression. In men, the results are mirrored with 19.05% having severe, 57.14% mild depression. As majority of the patients are taking typical antipsychotics (86%), then the medication is not a significant indication for depression. The difference in the use of medication between men and women is *Modisten depo*, with more than half of all male respondents (66.67%) having received it. In these men there are no signs of depression or it is mild.

OBSTACLES TO THE DIAGNOSIS OF DEPRESSION IN GENERAL PRACTICE

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Keywords. Depression, depressive disorders, Primary care, General Practice.

Introduction. Depression is a common illness worldwide, with an estimated 350 million people affected. It is the second leading cause of disability worldwide, but fewer than half of those affected receive treatment. The National Research programme Biomedicine (2007 – 2014) estimates that around 70 000 people are in need of treatment for depression in Latvia. However, only 9000 persons per year receive treatment. Depressive disorders are significantly underdiagnosed, particularly in the primary care environment. It is important to determine the problems that delays recognition and management of depression by general practitioners.

Aim. The aim of this study was to investigate the obstacles to the diagnosis of depression in general practice in Latvia.

Materials and methods. A self-administered cross-sectional survey was conducted among 100 family physicians from rural and urban-based general practices of Latvia. Questionnaire comprising 15 items was administered from December 2015 till January 2016. Data analysis with "IBM SPSS Statistics" program was performed.

Results. 43% of general practitioners admit having difficulties to diagnose a first-time episode of a depression. The main barriers to diagnose a depression included not having enough time of a visit (68.4%), multimorbidity (49%) and a social stigma associated with mental disorders – patient refusing the diagnosis (49%). 26.5% of general practitioners admit having difficulties to differentiate depression. 15.6% are having a lack of experience and knowledge to assess depressive disorders. Also, 93% of general practitioners believes it is important to diagnose a depressive disorder, while one-third (33%) believes it is not competency of a family physician to diagnose a depression.

Conclusion. This survey shows that there are several reasons for underdiagnosing depression in primary care. Most importantly, it is insufficient time of a visit, which could be improved by longer time slots. Also multimorbidity combined with a lack of time delays recognition of depression. Social stigma surrounding depression is still an actual problem.

ASSESSMENT OF COGNITIVE IMPAIRMENT OF OLDER PATIENTS CARED FOR IN NURSING DEPARTMENTS

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Keywords. Cognitive impairment, mini mental state examination (MMSE), older patients.

Introduction. According to the data of the Lithuanian Department of Statistics, at the beginning of 2011 year, there were 701,2 thousands of the elderly people (60 years old and older) in Lithuania, who accounted for 21.6% of the total population. The elderly people suffer from chronic diseases – cardiovascular disorders, chronic respiratory diseases, diabetes mellitus, cognitive impairment etc. Cognitive impairment is associated with age, sex, family situation, education, social status, economic situation (Hooren et al., 2007; Karlamangla et al., 2009, Bastos et al., 2015). In the hospital treated older patients often determined cognitive impairment.

Aim. To assess cognitive impairment in older patients cared for in nursing departments and define their relations with sociodemographic data.

Materials and methods. Study was carried out from January to September 2015 in one of long-term care and treatment hospital of Lithuania. The inclusion criteria were defined: patients older than 60 years of age; who understands and speaks Lithuanian; who provided consent to participate in the study. Cognitive functions were assessed using a short mental status exam (MMSE) (Folstein and others, 1975). The research has obtained the approval from Vilnius Regional Biomedical Research Ethics Committee.

Results. The study involved 177 respondents, of whom 106 were female (59.9%). The average age of recipients 78.93 ± 8.948 (range is from 61 to 97 years old). Most of respondents (41%) took part in the study, who were assessed for moderate cognitive impairment, only 10.7% patients had at least been with severe cognitive impairment. Cognitive impairment was not related to gender (p = 0.655) and from marital status (p = 0.453), however was clearly associated with age (p = 0.000). 73.6% of respondents in age group from 85 to 97 years had severe or moderate cognitive impairment. 50% of respondents in age group from 75 to 84 years of age had moderate or severe cognitive impairment. 44.7% of respondents in age group from 64 to 74 years and 45.5% of respondents in age group from 60 to 64 years were without cognitive impairment.

Conclusion. The study data revealed that age was significantly associated with cognitive impairment of the older patients cared for in nursing department.

PSYCHIATRISTS TACTICS IN CASE OF A POSITIVE SYPHILIS SCREENING

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Keywords. Syphilis, neurosyphilis, psychiatry.

Introduction. Neurosyphilis (NS) can develop at any stage of a syphilitic infection despite of previously received treatment and it can mimic virtually any neuropschychiatric disorder. Every patient admitted to RPNC (Riga Center of Psychiatry and Addictions Disorders) undergoes screening. In case of positive screening a confirmatory test must be performed and there are three main considerations: diagnose syphilis to a patient with preexisting psychiatric pathology, diagnose a patient with psychiatric pathologies caused by a syphilis infection and is it a seropositive status due to a previously successfully treated syphilis.

Aim. To determine the physicians action in cases of positive syphilis screening.

Materials and methods. We analised the medical documents of RPNC inpatients (2002–2015). The following parameters were evaluated: gender, age, year of screening, reaction used, the psychiatric diagnosis of the admitted patient, was the cause of a positive reaction determined, is the reaction false positive. The data were analyzed using Microsoft Excel and SPSS statistics.

Results. 186 patient medical documents with a positive screening reaction were checked. The average patient age was 48.2 years. There were 102 RPR (12.7% false positive), 76 SED (31.6% false positive) 8 TPHA reactions. 42 of 186 people were not investigated further (22.6%). 9 (21.4%) of the 42 patients were later diagnosed with NS, 1 patient (2.4%) died. There was delayed treatment of syphilis in 2 cases (4.8%). Lumbar puncture (LP) was performed in 45 (24.2%) cases, 38 were diagnosed with NS (84.4%), 5 did not match for NS (11.1%) and there is missing data for 2 patients. LP was not performed for 62 (33.3%) patients with positive serological evaluation, for 19 (30.6%) there were no indications, 5 (8.1%) refused a LP and we have no data for 2 patients. LP was indicated for 36 (58.1%), but not performed. From these 36 patients 2 (5.6%) died, the rest were diagnosed with other psychiatric diseases.

Conclusion. 22.6% of positive screening reaction cases were not investigated further. There are missed cases of NS due to an ignored positive sreening reaction. Most of the psychiatric inpatients with a syphilis infection, have NS. In Latvia the traditionally used methods of syphilis screening are RPR and SED which have low sensitivity and specificity.

CLINICAL FEATURES AND PSYCHOSIS RISK FACTORS IN ADOLESCENCE PSYCHOSIS

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Keywords. Child, adolescence, first psychotic episode, F23.

Introduction. First time psychotic episodes require careful scrutiny of their possible cause especially diagnosing adolescent. Nowadays there is little information on clinical features of psychosis manifestation in young age.

Aim. To analyse clinical features and risk factors of first episode of psychosis in adolescence age.

Materials and methods. Retrospectively 38 case files of patients who experienced first psychotic episode (ICD-10 diagnosis F23) under age 18 from 2010 to 2014 were examined, after exclusion of patients whose diagnoses changed during hospitalisation, 27 patients case files were examined. Case histories were explored for sociodemographic data (sex, age, comorbidities, psychotropic substances use, and etc.) and clinical features. Data evaluation was made by using IBM SPSS statistics 20 edition.

Results. Analysis showed that there was 55.6% man, and 44.4% woman. Mean age 15.50 years (min 10 years and max 17). Associated diseases were investigated and comorbid mental disorders were found in 53.6% patients and somatic illness had 21.4% of patients. Mostly patients lived in urban environment 66.7%. Examination of occupation showed that 33.3% studied at middle school, 55.6% at high school, and 11.1% at professional school. Most patient lived in family with both parents 63.0%, and with single parent 37.0%. Mental disorder risk factors were evaluated such as complicated birth 18.5%, head injuries 11.1%, heredity of mental disorders in family 25.9%, psychological trauma 44.4%, past suicidal tendencies: thoughts 3.7%, attempts 11.1%, and present suicidal tendencies – thoughts 29.6%. Substance abuse was found in 37.0% of all patients of those nicotine use 22.2%, alcohol use 25.9%, cannabis use 18.5%. In addition clinical features were analysed: hallucinations were present at 35.7% of cases. Manifestation of following types of delusions was observed: dysmorphic delusions 7.4%, expansive delusions 11.1%, nihilistic delusion 3.7%, delusions of persecution: 44.4%, relationship delusion 55.6%, poisoning delusion: 22.2%.

Conclusion. Adolescent patients with first episode of psychosis tend to have risk factors – substance abuse, psychological trauma, heredity, suicidal tendencies. Majority of patients presented with delusions of persecution and relationship as well as poisoning delusion. Hallucinations are less common in adolescent with psychosis episode.

IS COMBINATION OF VOICE THERAPY AND PHYSIOTHERAPY EFFECTIVE FOR VOICE PROFFESION SPECIALISTS SUFFERING FROM MUSCLE TENSION DYSPHONIA? A SYSTEMATIC REVIEW

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Keywords. Muscle tension dysphonia, recovery, therapy (voice therapy, physical therapy, physiotherapy), rehabilitation.

Introduction. Muscular tension dysphonia (MTD) manifests by excess tension in the paralaryngeal and suprahyoid muscles, an open posterior glottic chink, larynx rise, and frequently mucosal changes on the vocal cords. Functional voice disorders are most frequently diagnosed (30%), followed by vocal fold nodule (15%), and pharyngolaryngeal reflux (9%). Pathologies are significantly more common in females than in males, representing 63.8% and 36.2% of the population, respectively. Professional voice users account for 41% of the workforce population, with teachers as main subgroup. In professional voice users, functional dysphonia occurs in 41% of the cases, vocal fold nodules in 15% of the cases, and pharyngolaryngeal reflux in 11% of the cases. Muscle tension dysphonia is multifactorial with various contributing etiologies. In the United States a retrospective chart review was done, of one hundred fifty patients (60% female, 40% male, with a mean age of 42.3 years) with a diagnosis of muscle tension (functional hypertensive) dysphonia over a 30-month period. Significant factors in patient history believed to contribute to abnormal voice production were gastroesophageal reflux in 49%, high stress levels in 18%, excessive amounts of voice use in 63%, and excessive loudness demands on voice use in 23%. Speech pathology assessment revealed poor breath support, inappropriately low pitch, and visible cervical neck tension in the majority of patients. This set of multiple contributing factors is discussed in the context of current and emerging understanding of muscle tension dysphonia. Also the abdominal muscle pattern of overactivity of the internal oblique and underactivity of the transversus abdominis during phonation is found to be present in the large majority of patients with muscle tension dysphonia.

Aim. The aim of this systematic review was to determine patient perceived improvement in muscle tension dysphonia when treated with combination of voice therapy and physiotherapy.

Materials and methods. Randomized controlled trials, comparing a combined voice therapy and physiotherapy with a usual care – voice therapy by itself in adult, voice profession specialists suffering from muscle tension dysphonia, were identified by searches in Science Direct, PubMed, DynaMed, Clinical Key and Cochrane Library between 2005 and November 2015. 2 reviewers extracted information from included studies and assessed the risk of bias.

Results. A total of 2 studies, one with 153 patients, second one with 18 patients met the inclusion criteria. There was a similar distribution of patients with moderate or severe pre-treatment VHI scores across treatment groups (VT 45.5%, VT+PT 43.8%, PT 50%, no treatment 59.1%; p = 0.45). Patients treated with VT alone had significantly greater median improvement in VHI than those not treated: 10-point vs.2-point (p = 0.02). Interestingly,

median VHI improvement in patients with baseline moderate – severe VHI scores was no different between VT (10), VT+PT (8) and PT alone (10; p = 0.99). In the second study results showed significant improvements in MEP, VHI scores, and VRS scores, subglottal pressure for loud intensity, phonetogram area, and dynamic range.

Conclusions. There is indication that combination of voice therapy and physiotherapy is effective in treating voice profession specialists suffering from muscle tension dysphonia. However, voice therapy showed statistically greater improvement in muscle tension dysphonia cases, but physiotherapy was effective in cases where MTD etiology is extra-laryngeal component dysfunction of the voicing mechanism.

COMPLICATIONS RATE AND THE INFLUENCE OF ANY FACTORS IN PATIENTS EARLIER REHABILITATION PHASE AFTER TRAUMATIC SPINAL CORD INJURY

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Keywords. Spinal cord injury; Rehabilitation; Complications.

Introduction. Traumatic spinal cord injury (TSCI) is a devastating condition that often result in a disruption to essentially every aspect of life. Spinal cord in a global-incident rate is estimated at 23 TSCI cases per million for 1 year. Complications are common in rehabilitation department for patients after TSCI. Furthermore, infections might propagate neuronal death, and consequently contribute to the restriction of neurological recovery.

Aim of the study. To investigate the complications rate and the influence of any factors in patients earlier rehabilitation phase after traumatic spinal cord injury.

Material and methods. In total, 79 patients rehabilitated in Lithuanian University of Health Sciences Neurorehabilitation department (2006–2015 years), with TSCI were included in the study and their data was retrospectively analyzed. The main complications were urinary tract infections (UTI), respiratory tract infections (RTI), thromboembolism, sepsis and bedsores. The most frequent complications common pathogens were detected. The difference between patient age, gender, BMI, type of trauma, clinical expression, bad habits and the influence of the developed complications and their pathogens, were established using the chi-square (χ^2) criterion. The data has been considered as statistically significant when $p < 0.05$.

Results. The median age of 79 participants was 42.29 years (57 men, 22 women). Prevalence of any complication was detected for 58 (73.4%, age range: 18–83, mean: 42.64 ± 18.64) patients. From all complications the most frequent was UTI – 54 patients (93.1%), RTI – 14 patients (24.1%), thromboembolism – 7 patients (12.1%), sepsis – 1 patient (1.7%), bedsores – 2 patients (3.4%). More than one complication manifested for 15 patients (19%). The most common pathogen of UTI was *E. coli* for 20 (37%, age range: 20–83 years, mean 48.70 ± 19.97) patients, other pathogens were: *E. faecalis* – 19 (35.2%, age range: 19–83 years, mean 41.47 ± 20.35), *K. pneumoniae* – 15 (27.8%, age range: 20–72 years, mean 40 ± 16.16). The most common pathogen of RTI was *S. aureus* – 4 (28.57%, age range: 21–75 years, mean

37.75 ± 25.29). Presence of UTI pathogen *E. coli* statistically significant was for active smoking patients (p = 0.046). There was no difference between other complications, their pathogen rate and age, sex, BMI, type of trauma, TSCI clinical expression.

Conclusion. Our study shows that UTI are frequent in neurorehabilitation department for patients after TSCI. *E. coli* manifestation have relation with active smoking patients (p = 0.046).

EFFICIENCY OF DIFFERENT METHODS OF ELECTRICAL STIMULATION FOR PATIENTS MUSCLE TONE, STRENGTH AND ENDURANCE RECOVERY AFTER STROKE

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Keywords. Stroke, FES, EMS.

Introduction. Stroke is one of the most common diseases of elderly people, which causes abnormalities in muscle structure and functional disability. Post stroke, many people experience impaired motor function of the lower limb, leading to reduce of muscle tone, strength and endurance. Electrical stimulation may have the potential to improve strength after stroke by increasing the activation of motor units of a muscle, even when patients are unable to undertake interventions involving resistance exercises.

Aim. Compare different electro stimulation methods influence on patient's muscle tone, strength and endurance recovery after stroke.

Materials and methods. The subjects (n = 10) were randomly assigned to two experimental groups: I recieved functional electrical stimulation (FES), II – electrical muscle stimulation (EMS) on the same lower limb's muscle groups 12 sessions for 5 min each muscle daily. The patients were tested two times: at the beginning and after the treatment. The methods of the study were Myoton-3 myometer, Lafayette MMT, 6 MWT. Statistical analysis was performed using R Packet.

Results. Before treatment there was no statistically significant difference between groups of muscle tone (p > 0.05). After the treatment, only I group results of muscle tone improved statistically significantly (p < 0.05) however, no significant difference was found between the groups (p > 0.05). Lafayette MMT results at the beginning of the study for I group ankle flexors was 6.72 ± 2.27 kg, II – 10.53 ± 6.21 kg, an there was no difference in groups (p > 0.05). Second test results in I group improved statistically significant (10.83 ± 3.89 kg, p < 0.05), II group results haven't improved statistically significant 14.60 ± 7.05 kg (p > 0.05), and in the end there was no significant difference between groups (p > 0.05). In other muscle groups before treatment and after results in both groups improved statistically significantly (p < 0.05), but no statistically significant difference was found between them (p > 0.05). 6 MWT results at the beginning for I group was 235 ± 81.67 m, II group – 252.5 ± 95.79 m and there was no significant difference (p > 0.05). In both group results improved statistically significantly, I group 328.33 ± 65.78 m, II – 307.5 ± 119.27 m (p < 0.05), but in the end of the study no statistically was found between the groups (p > 0.05).

Conclusion. Different methods of electro stimulation showed significantly improvement in patients' lower limb muscle strength and endurance during the study. Statistically significant improvement (p < 0.05) in muscle tone showed only FES.

STROKE PATIENTS` RELATIVES SATISFACTION EVALUATION OF REHABILITATION SERVICES IN ACUTE REHABILITATION STAGE

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Keywords. Early rehabilitation, stroke, opinion of patients` relatives.

Introduction. Stroke is clinical syndrome consisting of rapidly developing clinical signs of focal disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin (WHO). It is one of the leading causes of death and disability worldwide. In Latvia in 2010 from cerebrovascular diseases died 208.1/100 000 inhabitants, however in 2014 244.5/100 000. Quintessential task of rehabilitation is to provide person with inability with the best psychological and physical potential and also involve relatives in this process.

Aim. To evaluate a participation of stroke patients` relatives in acute rehabilitation stage as well as to find out relatives satisfaction with provided services.

Materials and methods. In this research were used data from PSCUH neurology clinic which held information about patients with diagnosis stroke who received rehabilitation services from 1 Aug till 31 Oct. Study was realized by questionnaire method calling each relative. All data were gathered and analyzed using MS Excel program.

Results. 100 respondents were questioned. 13 of patients had hemorrhagic strokes and 87 ischemic strokes. 13 patients had died, 25 respondents didn't pick up, 5 refused to talk. On the question if relatives had sense of security that their kinsfolk received all the necessary and accessible assistance 53 or the 77% answered yes, while 16 or the 23% answered no. To the question whether relatives would return to PSCUH if there was such a need 52 or the 75% responded yes, 17 or the 25% responded no. 84% of respondents thought that consultation and training of physiotherapist would be useful. Currently 46% do not participate in rehabilitation, but 61% of them would be willing to do so. 81% of those who don`t engage in the rehabilitation of their relatives were satisfied with the provided services, but from those who participate – 75%.

Conclusions. Stroke patients` relatives have a sense of security that kinsfolk are provided with all the necessary and available assistance. Satisfaction with the services is not related with relative participation in the rehabilitation process. Currently kinsfolk involvement in the rehabilitation process is not sufficient however they would be willing to take part after training.

A COMPARISON OF VISUAL FEEDBACK AND VIRTUAL REALITY METHODS EFFECTIVENESS TO PATIENTS AFTER STROKE

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Keywords. Physical therapy, virtual reality (VR), visual feedback (VF), stroke.

Introduction. Stroke is one of the most common neurological disease and second leading cause of disability in the world. Disabilities including reduced muscle strength, gait speed, mobility, balance and other specific functions leads to dependent daily life. However, some studies show positive effect of virtual reality and visual feedback methods during rehabilitation to help recover functions.

Aim. To compare visual feedback and virtual reality methods effectiveness to patients after stroke.

Materials and methods. The study subjects were randomly divided into two experimental groups: I group – virtual reality (n = 6) and II group – visual feedback (n = 5). Without basic and functional physical therapy procedure in addition I group members had virtual reality method sessions, II group – visual feedback which lasted up to 15–20min. 5 days a week. Patients were tested at the beginning of the study and after 15 sessions. Berg Balance scale was used to compare results of balance, Timed up and Go test used to evaluate mobility, and 10 meter walk test used to measure patients walking speed. The statistical analysis was computing with The R project.

Results. At the beginning of the study Berg balance scale results for virtual reality group was 41.5 ± 4.76 points, visual feedback group 39.4 ± 2.89 points, there was no statistically significant difference between groups ($p > 0.05$). After sessions both groups results improved statistically significant ($p < 0.05$); VR scored 51.17 ± 1.94, VF – 47.8 ± 2.39 points. Although, statistically significant better improvement was found in VR group after sessions ($p < 0.05$). The average speed before sessions of VR group was 0.70 ± 0.23 m/s., while VF group 0.61 ± 0.12 m/s ($p > 0.05$). Comparing results second time in both groups speed improved statistically significant ($p < 0.05$); VR mean was 0.92 ± 0.22 m/s., VF group – 0.74 ± 0.09 m/s. there was no statistically significant difference found between the groups ($p > 0.05$). Timed up and go test results at the beginning for VR group was 15.35 ± 2.65 sec, VF group – 19.68 ± 4.52 sec. ($p > 0.05$). Later TUG results got better in both groups statistically significant ($p < 0.05$), VR results 10.2 ± 1.62 sec., VF – 14.02 ± 3.11. Also, we found statistically significant difference between two groups ($p > 0.05$).

Conclusions. These new methods used during rehabilitation have given statistically significant improvements in patients balance, walking speed and mobility. Moreover, after study we do found better VR group patients improvement of balance and TUG results than VF group members so far.

EFFECTS OF ISOKINETIC TRAINING ON MUSCLE STRENGTH AND GAIT IN PATIENTS AFTER STROKE

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Keywords. Stroke, muscle strength, gait, isokinetic dynamomter.

Introduction. After a stroke person's physical capacity is reduced. This is influenced by muscles' weight loss and weakness and consequently leads to functional disorders. Several studies have shown that low muscle strength is strongly associated with variations in gait parameters. Use of isokinetic dynamometer is a new practical method that more effectively improves muscle strength and parameters of functional task (gait) in patients after stroke compared to conventional physiotherapy.

Aim. The main purpose of this study was to determine the effectiveness of isokinetic training on muscle strength and gait in patients after stroke.

Materials and methods. 22 patients (56.55 ± 8.24 years) after the first stroke participated in the research. The patients with stable condition of heart and vascular system, muscle strength on the Lovett scale more than 3 and Mini-mental score not less than 20 were divided into two groups by a random selection method. To conduct the research an isokinetic dynamometer "Gymnex", and the main measurable gait parameters: step width and length, walking speed, were used. Data analysis was conducted using "R x64 3.0.3" and "Microsoft Office Excel 2010".

Results. The data analysis showed that muscle strenght indicators in the treatment group improved more than in the control group. However, the difference between the peak torque of knee flexor and extensor muscles in both groups was higher than the 10% norm. There were statistically significant ($p < 0.05$) differences between the treatment and control groups regarding the non-paretic limb knee extensor and flexor muscles, paretic limb knee extensor muscles peak torque. Gait parameters indicators improved in both groups. There was a statistically significant ($p < 0.05$) difference between the treatment and control groups regarding the step width and length when making a step with a non-paretic limb forward.

Conclusions. The results showed that isokinetic training in treatment group may improve more knee muscle strength and gait parameters that in control group. They also demonstrate that isokinetic dynamometer reliably assesses muscle strength parameter changes in both the paretic and the non-paretic limb.

RELATIONS BEWTEEN PARENTS AND CHILDREN'S PHYSICAL ACTIVITY

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Keywords. Children, parents, physical activity.

Introduction. Nowadays most of the people are less physically active because of sedentary lifestyle. Not only adults, but also children becoming less active, their leisure activities usually involve computer games or films on TV. Lack of physical activity may become a cause of illness. Therefore it is important to understand if parents could influence their children to be more active.

Aim. The main purpose of this study was to assess physical activity in children and their parents and relations between children and parents physical activity.

Materials and methods. One hundred eight students of 5–7 grade and their parents were included in the study. Subject's physical activity level was assessed using youth physical activity questionnaire and international adult's physical activities questionnaire. Parents had additional questionnaire in order to find out how they encourage their child's training, how actively they spend leisure time with their kids and whether they monitor or participate in children's sport events.

Results. The data analysis showed that 17% of parent's physical activity level was low, 36% – average, and 47% – high. Even 50% of parents spend no time on moderate-intensity and vigorous-intensity physical activity, 44% – sits from 1 to 5 hours, 45% – from 5 to 10 and 11% – more than 10 hours. The results of student's answers showed a low level of physical activities in 6% of the kids, average – in 27% and high in 67% of kids. Actually, 27% of kids were not involved in any sports activity after school. Average time, which children spend on sports activity was 189.31 ± 21.34 min. per week. Around 70% of parents were motivating their kids to do sports often. Besides, less than one fourth of the parents have active leisure with their kids.

Conclusions. Less than 50% of participating parents in this research recorded a high level of physical activities. While most of the children's physical activities reached the recommended level. Boys are more physically active than girls. The relation between parents and children's physical activity was insignificant, although children whose parents were motivating them to do sports or spend their leisure actively were more active.

THE EFFECTS OF VIRTUAL REALITY METHOD ON STROKE PATIENTS BALANCE AND GAIT

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Keywords. Acute stroke, virtual reality method, balance, gait.

Introduction. Data about the efficiency of the virtual reality method application and advantage over conventional physiotherapy are not sufficient. Therefore, scientific problem arises to reveal whether virtual reality method applied to patients after acute stroke is more effective than conventional physiotherapy program during the balance and gait training.

Aim. To determine the efficiency of virtual reality method on stroke patients balance and gait.

Materials and methods. The study was conducted in Vilnius University Hospital Santariskiu Clinics, rehabilitation, Physical and Sports Medicine Centre. 30 persons after acute stroke participated in the study. The average age of participants – 65.1 ± 9.05 years. Participants were randomly divided into two groups: treatment – combination of conventional therapy and virtual reality method (15) and control – conventional therapy (15). The balance of participants was assessed by the Berg Balance Scale (BBS). The gait parameters were assessed by 6 minutes walking test, Treadmill walking test. With the help of Treadmill weight transfer coefficient, length and cycle of the step were evaluated. Statistical data analysis was carried out using SPSS 21.0 for Windows and Microsoft Excel 2010 programs.

Results. The results of BBS showed that control group demonstrated better results, but these changes were not statistically significant ($p > 0.05$). Evaluation of gait parameters showed statistically significant improvement of weight transfer coefficient on an affected leg in the treatment group compare to the control group ($p < 0.05$). After the study patients in treatment group completed longer distance during 6 minutes walking test and had higher walking speed than in the control group but there were not any statistically significant difference ($p > 0.05$).

Conclusions. Virtual reality method for patients after acute stroke is an effective tool for balance training as well as the conventional balance exercises. Virtual reality method for patients after acute stroke is a more useful tool for weight transfer training than conventional walking exercises.

WEARABLE SENSOR NETWORK AND MOBILE APPLICATION FOR KNEE JOINT DYNAMICS MONITORING DURING REHABILITATION

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Keywords. Sensor Networks, Knee Joint, Monitoring, Rehabilitation, Mobile Software.

Introduction. Over the last decade there has been a rising interest in wearable and implantable biomedical sensors. Researchers believe that long-term monitoring of physiological data could lead to significant improvements in the diagnosis and treatment of diseases (such as cardiovascular diseases, musculoskeletal disorders etc.). One of the cases are injuries of knee joint that are very common and occur in people of all ages. In 2010, there were roughly 10.4 million patient visits to doctors' offices because of common knee injuries such as fractures, dislocations, sprains, and ligament tears. In scope of this project authors concentrated on injuries of menisci, that are the second most common injury of knee joint (61 cases per 100,000 persons).

Aim. The goal of this project is to present an approach for knee joint dynamics monitoring during post-operative rehabilitation by using specially developed architecture consisting of wired and wireless sensors and mobile software.

Results. Developed solution was tested in dynamic conditions – patients used the system during their rehabilitation session in real life. During rehabilitation session developed prototype data was compared to industrial one. Precision of the implemented solution was calculated: 0.79°. Main result of this project is developed prototype, that consists of wearable device and mobile software for health data acquisition. This project received the 2nd place in Best Student Paper competition in Computer Science. Prototype version was successfully presented at "IPSN 2015" conference demonstration session in Seattle, USA. Work is added to both conference proceedings.

Conclusion. Aim of the research project is to study the problems in patient state of health monitoring and opportunities during rehabilitation session. As a result, detailed analysis was made to define the difficulties occurring during post-operative knee joint rehabilitation period. Developed solution was tested in dynamic conditions – patients used the system during their rehabilitation session in real life. System received positive feedback from participants and rehabilitation specialist. Sensor data during dynamic conditions (like running, sports etc.) can lead to decrease of system's precision. This fact is not influencing system's ability to help during rehabilitation sessions, since such exercises are static. However, it is possible to broaden system use cases by using other sensor nodes combination. Author sees system future extension as a part of global human vital signs monitoring solution – developed device can be used in synergy with other systems to get more data and provide them to health specialist to better diagnostics.

VII. Public Health, Occupational Medicine, Nutritional Science, Sports Medicine

DIETARY FIBER INTAKE AND CONSTIPATION PREVALENCE AMONG TYPE 2 DIABETIC PATIENTS

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Keywords. Type 2 diabetes, dietary fiber, constipation.

Introduction. In the Latvian summer season, fresh fruits and vegetables are available for a relatively good price and huge variety from local growers compared with the winter period. Dietary fiber (DF) works as bowel regulator and can be effective for constipation. Based on the available evidence on bowel function, the European Food Safety Authority (EFSA) considers DF intakes of 25g/day to be adequate for normal laxation in adults. As for the general population, people with type 2 diabetes mellitus (T2DM) are encouraged to consume a variety of fiber-containing foods.

Aim. To determine the prevalence of intestinal constipation and to verify its possible associations with insufficient DF intake among T2DM patients treated at the endocrinology outpatient clinic at Pauls Stradiņš Clinical University Hospital, at summer period, from June to August 2015.

Materials and methods. Fifty T2DM patients who have been followed up at the Latvian capital endocrinology outpatient clinic Paul's Stradiņš Clinical University Hospital, and agreed to the investigation about food intake were included. Patients were interviewed in face-to-face interview, 16 (32%) were men and 34 (68%) were women. The mean of age was 61 ± 9 years for women, and 56 ± 10 years for men. The mean duration of diabetes was 8 ± 6 years, HbA1c was 7 ± 0.5. The calculations of the nutritional components were performed with the aid of Nutrisurvey Software. Constipation was defined through the RomeIII criteria. Results are expressed as mean ± standard deviation. Comparisons between means were carried out using the one sample t-test. The statistical analysis were performed by IBM SPSS 22.00 software. Permission to carry out the study was issued by the Ethics Committee of the Faculty of Medicine at University of Latvia.

Results. On average patients eat about 1900 kcal/d, 35E% from carbohydrate, 42E% from fat, and 23E% from protein. Average daily intake of DF during the summer season was 20 ± 5 g/d. The overall average consumption of fruit and vegetables was 600g/d, which exceeds the WHO dietary recommendation of 400g/d. Constipation was reported in 17 (34%) of patients. Comparison to EFSA recommendation on DF intake (25g/d) patients with constipation do not met this recommendations 17 ± 4 g/d (p < 0.001). Difference of DF intake in patients without constipation is insignificant according to EFSA recommendations 23 ± 6 g/d (p > 0.05).

Conclusions. In summer season majority of T2DM patients follow dietary guidelines for dietary fiber consumption. Increased frequency of constipation and insufficient DF intake were common in 34% patients. To compare seasonal differences the survey should be repeated in winter season.

16 March 2016

LABELLING COMPLIANCE OF SOUR CREAM
WITH THE LEGISLATION

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Keywords. Label, dairy products, sour cream.

Introduction. Dairy products can be an important part of a healthy, balanced diet. Taking into account the wide variability of milk products and their nutritional composition, it is important that all the necessary details about the product is available to the user. It is therefore critical that the regulatory framework on labelling ensures that the consumer receives accurate information about the product.

Aim. The aim of this research was to compare the information given on labels of sour cream and it`s substitutes with requirements set in legislation.

Materials and methods. Thirty-three sour creams and two sour cream substitutes with different fat content accessible at local store "Rimi" were selected. The information indicated on their label was recorded and collated with requirements set in Regulation (EU) No 1169/2011. The nutritional value (fat, saturated fatty acid, carbohydrate, sugar, protein and salt content) of seven randomly chosen samples was determined in laboratory and compared with the information given on their label, taking into account guidance document for Regulation (EU) No 1169/2011 setting of tolerances for nutrient values declared on a label.

Results. 83% of the labels contained all the information accordingly to requirements set in legislation. The list of ingredients was specified on 68% of inspected sour cream samples (although it is not a mandatory requirement for dairy products which no ingredient has been added other than microorganism cultures essential to manufacture). In two cases in the list of ingredients allergen "pasteurized sour cream" was not emphasized. Origin of vegetable fat added to sour cream substitutes was not declared. In three cases, nutritional information was declared in wrong order. Although on the label of all samples some carbohydrate content was mentioned, in five cases sugar content was declared as 0 grams, forgetting that lactose is a sugar – disaccharide. In 86% of all cases, nutritional value on label was rounded incorrectly, mainly salt content (yet guidance document for setting of tolerances for nutrient values declared on a label has no legal status).Experimentally determined nutritional value of all tested samples comparing to the nutrition information declared on label was within the validated tolerances.

Conclusion. Regulation (EU) No 1169/2011 provides consumers with clearer, all-inclusive information about the foods. However, for some producers, it is difficult to comply with all the necessary requirements. Although nutrition declaration for foods with no nutritional or health claim are voluntary until the end of 2016, many dairy product manufacturers already have implemented new requirements according to EU Regulation No. 1169/2011. The actual amount of nutrients in a product may vary, especially for dairy products. Therefore, tolerances for nutrition labelling should be taken into account. Still, they should not deviate substantially from labelled values to mislead consumers.

THE PREVALENCE OF FOOT PROBLEMS AMONG PRIMARY SCHOOL CHILDREN – SUBJECTIVE AND OBJECTIVE ASSESSMENT

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Keywords. Foot problems, schoolchildren, podometry.

Introduction. The foot is an important element of the musculoskeletal system and it's responsible for our mobility and independence. Podometry is one of the most effective and quickest way to examine the foot to determine the pressure distribution on the surface of the foot and to early diagnostic of foot problems.

Aim. To assess the causes of foot deformations and foot load changes by podometry, to assess schoolchildren physical development by weight and height.

Materials and methods. A prospective study was conducted with Riga primary school children aged 5 – 15 years. Informed consent from parents was obtained before the start of the study. A questionnaire and computerized podometric system was used to gather data. The data obtained was processed with *MS Excel 2013* program using descriptive statistical methods.

Results. The study included 74 schoolchildren, 66.2% (n = 49) girls and 33.8% (n = 25) boys. In questionaire 17.57% (n = 13) of parents marked that their child had foot problems, 28.38% (n = 21) noted that other relatives in their family had flat foot and 12.16% (n = 9) foot bones deformations. Results of the podometry shows that 91.89% (n = 68) of children have a hollow foot, overloaded transverse arches – 48.65% (n = 36), overloaded heels – 22.97% (n = 17), flattened longitudinal arches – 22.97% (n = 17). Asymetric foot weight distribution was observed in 29.73% (n = 22) of cases. On a daily basis 50% (n = 37) of children wear comfortable sports shoes, 56.76% (n = 42) shoes with heel 1–2cm and 12.16% (n = 9) choose comfortable shoes with heel 2–4 cm. At home 75.68% (n = 56) of children walk without shoes. Every day orthopaedic footwear is used by only 5.4% (n = 4) and orthopaedic insoles – by 8.11% (n = 6) of children. 50% (n = 37) of children are actively engaged in sports after school, an average of 80 minutes a day 2–3 times a week. Measurments show that 20.27% (n = 15) of children are overweight and 13.51% (n = 10) are obese.

Conclusion. Wearing inappropriate footwear and lack of attention towards pecularities of child's foot development during it's growth can lead to foot problems. It is important to wear shoes made of breathable material with soft leather or rubber soles with good arch support, as well as to have physical acitvity and maintain a healthy weight. Screening of foot problems and it's associated factors helps detect underlying risks influencing the stresses on the foot. Podometry is one of the most effective and quickest way to examine the foot.

GENERAL SIDE EFFECTS DURING IONIZING RADIATION IN RADIATION THERAPY PERFORMED IN WOMEN

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Keywords. Radiotherapy treatment, women, side effect.

Introduction. Radiotherapy destroys malignant cells in the area it is aimed at. But the therapy also affects some of the normal cells. Radiotherapy affects people in different ways, so it's unpredicted. Some people have only mild side effects but for others the side effects are more complicated. A large number of complications are connected with location of radiotherapy treatment. Unlikely women have huge numbers of complications because of cancer location. In Latvia among women often met breast and uterus cancer, skin cancer and gastrointestinal tract cancer.

Aim. To clarify with a help of the survey the effect of radiotherapy on patients of Clinical Department of Radiation Therapy, to estimate patients' side effects such as dry mouth, dyspeptic symptoms and skin reactions.

Materials and methods. A prospective research using survey in Clinical Department of Radiation Therapy, Oncology Centre of Latvia and Daugavpils Regional hospital. All data and results of researches were processed with IBM SPSS 23 descriptive and analytical statistics including 95% confidence interval (CI) and Pearson correlation.

Results. Over all in study are used 65 patient survey data, average age 64.38 (Std. Deviation 11.052, 95%CI: 61.6 – 67.1). Women range in age from 35 to 79 years. 66.15% (N = 43) of women were with gynecological diseases. This number includes both breast and uterus cancer. For that type of patients the most common side effects were dry mouth, as well as weakness and dyspeptic symptoms. About 15.38% (N = 10) were patients with skin cancer. Out of them 47.69% (N = 31) had skin burns in place, where radiotherapy was used. As well as they had taste changes 15.38% (N = 10), dry mouth 56.92% (N = 37). Patients with gastrointestinal tract diseases had primary side effect like dyspeptic symptom 56.92% (N = 37). Correlation was found between numbers of radiation therapy and skin damage (r = 0.383, p = 0.002), knowledge and smoking (r = 0.961, p = 0.006). No significant correlation was found between age and depression (r = 0.252 p = 0.043).

Conclusion. Radiation therapy is a local treatment. It only affects the area of the body where the tumor is located. The side effects are often classified as early or late. Early side effects generally occur during treatment and end within a few weeks afterwards. Most side effects go away after treatment. Patients should be informed about most common side effects. It is very important because patients can be afraid of these negative changes in their bodies. As a result patient can interrupt therapy.

THE IMPACT OF THE AMOUNT OF SLEEP ON MEDICAL FACULTY STUDENTS' WORKING ABILITY

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Keywords. Sleep, work ability index, students.

Introduction. Sleep is extremely necessary. We spend in sleep approximately one third of our life. The desire of sleep is as strong as the tendency to breathe. Sleep is the body's process of regeneration. Therefore, wholesome sleep is one of the preconditions for good life quality and good work ability. Chronic lack of sleep increases daytime sleepiness. It causes numerous problems in our lives such as mood swings, cognitive disorders – reduced ability of concentration, impaired short and long term memory as well as another changes in the body.

Aim. To study how the amount of sleep affects Riga Stradiņš University (RSU) Faculty of Medicine (MF) students' working ability in 2015/2016 academic year.

Materials and methods. Summary of recent findings about normal sleep and the lack of it on human body. The study includes 234 voluntary answers on questions obtained by using Google Forms from RSU MF student questionnaires over the autumn / winter of 2015. We have summarized all of them and excluded surveys which were filled in incorrectly. Survey analysis included: Dividing the answers into two groups and analyzing them using IBM SPSS software 20.0 version. Analysis included Shapiro-Wilk test to estimate data distribution. In order to find statistical significance we used Chi-square and Fisher's exact test. In order to evaluate interaction between collected data we used Spearman's Rank-Order Correlation and Pearson Correlation. In all cases the significance level of $p < 0.05$ has been seen as the basis for null hypothesis rejection and acceptation of the alternative hypothesis.

Results. We have analyzed 234 students' answers, which is 18.5% of all students of RSU MF during 2015 / 2016 academic year. The average age of respondents was 21, the majority were women 79.8% (186) while only 20.2% (47) were men. The average length of sleep was 6.5 hours, and most of the students went to sleep at 00:00am and got up 7:00 a.m. Students' work ability index according to questionnaire has been scored at an average of 40.3 points, which means – good working ability.

Conclusion. Student responsiveness has been low; the biggest number of responses came from the female students. Students are sleeping less than the average person need to. Average time for going to sleep is about an hour later than determined by the human circadian rhythm, however the waking up time is fully consistent with it. The number of diagnosed diseases in the last 5 years showed a statistically significant correlation with work ability index. We have not found statistically significant correlation between sleep duration and the number of diseases diagnosed in the last five years. There is a statistically significant correlation between sleep and work ability index.

CARDIOVASCULAR DISEASE RISK FACTORS AMONG TEACHERS IN URBAN AND RURAL AREAS

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Keywords. Teachers, urban and rural area, cardiovascular disease risk factors.

Introduction. According to the data of The CDPC of Latvia, cardiovascular disease (CVD) is still the major cause of death in Latvian population. It is extremely important to determine CVD risk factors, such as: gender, age, unfavourable family anamnesis, smoking, irrational diet, sedentary lifestyle, high blood pressure rate, excessive weight, intraabdominal obesity, etc. Knowledge of these risk factors may lead to changes in habits and attitude with following reduction in prevalence. School teacher is an authoritative workforce that has important influence on students and their parents.

Aim. The objective of the study was to assess the prevalence of CVD risk factors and knowledge of these risk factors among the teachers in urban and rural area.

Methods. A sample of 110 school teachers: 97.27% females (n = 107) and 2.72% males (n = 3), average age 49 years (teaching experience > 3 years) volunteered for the research and completed anonymous questionnaire. Participants were divided into 4 groups. Group I: teachers from secondary schools in Riga (number of students in classes: > 30) group II: teachers from small secondary / basic schools in Riga (16–20 students in classes), group III: teachers from big secondary school in Rezekne (> 30 students) and group IV: teachers from small rural basic schools in area of Rezekne (8–12 students). The results of questionnaire were compared between the groups.

Results. 62.72% (n = 69/110) of respondents suffer from overweight or obesity. There is a weak positive linear relationship between the age of participants and their BMI value (r = +0.438). From all females, who had noted their waist circumference 70.32% (n = 64/91) have waist circumference more than 80 cm. Only 1 respondent is currently smoking, and just 7 were smoking in the past. 59.09% (n = 65/110) of respondents have average physical activity only once a week or less. There is no correlation between the age of teachers and their daily physical activity (r = 0.009).

Only 11.81% (n = 13/110) of teachers have average blood pressure rate higher than 140/90 mmHg. Only 7.72% (n = 8/110) of respondents are aware of normal levels of blood pressure, cholesterol and glucose in blood. There was no statistically significant difference in the work load between 4 groups. 71.81% (n = 79) of teachers regularly continue and prepare their work at home. Generally, eating habits of teachers both in rural and urban area are sufficiently healthy, although 58.92% of respondents consume "ready-to-cook" food regularly.

Conclusion. More than a half of analysed population suffer from overweight or obesity and sedentary lifestyle. Smoking habit is uncommon among analysed population. Generally, the knowledge of the teachers about CVD risk factors is insufficient and needs to be improved.

OCCUPATIONAL SKIN DISEASES AMONG HEALTHCARE PROFESSIONALS IN LATVIA

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Keywords. Occupational skin diseases, contact dermatitis.

Introduction. Exposure to chemical, physical, biological risk factors can lead to different skin diseases. In many developed countries occupational skin diseases are second in the ranking of occupational diseases, following musculoskeletal disorders. At the European level skin diseases represent 10%-40% of recognised occupational diseases. The most frequent lesions are irritant contact dermatitis followed by allergic contact dermatitis.

Aim. The aim was to study the prevalence of self-reported skin symptoms on hands and forearms among healthcare professionals and to find out the main risk factors for development of occupational skin disease.

Materials and methods. A questionnaire, partly based on the Nordic Occupational Skin Questionnaire NOSQ-2002, was used to collect self-reported data from healthcare professionals from different medical institutions in Latvia.

Results. 361 respondents took part in this study: 110 physicians (30.5%), 149 nurses (41.3%) and 102 nursing assistants (28.3%). The information in the questionnaire showed that in the healthcare sectore most of the respondents (59.8%) have had 1–3 different skin symptoms in previous 12 months. Statistically significant (p = 0.001) nurses (34.9%) more often had multiple skin symptoms than physicians (25.76%). Only 52 (14.4%) respondents reported that they have not had any of skin symptoms. Dryness (30.6%), sensitivity (14.8%) and redness (14.6%) were main reported skin symptoms. In the time of survey 161 (44.6%) respondents had at least one active skin symptom. 270 respondents (74.8%) admitted that they have noticed reduction of symptoms during vacation. 44 respondents (12.2%) have visited doctor because of these symptoms. 102 (28.3%) respondents have had other allergic symptoms in the work, 46.8% of them have had rhinitis. 36.8% of respondents wash hands and 21.6% use hand disinfectant > 20 times per day. 125 (34.6%) respondents have noticed skin symptoms after using latex gloves but did not have a necessity to stop using them. 61 (16.9%) had a necessity to use gloves of different material. There was a weak correlation between more years spent working in healthcare sector and more skin symptoms (r = .142, p = 0.014). The use of hand disinfectant (48.2%) and frequent hand washing (26.7%) were the possible irritant agents most often reported.

Conclusion. According to the survey occupational hand diseases in healthcare field is significant topic. It is important to prevent occurrence of symptoms by educating employees about hand care and substitution of substances with skin-damaging properties. Further research should be done to exclude factors that may have had effect on the result and specify the risk factors in a more detailed way.

CORRELATION BETWEEN OCCUPATIONAL EXPOSURE TO OIL MISTAND SPRAY FROM METAL WORKING MACHINERY AND HEALTH SELF-ASSESSMENT AMONG WORKERS IN METALWORKING INDUSTRY

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Keywords. Occupational medicine, occupational environment, metalworking, oil mist, oil spray, self-assessment.

Introduction. Oil mist and spray exposure as a part of occupational environment in the field of metalworking industry is associated with number of occupational health issues, particularly various allergic and hypersensitivity reactions.

Aim. The aim of the study was to investigate the potential relation between occupational exposure to oil mist and spray and health self-assessment among workers in metalworking industry.

Materials and methods. Oil mist and spray was collected and analyzed by P-Trak Ultrafine Particle Counter Model 8525 and electrical low pressure impactor ELPI which enabled to measure spray concentration (by mass, number, surface area – $\mu g/m^3$) and give particle characteristics by size distribution: 6 nm – 10 μm.

Health self-assessment questionnaire (established by ESF project "The development of up-to-date diagnostic and Research Methods for the risk caused by nanoparticles and ergonomic factor at Workplace" Agreement No.2013/0050/1DP/1.1.1.2.0/13/APIA/SEDA/025) were conducted on workers (n = 50) exposed to oil mist and spray. Questionnaire covered four categories of questions: occupational history, lifestyle, subjective symptoms and satisfaction with health in general. Statistical analysis was done by SPSS 20.0.

Results. All measurements as well as health self-assessment questionnaires were implemented during separated visits to three metalworking companies. Measurements were carried out during one shift in each of the companies with the measuring equipment placed in the working area, due to exposure of higher concentration of oil mist and spray closer to metalworking machinery. Altogether n = 40 health self-assessment questionnaires were included in the study as valid.

Conclusion. As anticipated, workers with longer occupational history in the industry and lower occupational air quality showed poorer self-assessment health rates. Besides the results of measurement obtained also the technical solutions how the manufacturing process is organized as well as work habits of the workers should be taken in consideration when looking for links between the occupational environment and health conditions. Further research should be done exploring the correlation between the exposure to oil mist and spray and anticipated work-related health issues also including a bacterial and fine particulate contamination of oil mist and spray as an important health hazard.

THE ANALYSIS OF OCCUPATIONAL EAR, NOSE AND THROAT DISEASES IN LATVIA 2005 – 2014

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Keywords. Occupational diseases, noise-induced hearing loss, chronic laryngitis, chronic pharyngitis, allergic rhinitis.

Introduction. Ear, nose and throat (ENT) diseases are widely diagnosed among people, causing significant impact on both work quality and productivity.

Aim. The purpose of the research is to examine and analyze incidence of occupational ENT diseases among employees in Latvia between 2005 and 2014.

Materials and methods. Data from the Latvian State Register of Patients with Occupational Diseases between 2005 and 2014 was obtained and analyzed using Excel program to identify the most commonly registered occupational ENT diseases, the dynamics of their appearance and the most frequent branches of economic activity where employees with occupational ENT diseases worked in.

Results. The study involved 2302 employees with 2562 cases of occupational ENT diseases. 2054 employees (89.2% of all the registered employees with occupational ENT diseases) had one, 236 employees (10.3%) had two and 11 employees (0.5%) had three occupational ENT diseases. The most frequently registered occupational ENT diseases were: noise effects on inner ear (1699 cases or 66.3% of all the registered cases with occupational ENT diseases or in 73.8% of all the registered employees with occupational ENT diseases); chronic laryngitis (380 (14.8%/16.5%)); chronic pharyngitis (321 (12.5%/13.9%)) and allergic rhinitis (114 (4.4%/5.0%)). Occupational ENT diseases most frequently were registered in workers of manufacturing (1056 cases or 41.2% of all the registered cases with occupational ENT diseases); transport, storage and communication (522 (20.4%)); construction (232 (9.1%)); agriculture, hunting and forestry (182 (7.1%)) and education (168 (6.6%)) sectors. Analyzing incidence of noise effects on inner ear, chronic laryngitis, chronic pharyngitis and allergic rhinitis per 100 000 of employees in Latvia in corresponding year it was noted that most frequently these diseases were registered in 2009 and 2010: noise effects on inner ear – 33.57 and 35.97 cases per 100 000 employees respectively; chronic laryngitis – 9.25 and 8.70 cases; chronic pharyngitis – 7.59 and 7.29 cases, and allergic rhinitis – in 2.42 and 2.59 cases. Afterwards incidence decreased reaching in 2014 14.24 cases per 100 000 employees for noise effects on inner ear, 2.26 for chronic laryngitis, 0.90 for chronic pharyngitis and 0.68 for allergic rhinitis.

Conclusions. The drop in incidence of occupational ENT diseases after 2010 demonstrates that modern methods used for occupational protection and for control of workplace hazards, as well as apropos prophylaxis methods are effective. Special attention should be given to occupational health of the workers in manufacturing; transport, storage and communication; construction; agriculture, hunting and forestry and education sectors, emphasizing the importance of a regular health check-up and self-protection.

VISUAL ACUITY DYNAMICS OF ILGUCIEMS SECONDARY SCHOOL STUDENTS FROM 2003 UNTIL 2015

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Keywords. Visual acuity, school-age students, visual dynamics.

Introduction. Nowadays school-age students spend increasingly more time using electronic devices in their daily activities including studying. Since these devices require lengthy visual focus, it puts strain on students' eyes, eventually causing decreased visual acuity. What is more, reading from a computer monitor or a mobile device for a prolonged period of time, causes students to blink more rarely, thus decreasing the natural protective barriers of the eye.

Aim. The aim of the research is to find a correlation between the time students spend using electronic devices and the decrease of their visual acuity. To find and present significant statistical findings concerning premature decrease of visual acuity. Also to prove that students who were studying before the wide spread of mobile phones and computers had over all better visual acuity compared to the same age students nowadays.

Materials and methods. Data were obtained using yearly student visual acuity tests at Ilguciems secondary school. Data were analyzed, assessed and ordered in a statistical and visually perceptible matter. For the analysis MS Excel and SPSS 20.0 were used. To find out the time students spend using the devices, questionnaires were given out.

Results. Results show a strong correlation between time students spend using electronic devices and a decrease in their visual acuity. Students in the higher classes, who did not have access to computers in their early years of school, show less decreased visual acuity compared to students in the same year of school nowadays (first year students had 18.5% lower visual acuity). Students of 2011 had their visual acuity decrease from 4% to 10% until fifth grade, compared to students of year 2006, whose visual acuity was not impaired at all. 9 students of the year 2014 needed glasses by the second grade, which is the same amount combining year 2004, 2005 and 2006 in the ninth grade. The degradation of visual acuity is wide spread in population of school-age students and is abnormal for their age.

Conclusion. Many students have dramatically decreased vision (0.2) on one or both eyes for at least 1 year. Many students in need of refractive correction refuse to wear glasses to school for unknown reasons. Similar studies should be made in regions with limited or no access to electronic devices to determine influence of other factors on the visual acuity.

REASONS FOR DELAYED DETECTION OF OCCUPATIONAL DISEASES IN LATVIA

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Keywords. Occupational disease.

Introduction. In Latvia people diagnosed with occupational disease (OD) are usually > 50 years old and already have a disability. If ODs were detected earlier, effective interventions could help workers remain healthy.

Aim. To detect and name possible reasons for delays in the diagnostics of ODs.

Materials and methods. Research type: qualitative research. 101 patients were interviewed. Inclusion criteria: already diagnosed patients found in the Center of Occupational and Radiological Medicine (Center). Data was later analyzed using descriptive statistics tests and tests of normality.

Results. Information regarding the timing of diagnosis compared to first symptoms was gathered: 0 to 40 years in between, median time 10 years, IQR 4.25–18.75 (henceforward this period of time will be called YBD – years before diagnosis).

Patient median age 57.5 (n = 101), 38.6% males, 61.4% females. Most (68.4%) live in the city, 31.6% in the countryside (YBD 10.5 and 10 years respectively). 65.3% employed, although 68% of them are on sick leave; 78% respondents reported having a disability. People who contacted their physician instantly after noticing the symptoms (40%, n = 36) were not diagnosed faster than those who waited for > 5 years (~30%, n = 27). 63.6% didn't voice their concerns of OD with their employer. However, patients that did were diagnosed earlier (YBD 7.5 versus 12 years, $p < 0.05$). During employee health screening (EHS) 41.5% didn't report their health problems. 58.5% reported health problems during EHS and received recommendations about further course of actions, yet it did not affect YBD. When asked about doctors attitude during EHS, 39.5% patients felt that doctors were attentive (YBD = 8), 43.4% felt they treated it as a chore (YBD = 17), 17.1% had mixed experiences (YBD = 10). In 94.3% EHS was performed by > 1 physician. Whether any workup was performed during EHS (81.8%, YBD = 10) or not (18.2%, YBD = 11) did not affect YBD. 89.8% of patients were instructed to do workup before coming to the Centre. Afterwards, more than 90% patients were sent to do more investigations and consultations with different professionals in order to qualify for the OD. It takes ~6 months on average (median 6, range 1–60, IQR 4.6–12, n = 76) for the ODs to be acknowledged by the Center.

Conclusion. It usually takes ~6 month to get the OD acknowledged. There is a significant delay (10 years) in the detection of ODs. Gender, wage, living in the city, education and reporting symptoms to the physician or during EHS had no statistically significant effect on the delay. On the other hand, patients who voiced their concerns to the employer and reported doctors performing EHS to be attentive listeners were diagnosed quicker.

BODY MASS INDEX AMONG MEDICAL STAFF IN RIGA AND JURMALA

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Keywords. Body mass index, medical staff.

Introduction. Maintaining a healthy weight is important for overall health risks and can help to prevent and control many diseases and conditions. Furthermore people with normal Body mass index (BMI) have better ability to live longer. Medical staff should not just educate their patients and society about significance of normal BMI but also to be as a benchmark.

Aim. The aim of this study is to assess BMI and related health risk among medical personnel.

Materials and methods. A cross-sectional study was conducted among 151 people (126 female, 25 male) aged 20–64 years working in health care in Riga and Jurmala. Participants were randomly selected from different medical institutions doing different type of work there. Responders were asked to fill a questionnaire about their everyday habits and self-reported weight and height. Obtained Data were analyzed using descriptive statistics.

Results. The total count of respondents was 151. The total respondents with valid data were 146. The mean BMI was 26.37 ± 4.47 kg/m^2 [range 18.42–45.17]. For 60 (41.1%) participants BMI were in the range 25–29.9 kg/m^2 and for 28 (19.2%) BMI ≥30 kg/m^2.

Doctors were 29 of respondents with average BMI 26.74 ± 3.35 kg/m^2 [range 20.96–32.69].

Nurses were 73 of respondents with average BMI 25.22 ± 4.28 kg/m^2 [range 18.94–45.17].

Hospital attendants were 41 of respondents with average BMI 27.89 ± 4.97 kg/m^2 [range 18.42–33.95]. Three of all respondents who have other specialty average BMI were 29.69 ± 5.21 kg/m^2 [range 23.89–33.69].

Conclusion. Almost half of medical staff researched is overweighed, but every fifth of them already have obesity.

SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING EATING HABITS AMONG MEDICAL STUDENTS OF RIGA STRADINS UNIVERSITY

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Keywords. Eating habits, medical students, social and psychological.

Introduction. Eating habits and healthy lifestyle has become one of main topics in our daily lives. Healthy lifestyle is an important determinant of health, which can be effected by social and psychological factors either consciously or unconsciously. Although student life is temporary, the unhealthy eating habits learned during this time may persist for the rest of life.

Aim. The aim of this study is to determine eating habits and its association with social and psychological factors among medical students of Riga Stradins University.

Materials and methods. A cross-sectional study was conducted among 147 medical students of Riga Stradins University. A self-administered questionnaire was used which included questions on eating habits, exercise, social and psychological factors.

Results. Total amount of respondents was 147, 84% female and accordingly 16% male. 9% of them had underweight, 69% had normal weight, but 16% had overweight and 6% obesity. The majority had regular meals and breakfast (60% and 69% respectively). Most of students had a balanced variety of foods (65%), while 17% preferred flour products, rice, buckwheat, oat flakes, 14% preferred meat and 4% preferred vegetables and fruits.

Only 11% of respondents drunk more than 2 liters of fluid daily. A minority (22%) was exercising more than 3 times a week, while 39% did it once or twice a week and 39% did not exercise at all. Four psychological factors out of five were associated with eating habits such as loneliness, feeling out of control about food, boredom and stress.

The half of respondents (50%) who had overweight lived together with parents, 20% lived together with a partner or spouse, 17% lived together with other students, 13% lived alone. More than a half of respondents (56%) who had obesity lived together with parents, 22% lived with other students, 11% lived together with a partner or spouse and 11% lived alone.

Conclusion. Most of the students in this study had healthy eating habits. However, the daily fluid consumption and weekly exercising was too low. Social and psychological factors were important determinants of eating habits among medical students of Riga Stradins University.

THE MOST COMMON REASONS OF VACCINE HESITANCY AMONG PARENTS IN LATVIA

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Keywords. Vaccination, vaccine hesitancy, immunization.

Introduction. Vaccination is one of the most efficient public health measures, preventing an estimated 2.5 million deaths per year (WHO). Despite the satisfying immunization rates in 2015, the same tendency has been observed in Latvia. This is due to various social and economic factors, as well as an increase of biased anti-vaccination information within society.

Aim. To identify the most common reasons of vaccination refusal.

Materials and methods. Quantitative cross-sectional study in 2015 with a sample size of 300. The questionnaire included: data of epidemiology, eating habits, opinion on homeopathy, evaluation of "vaccine preventable disease" severity and most common anti-vaccination statements. Statistical methods – descriptive statistics, Z test for column proportion comparison, Mann – Whitney U test to compare independent samples (full vaccination and partial vaccination) in categories – eating habits, opinion on homeopathy, place of residence, level of education, monthly income and previous experience with vaccination. Results were considered statistically significant with $p < 0.05$.

Results. There was a significant statistical difference between full and partial vaccination supporters in the following categories: level of education, monthly income, homeopathy, place of residence and previous vaccination experience. No significant difference between eating habits and decision to vaccinate, was observed. A correlation, regarding vaccination decision making, was found between place of residence and previous vaccination experience ($p < 0.05$). All of the "vaccine preventable diseases" were rated as equally severe in both groups, except rubella – partial vaccinators rated the rubella infection as less severe compared to full vaccinators. The three most common reasons of vaccine refusal – vaccination doesn't guarantee immunity and people still can get sick after vaccination; vaccination has a heavy burden on a child's immune system; vaccination is nothing but a pharmaceutical business.

Conclusions. Despite of satisfying immunization rates in Latvia, anti-vaccination movement is becoming more popular among the young parents. Vaccine hesitancy is a complex problem that needs a multi-level approach including education of young parents and medical staff, promoting understandable, reliable and evidence based information about immunization, and collaboration with national health instances to achieve better results. Identifying the most common reasons might help to tackle the problem more efficiently.

UNEXPECTED LITHUANIAN MURDER STATISTICS

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Keywords. Murder rate, homicide.

Introduction. Murder is one of the worst violent crimes that can be conducted against another human being. Homocides have a big influence on public welfare, inter-society relationships and overall economy of a country. No study regarding homocide statistics has been done in Lithuania yet, however such information is extremely important for identifying risk groups and creating prevention tactics.

Aim. To analyze features of murder statistics in Lithuania and compare the results with data of other countries.

Materials and methods. A retrospective analysis of murders in Lithuania during 2004–2013 was done, for which data from State forensic medicine service departments' archives was used. 1738 cases matched criteria. Only statisticaly significant results are presented ($p < 0.05$).

Results. During the period of 2004–2013 a decreasing murder rate tendency world-wide is observed (except 2008–2009, when the number of homocides increased). According to UNODC statistics, in 2011 Lithuania's murder rate was 6.9 per 100000 inhabitants, exceeding European Union's (EU) mean murder rate (1.6:100000) several times. Most homocide victims are 38–52 years old, mean age of female victims (50.97 years) being higher than male ones (45.54 years). Men are responsible for the majority of violent crimes (82% world wide and 73.8% in Lithuania). Dominant among killing mechanisms were hard-blunt objects (52%). Only 6% of victims died from gunshot injuries. Alcohol intoxication was the most common finding in murder victims (58.6%). Medical care could not be provided to 71%. However it was more often provided for victims found outdoors than on premises ($p < 0.001$).

Conclusions. In this study we found that Lithuania has the highest murder rate in EU, being more similar to Eastern European countries by this indicator. In 2008–2009 number of homocides was influenced by the global financial crisis (decreasing GDP, increasing consumer-price index as well as increasing murder rates). Majority of victims were men – 73%, and since around 90% of prison inmates are men, it supports the most common homocide model of "men murder men". Young men, older women, alcohol consuming individuals belong to the high homicide risk group. Most victims were of working age (84%), which negatively impacts country's economy. The dominating mechanism of death – injuries caused by hard-blunt objects – is unique among European countries. While death from gunshot injuries rate in Lithuania is lower than the European average – 13%, which relates to a relatively low number of weapons in possession– 0.7 per 100 inhabitants.

EVALUATION OF BEHAVIORAL FACTORS OF STUDENTS
OF KAZAKH NATIONAL MEDICAL UNIVERSITY

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Keywords. Behavioral factors, students' health.

Introduction. The Republic of Kazakhstan implements programs targeted in improving it's health care system, affecting the most sensitive aspects of management of quality health care services to the population. KazNMU manages three hospitals and PHC facility, where the main affixed population are its students. One of the objectives of PHC of KazNMU is strengthening and capacity building of health of students through the integration of science-based education, prevention, treatment, involving into the process students themselves etc.

In this regard, for the implementation of objectives of the PHC, development of technologies improving PHC facility activities, its planning of strategies and programs on healthy lifestyles the study of behavioral factors of students is very urgent at the moment.

Aim. To analyze behavioral risk factors among students of KazNMU.

Materials and methods. A sociological survey was conducted anonymously among 3 thousand students aged 17 to 23 years from 1 to 5 courses of KazNMU. The structure of the questionnaire consisted of questions about the main spheres of life: nutrition, accommodation, general health, reproductive health, personal qualities of students, distribution of time for sleep, information about bad habits and physical activity.

Results. Regarding the behavioral risk factors of KazNMU students, it was revealed that the major share of smokers were hookah smokers – 24%, which is "popular among friends" and a very low physical activity of students, where only 22% of respondents regularly exercised at least 30 minutes daily. 20% of respondents for various reasons, are malnourished and do not receive the necessary nutrients, so overall frequency of gastrointestinal diseases among them was an average of 10%. 62% of respondents do not visit doctor and prefer self-treatment using online resources and folk remedies. Also, more than 80% of students do not work and have no additional workload affecting education process. Furthermore, it was found that 3rd year students are the most contrast on the questions of harmful habits, marital status (19.6% married), the frequency of cold diseases per year (usually 4 times – 24.6%), high rates of chronic diseases, namely 24% – bronchitis, 12% cholecystitis, etc.

Conclusions. The principle of PHC and health education of population, particularly the younger generation, especially among future doctors is strategically important for the socio-economic development of the country. According to the results of our study, and based on this research, a draft program to be developed to identify health needs and strengthen preventive care among 3rd year students.

ASTHMA MANAGEMENT AND INFLUENCING FACTORS OF TREATMENT EFFECT ANALYSIS

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Keywords. Asthma, FEV, medication, influencing factors.

Introduction. Throughout the world, about 300 million people suffering from asthma. It is expected that prevalence will increase caused by increasing environmental pollution, population urbanization, unhealthy dietary use and smokers proportion. The main objective of the asthma treatment is controlled asthma, which can be achieved by stopping smoking, avoiding allergens, stress and medications (beta-blockers).

Aim. To analyse influencing factors of asthma treatment in the adult population.

Materials and methods. Between February, 2015, and January, 2016, was conducted retrospective quantitative study in practice of pneumonologist. In study questionnaire were collected information from outpatient cards about patient gender, age, duration of asthma diagnosis, frequency of visits, forced expiratory volume (FEV_1), complaints, smoking status, profession, medication and asthma severity. All the data was analysed using SPSS.

Results. We had gathered data about 48 patients with average age 59.6 ± 18.8 years. Most of them were women (n = 36; 75%). The period of time for asthma diagnosis was 6.2 ± 7.8 years. For the majority of patients (n = 42; 87.5%) moderate persistent asthma were confirmed, often partly controlled (72.9%). More than one-fifth part of patients (20.8%) were active smokers and six – ex-smokers (12.5%). Measurement values of FEV during the visit ranged from 26 to 146% (mean 86.8 ± 24.9%). For active smokers FEV values were statistically significantly lower than non-smokers, respectively, 72.7 ± 23.0% vs. 90.9 ± 25.3% (p = 0.049). In patients with harmful working conditions FEV values were lower than with the safe, respectively, 89.2 ± 15.6% vs. 106.5 ± 24.9% (p = 0.196). Overall, more frequently asthma therapy was started with a short – acting beta agonists (60.4%), inhaled corticosteroids and long-acting beta agonist combination (68.8%). Less frequently in treatment were used systemic glucocorticoids (8.3%), leukotriene modifiers (12.5%), combination of beta agonist and M cholinoblockers (8.3%), short-acting M cholinoblockers (8.3%) and inhaled glucocorticoids (16.7%). FEV was statistically significantly higher in users of metered dose inhalers than dry powder inhalers, respectively, 75.1 ± 10.1% vs. 58.4 ± 15.8% (p = 0.002).

Conclusions. Difference in FEV measurements according to the smoking status had shown negative influence on asthma treatment effect. Work conditions connected with different types of dust, paints had a negative impact on the FEV values compared with employment without mentioned factors. FEV differences observed in different kinds of drugs forms could be related with correct inhaler technique. Pharmacist could have an important role in patient education about healthy lifestyle, the dangers of smoking and the correct use of inhaler to improve quality of asthma treatment.

LONG TERM THERAPY OF BENZODIAZEPINES AND THEIR ANALOGUES: A PROVOCATION FOR ROAD SAFETY?

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Keywords. Benzodiazepines; adverse effects; accidents.

Introduction. Benzodiazepines (BZDs) and their analogues (Z-drugs) are often used as a primary therapy in the case of sleep disturbance which in long term can increase the risk of dependence and adverse reactions such as cognitive and psychomotor impairment. In the last year total number of road accidents in Latvia had been increased. Studies in other countries had demonstrated the relationship between driving safety and use of BZDs and their analogues.

Aim. To analyze the relationship between adverse effects of BZDs and the kind of road accidents.

Materials and methods. The quantitative research was made from July to November 2015 by including respondents who received BZDs or Z-drugs. The co-criteria of selection were existence of driving licence and at least one traffic accident in the last 3 years. The respondents were asked to fill anonymous survey in which demographic data, information about insomnia, prescribed medication, number and kind of road accidents were collected.

Results. In the study were included 57 parcipitants, most of them (89.5%) were women with an average age 46.6 ± 16.8 years while men were slighty older – 57.8 ± 16.4 years. Higher education had acquired 59.6%, intellectual occupation – 63.2% of study population. In the last 3 years in 29.8% of all cases women had one road accident and more than in the half of them (64.8%) one vehicle had involved. Statistically significantly heavier and more frequent accidents were caused by men, respectively, 10.6% of them had experienced four or more accidents in which were involved walkers (5.3%) or other vehicle (7.0%) ($p < 0.001$). The most common accidents were experienced by users of intermediate-acting BZDs (56.1%), which is by 23.3%p more than in users of short acting BZDs. Adverese reactions were observed by 56.1% in group of long-term (≥1 year) treatment. In study population with regimen once daily, adverse drug effects observed in 47.6% of long-term users manifested like cognitive impairment (35.7%), while psychomotor dysfunctions were noted by 14.3% p less frequently. Daily users of BZDs were observed adverse effects in 47.6% cases, most frequently like cognitive impairment (35.7%), rarely by 14.3%p like psychomotor dysfunction. 19.3% of BZDs users were been involved in one road accident of which more than one third of cases (36.8%) were caused by one vehicle.

Conclusions. The third part of BZDs and their analogues users experienced at least one accident on the road in the last 3 years, most of which caused by one vehicle (68.4%).The duration of hypnotic therapy more than 1 year contributed to the development of adverse reactions of which cognitive disorders were dominant. The observed trend may pose a potential risk to road safety.

ACTIVE SMOKING ATTRIBUTABLE CANCER MORTALITY IN LITHUANIA IN 2003–2013

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Keywords. Mortality, smoking, smoking attributable mortality, cancer, smoking attributable fraction.

Introduction. Strong evidence coming from vast number of studies worldwide shows that tobacco smoking increase risk of cancer, vascular disease, respiratory diseases and has serious effects on reproductive health. Tobacco use is responsible for 22% of all cancer deaths. It is worrying that Lithuania has extremely high mortality rates from specifically smoking related diseases. One of the most important measures for ascertaining the impact of tobacco is the estimation of the mortality attributable to its use. To our knowledge this is the first attempt to quantify specific smoking related disease mortality in Lithuania.

Aim. To estimate the number of active smoking attributable cancer deaths in Lithuania in 2003–2013.

Materials and methods. Sex, age and disease specific mortality was calculated by applying the smoking attributable fraction. Prevalence estimates of current and former smokers among Lithuanian adults aged ≥35 years based on the Health Interview Survey 2005. Mortality data was obtained from the Institute of Hygiene Health Information Centre.

Results. Overall, 20782 deaths from cancer in Lithuania were attributable to smoking – 19223 men and 1559 women deaths in 2003–2013. This accounted for 37.9% of total cancer mortality, 8.1% of women and 54.1% of men) and 4.4% of total all cause mortality. The leading four causes of smoking attributable cancer deaths were Trachea, Lung, Bronchus Cancer (12436), Colorectal Cancer (2004), Stomach Cancer (1745) and Pancreas Cancer (921) accounted for 82.3% of the smoking attributable cancer mortality. Smoking attributable cancer mortality was highest in 2006 and 2007.

Conclusion. Smoking causes a considerable burden in Lithuania. Tobacco use caused one out of 144 female cancer deaths and one out of 13 male cancer deaths in 2003–2013. Many effective and comprehensive interventions exist that can reduce cancer related mortality in Lithuania.

COLORECTAL CANCER SCREENINGS, PATIENTS POPULATION IN FAMILY PHYSICIAN PRACTICE

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Keywords. Screening, colorectal cancer, general practice.

Introduction. Colorectal cancer (CRC) is the most common type of gastrointestinal cancer. Most important factor in decline of CRC is early detection through screening programs, thereby making possible to prevent disease while it's not progressed too far. In last five years morbidity and mortality of CRC have grown in Latvia. Each year 1000 people are diagnosed with CRC where more than 700 die. Reason for so high mortality is absence of early disease diagnosis and poor people responsiveness in their health check.

Aim. Is to estimate population of the patients who are informed about CRC screening programs.

Methods and materials. Questionnary with 11 questions relate to CRC screeneing programm was created and given to patiens from four family physician practices. Responded data was summarized and processed with SPSS data processing methods.

Results. 131 patients aged between 50 and 74 participated to CRC screening programs via family doctor practices. Average age: 61.7 years. 90% (n = 118) of respondents was educated about screening programs by family doctors. 66% (n = 86) from overall respondents were women, and 73% of them at least once took a test for CRC screening, and 34% (n = 45) of respondents were men, and 74% (n = 97) of them at least once took a test. Fact, that test is free of charge, was considered as an appreciable advantage by 94% of respondees. 87% appreciated that test can be done home, 74% thought test was easy to understand, simple and straight forward, 61% noted that screening programs are very useful to diagnose cancer in its early stage.

On the other side, 3% of respondents pointed out that test instructions was poorly undestandable, 13% thought test process itself wasn't very plesant and 1% run out of time to prepare and take analysis in the mornings.

26% of the respondents didn't took a test because of the followig reasons: 9% of cases family doctor havn't provided educational information, 63% didn't have any health issue complains, 13% was afraid of possible results, 22% didn't took becaus of unplesant test process, 9% thought test was not necesary, 3% of respondents forgot to take and / or return analysis and 3% didn't visited family doctor at all, to get information about CRC screening program options. Once a year test was completed by 16% women and 35% men. 5% respondents got informed about CRC screening program from other sources, such as, gastroenterologist, gynecologist, pulmonologist or otorhinolaryngologist. 89% of respondents are going to continue to do screening tests in the future, but all respondents agree, that program is important and needed.

Conclusion. Based on collected data, my conclusion is that family physicians actively keep patients informed about CRC screening programs. Thought, number of respondents that keep taking the test each year is very low. And that is because of insufficient participation in their own health care, lack of understanding why tests should be taken reguraly as well as fear from results, unpleasant test process or they just dont have any health complaints.

CAN PRESCRIPTION BE THE NOTABLE PROOF
OF ADHERENCE?

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Keywords. Arterial hypertension, patient adherence, prescription.

Introduction. Nonadherence to prescription medication has received increased attention as a public health problem. Lower adherence are associated with diuretics and beta blockers (BAB) but higher adherence rates associated with angiotensin-converting-enzyme inhibitors (ACEI).

Aim. To examine the factors affecting patient adherence to antihypertensive therapy based on the circulation of the prescription count and drug substances in long-term tendency.

Materials and methods. A retrospective quantitative study was conducted from January 2015 to January 2016 analyzing prescription circulation and dispensed drugs for arterial hypertension treatment at "Aura-Farm" Ltd. pharmacies. Inclusion criteria – patients who visited the particular pharmacy repeatedly to get their medicine for arterial hypertension. Year was divided into four periods over three months (A, B, C, D). Data were collected about patient`s sex, age, the prescribed medicine by its chemical name, quantity, amount of recieved drugs.

Results. The study collected data on 198 patients in period A, 104 in period B, 68 in period C and 56 in period D. The majority of them (65%) were women. The mean age of the population was 71.6 ± 11.2 years in range from 38 to 100. The average age differed statistically significant – for men 68.0 ± 12.1 years and women 73.3 ± 10.5 years ($t = 3.142$; $p = 0.002$). A significant increase of drug usage was observed when compared periods A and D but decrease-periods C and D. From single dose drugs BAB and ACEI had the highest increase (12.5%; 4.1%). Diuretics had the most significant reduction (of 7.2%) then calcium channel blockers (CCB) with 6.7%, angiotensin receptor blockers (ARB) and statins with 0.6% reduction. Fixed-dose combinations (FDC) drugs with ACEI, CCB and diuretics, CCB and ACEI, diuretics and BAB, CCB and ARB had the highest increase, respectively 7.1%; 4.7%; 3.1%; 2.1%. Diuretics and ACEI had the most significant reduction (of 7.6%), followed by FDC drugs containing diuretics and ARBs with 2.4% reduction (comparing periods B and C), 2.6% reduction (comparing periods C and D) and 5% reduction (comparing periods B and D). The same situation was observed in terms of the number of prescriptions. A significant changes were observed when compared periods A and D. The number of one and two prescriptions decreased (of 18.9% and 1.3%) but three, four and five prescriptions increased (2.7%; 2.2%; 12.6%).

Conclusions. Decrease of drug usage may indicate that chronic patients got tired of using medicine in long-term. CCB had lower adherence than BAB. Single dose drug reduction and FDC drug increase showed benefit of FDC drugs in long-term therapy. The changing situation with the number of prescriptions dispensed confirms patient nonadherence. There is a possibility that patients make their own drug regimen which could be explained with possible patient drug accumulation and deterioration of health.

16 March 2016

SMOKING AND ARTERIAL HYPERTENSION – FRIENDS OR ENEMIES?

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Keywords. Smoking, arterial hypertension, drug therapy.

Introduction. Smoking is one of the most important factors in the development of heart disease. Smoking process results in an increased risk of blood clots, as well as the risk of arterial hypertension, especially in older people. The smoking harmful influence is characterized by the number of cigarettes smoked per day and duration of smoking. In Latvia the number of smokers is increasing, more than 5% per year. Daily smokers are aproximately 36% of the population. Smoking affects the pharmacokinetics of drugs by inducing of enzyme activity, as a result decreases the therapeutic effect of drug. Physicians and pharmacists are required to take into account the smoking status in case of failure of desired therapeutic effect.

Aim. Analyze relationship between the hypertension drug therapy effect and smoking status.

Materials and methods. Between December, 2015 and January, 2016, was conducted quantitative study in the open type pharmacy in Riga. Respondents with diagnosed arterial hypertension who received fixed combination therapy with or without monotherapy were surveyed anonymously to collect information about age, sex and smoking status. Statistical data processing was performed with SPSS software.

Results. We have gathered data from 103 participants, whose average age was 62.5 ± 12.5 years, most of whom (64.1%) were women with an average age 64.8 ± 11.6 years, while the men were younger – 58.4 ± 13.0 years (t = 2.542; p = 0.013). The majority of respondents had never smoked (49.5%), others were smokers or ex-smokers, respectively 20.4% vs 30.1%. Men smoked statistically significant more often than women, respectively 12.6% of all smokers (p = 0.001). Women were more active in smoking cessation than men, accordingly 17.5% vs 12.6%. The average number of cigarettes smoked per day was 12.6 ± 6.1, which between the sex differed statistically significant, respectively men smoked (n = 13) 14.8 ± 6.2 cigarettes per day, women (n = 8) – 8.4 ± 2.9 (t = 2.754; p = 0.012). Active smokers were more in elevated blood pressure group than well controlled, respectively 12.7% vs 7.8% (p = 0.264). Comparing smoking and age of the respondents, statistically significant difference were observed, respectively average age of smokers (n = 21) were 55.4 ± 9.3 years, but non-smokers were older – 65.2 ± 12.5 years (p = 0.002).

Conclusion. Younger respondents do not pay attention to the harmful effect of smoking, despite the warnings of the increasing risk of cardiovascular events, uncontrolled arterial hypertension. Smoking popularity more pronounced among men, thereby this sex could also be topical audience during pharmaceutical care process.

THE AVAILABILITY AND USE OF STATE-FUNDED SCREENING PROGRAMS

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Keywords. Screening program, breast cancer, cervical cancer, colorectal cancer.

Work actuality. The incidence of oncological diseases in Latvia remains at a high level and this is the second leading cause of death in the country. According to the statistical data of Disease Prevention and Control Centre, over the past decade indicators of oncological diseases in Latvia have increased by 39%. Unlike other countries, in Latvia is much higher the proportion of malignant tumors, which are detected at later stages, and as a result a higher mortality rate. In Latvia there is a high proportion of cancer detected at late stages, ie. the number of cases of 3rd and 4th stage is about 40%. Compared to European countries, the incidence of malignant tumors at late stage is been discovered by around 20% of patients. The screening program which has been paid by state enables to diagnose the disease early, and this significantly affects the effectiveness of the treatment.

The **Aim of the study.** The aim of the study is to determine how many respondents used the opportunity of screening program, and to evaluate respondents' knowledge and understanding of screening and also the reasons for non-use screening.

Materials and methods. Type of study – prospective. The study consists of 51 inquiry. All respondents are women, the average age is 35 years. Women were interviewed using the questionnaire method.

Results. Respondents participated in the study are at age group from 25 to 35 years (37%) and the age group from 55 to 65 years (31%). From all respondents 69% replied that screening program is the opportunity to make the test which is paid by state, 90% of respondents said that screening includes cervical cancer test, and 53% also noted mammography as a screening component. Only 20% of respondents are informed that screening includes also colorectal cancer test. Of all the respondents 80% were invited to the screening program, but only a half – 55%, used this option, while 45% of women has not used the screening. Only 39% of the people took cervical cancer screening. But women from age of 50 are using a breast cancer screening in 70% of cases, but 80% failed to use colorectal cancer screening, because they do not receive an invitation from family doctor. In addition it was found that 82% of respondents stated that the family doctor has never told them about the screening and failed to explain how to perform it properly. Women identified the following reasons why they do not use screening: 32.2% of women do not have time, 19.4% do not feel that this is important, and 48.4% have not received invitations.

Conclusions. The results show that most part of respondents receive invitations to perform screening, but nearly half use this option. The surveyed women in age 50 use the possibility of breast cancer screening more actively (70%). From the results obtained it can be concluded that both age groups have a weak awareness of colorectal cancer test, which is to some extent related to the information provided by the family doctor. Most of the women surveyed admitted that the family doctor has not given to them the information or explanation

on screening, including a call to colorectal cancer test. The information provided by respondents also shows that the cause of not using the cervical cancer test among young women is the lack of time, or the opinion that this question is not so important. The obtained information leads to the conclusion that it is necessary to raise public awareness about screening capability and about the reasons why it is important to make screening and also about the goal – to diagnose the disease early and start treatment.

DIVIDING TABLETS – RISK OR BENEFIT?

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Introduction. The use of fixed-dose combination medicine in the treatment of arterial hypertension is becoming ever more common due to its simplified use and improved patient compliance. The vast majority of fixed-dose medication must be taken undivided; a fact clearly specified in the package insert instructions of use. The visible line on the pills often leads to the misuse of the medicine by patients provoked into believing they are meant to be split.

Aim. The main goal of this research was to investigate if the desired effect on arterial hypertension therapy is influenced by the divided use of the fixed-dose combination medicine.

Material and methods. The prospective quantitative study was conducted from December 2015 to January 2016, including 103 patients with arterial hypertension undergoing a fixed-dose combination therapy. The survey registered data on medications being used and habits of use, as well as the dividing of fixed-dose medication. Arterial blood pressure was measured for all patients with a desired base goal of < 140/90mmHg. The data was then analysed using SPSS.

Results. The mean age of the surveyed patients was 62.5 ± 12.4 years, with women constituting 64.8% (n = 66). The average systolic BP was 135.8 ± 11.3 mmHg and diastolic BP 87.3 ± 11.2 mmHg. During the course of the survey increased blood pressure was observed in 45.6% (n = 47) of the patients, of which 61.8% (n = 32) were more likely to divide their medication compared to the patients who did not divide their fixed-dose combination (31.9%; n = 15), p = 0.254. Observations showed that since the beginning of their combination therapy for arterial hypertension 45% (n = 45) of patients did not reach their desired level of BP, a statistically significant portion of these patients (n = 34) admitted to dividing their medication (75.6% vs 24.4%; p = 0.012). Patients who did not read package insert instructions for use (n = 51) were 3 times more likely to divide their fixed-dose medication (74.5% vs 25.5%; p = 0.010).

Conclusions. Patients who divide their fixed-dose combination medicine were statistically more likely not to achieve expected blood pressure levels. Patients in the habit of not reading package insert instructions tend to use fixed-dose combination medicine incorrectly, leading to a decreased efficacy of the arterial hypertension therapy. It is very important that pharmacists pay more attention to correct use of drug doses in accordance with the doctor's treatment regimen.

PATIENTS' ATTITUDE TOWARDS STUDENTS' PARTICIPATION IN THE PROCESS OF THE TREATMENT IN THE PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL

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Keywords. Patients' satisfaction, students, education, hospitalization.

Introduction. Education of the medical students in clinics is very important part of the studies. Communication and clinical skills are one of the most important prerequisites for students to continue building a successful career as a doctor after studies. These kind of skills can be acquired only in real clinics, where students can get experience by working with real patients. The number of students from Rigas Stradins university (RSU) who are studying different subjects in Pauls Stradins Clinical University Hospital (PSCUH) is high. Meanwhile the number of patients in the hospital isn't so high. As a result lots of students visit single patient, which could make patient uncomfortable and also limit students' education. It should also be considered that some patients might have negative attitude towards students' education in the hospital.

Aim. Find out patients' attitude towards students' presence during hospitalization and students' participation in procedures and describe students' flow to patients in the Pauls Stradins clinical university hospital.

Materials and methods. 1. Interviewing 100 patients (50 men and 50 women) in a different types of the departments in the PSCUH. 2. Comparing the number of the hospitalized patients in the PSCUH with the number of the students in the RSU who have different subjects in the PSCUH.

Results. 134 patients were approached to participate in the survey. Survey was held in the following wards – Ward No. 32, Ward No. 15, Ward No. 10, Ward No. 3 and Ward No. 18. 34 patients refused to participate in the survey. From 100 patients (median age 54), who participated in the survey, 28 patients were hospitalized only for scheduled examination. 9 patients admitted presence of chronic pain during hospitalization. 63 patients agreed with a presence of medical students, while 23 answered – "Do not care". 32 respondents have been visited by medical students, 72% (n = 23) patients were visited 2–3 times per week. Students came without doctor in 81% (n = 26) of the visits. 58 patients agreed to be examined by students with a doctor's attendance. 2 patients noticed some kind of unusual things in students' outfit. Patients had mostly negative attitude towards piercing – 72 answered "negative". During period from 1st February 2015 till 31st May 2015 ratio between number of students and hospitalized patients was 2148/21530.

Conclusions. Most of the patients (63%) accept presence of the medical students during their hospitalization, however only 32% of the respondents were actually visited by medical students. Thus certain patients are visited multiple times, which can be bothersome for these patients. Ratio between students and patients is around 1:10. However factors like patients' health condition, attitude towards students makes students' presence impossible.

HORMONAL MEDICINE – WITH WHAT AND WHEN WE ARE RISKING?

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Keywords. Hormonal medicine, contraception, progesterone.

Introduction. In scientific literature can be found contradictory information about venous thromboembolism (VTE), depending on the hormonal contraceptives (HC) combination. Research data shows that women who used estrogen HC combination with levonorgestrel, VTE risk is lower than for women who used estrogen in combination with third-generation progesterone. In the researches are recorded factors that additionally affect the risk of VTE: age (> 35 years), smoking, elevated body mass index, immobilization, and in a personal or family anamnesis found thromboembolism or thrombogenic mutations. An increased risk is also listed for certain birth control methods, such as transdermal patch and vaginal ring.

Aim. The aim was to analyze the available sources of information on the VTE risk influence on hormonal medicine prescribing tendency.

Materials and methods. During the period from March 2015 to October 2015 it was carried out a quantitative study, including women who were prescribed hormonal therapy. Participation in the study was voluntary, filling the form in one of the Riga drugstores during hormonal medicine purchasing time. Basic data was collected about the woman's age, diagnosis code, the hormonal medicament patented name.

Results. During the study data were collected from 180 women with an average age of 36.0 ± 11.1 years. 96 women (53.3%) were aged over 35 years. 87 women (48.1%) had the most common diagnosis code Z30 – contraceptive measures. Combined hormonal therapy was prescribed in 87.3% of cases. Depending on the hormonal medicine prescribing frequency dominated the third generation gestagen (n = 143; 79.0%), a relatively uncommon was prescribed the first (n = 22; 12.2%) and the second (n = 10; 5.5%) generation progesterone therapy. Additional reminders about the prevention of the presence of risk factors – smoking cessation, body mass index reduction – can improve both the quality of pharmaceutical care and drug safety. The third generation progesterone statistically significantly more likely was prescribed to women older than 35 years as contraceptive measures than for other indications, respectively, 42.7% versus 26.0% ($p < 0.001$). Women younger than 35 years, the third generation progesterone therapy was used statistically significantly more likely than any other generation of hormonal medicament respectively, 51.2% versus 40.5% of cases ($p = 0.049$). 20.7% of women smoke daily.

Conclusions. The most common hormonal medicaments were prescribed to women in reproductive age for contraception purposes. The available scientific information on the increased risk of VTE with third generation hormonal contraception does not reduce the mean prescribing tendencies of this generation drugs. Third generation progesterone contraception incidence was high not only for the whole study population, but also women in the group with the presence of additional risk factors – age ≥ 35 years.

THE SOCIAL ISSUES OF RURAL IN KAZAKHSTAN

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Keywords. Social problems, poverty, alcohol abuse.

Introduction. The development of any program document has always a social context, in other words, takes into account certain demands of the population, for which the program is addressed. In this regard, the development and the implementation of a rural health promotion program should take into account not only education and physical health issues, but also should consider the existing social problems. The populations' health promotion involves not only the improvement of physical and mental health, but social well-being also.

Aim. The objective of the present study was to investigate the social problems of rural population.

Materals and methods. The present study was performed by a group of medical students. They used participatory video method of the study with a series of interview and survey of habitants of villages Ushkonyr and Shelek. The study included 100 persons of different nationalities of the population. The study was not carried out earlier in Kazakhstan. The questionnaire included questions for clarifying and description of a social basis of life of rural residents such as economic well-being of families, satisfaction of the population with rural infrastructure, the level of social services. Another group of questions was given during interview of medical professionals serving these villages residents to study the main causes and the prevalence of social diseases such as tuberculosis among the rural population.

The results. The survey showed that villagers are most concerned with the problem of low wages and poverty (84% of respondents). The second priority identified by rural residents was – high rate of unemployment (51.3%). The third issue of villagers' concern was of alcohol abuse (39%).

A big difference was found between male and female respondents regarding these three priority issues. The issue of low wages and poverty was indicated by 54.4% of women and 82.4% of men. 50.7% of men and only 17.4% of women have identified unemployment as a second issue. And alcoholism was an important problem for 14.9% of women and 39.1% of men.

Apart of these problems, poor living conditions, irregular transport and lack of nurseries and preschool institutions nearby were of women's concern. The list of social issues villagers concern included also a heavy physical load (36%) and lack of educational opportunities (34.3%).

Socio-economic concerns of rural people depend on their age: the younger age residents were interested in job, education and entertainment opportunities. In the age when acquires a family, respondents are naturally concerned about issues of availability of nursery and kindergarten, quality of health care services and education. In adulthood, villagers raised issues of alcoholism and quality of living conditionand medical care. In the old age, respondents were concerned about availability of medical care and transport services.

Conclusion. Rural respondents specified a number of social and economic problems they face in everyday life. The issues of most villagers' concern arethe low wage and poverty, unemployment and alcoholism, poor opportunities for education and hard physical work. The vast priority problems list depends on the age and sex of the respondent.

PUBLIC OPINION ABOUT ORGAN DONATION
AFTER DEATH

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Keywords. Informed consent, laws, organ donation after death, public opinion, transplantation.

Introduction. Organ donation after death is giving chance to live one or more people, when there is no other chances for life. There has always been big discussion about organ donation after death, that's why it is important to understand public opinion. Qualification work theme is live, because statistics show that several dozen people die without getting organs. In the same time activity making decision about organ usage after death is consistently low.

Aim. Find out public opinion about organ donation after death.

Materials and methods. Quantitative research, total amount of 320 respondents. In the Paper the author has used scientific literature, publicistic literature, materials and statistical data relating to theme.

Results. 28% from respondents answered corectly that will to donate or prohibit organ donation in Latvia can be done in The Office of Citizenship and Migration Affairs. In question "Have you discussed issue of organ donation after death in your family?" 51% said no, 17% said yes and 32% others. In question "Please select the option that best describe your willingness to donate or not to donate an organ after your death?" 23% of respondents answered that they would allow organ transplantation if their relativs would benefit from it. 48% from respondents would allow to use organs in all cases. Would you agree to be organ donor after death? 21% of respondents has never thought about it, 15% told that they are considering this idea, 10% said clear no, 31% said yes. "Would you agree to receive other human organs, if it would depend on your life?" no 5%, yes 86%. "Would you like to receive more information about the opportunity to become donor after death?" 18% yes, 37% yes – Yes, because it would give me a chance to think and maybe become a donor after death. 5% yes because I have never heard about this possibility before.

Conclusions. Hypothesis – Public attitudes are negative in organ donation after death-failed, becauce 31% of respondents told that they would donate they'r organs and 15% are thinking about it. The law states that human organs can be used if a person has not signed the refusal or his relatives did not object. Legislation ir Latvia is incomplete, person have no way to choose whom (science or other people), and how they would like donate. People are woried if they will be treated in their best interests at the end of life. 16% of respondents who said NO to organ donation fear that they will be given lower health care, as a result, they might die. 86% of people told that they would like to recieve organs if it would be needed, despite that only 31% said yes to giving their organs.

THE WELCOME OF PRESCRIPTION STICKERS
IN PHARMACIES!

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Keywords. Pharmaceutical care, prescription stickers, criteria.

Introduction. From the 1st January of 2016 all pharmacies in Latvia must apply an informational sticker on each prescribed medication packaging. This also applies for primary packaging, if the patient has been prescribed quantity less than full secondary package. The compulsory criteria for the stickers are described in Cabinet Regulation No 288 of 23 March 2010 "Regulations Regarding Operating of Pharmacies".

Aim. To observe the adjustment of pharmacies for the new regulation for obligatory prescription stickers.

Materials and methods. In January, 2016 quantitative prospective study was conducted in pharmacies of Riga. The experimental model consisted of purchasing small quantity of the nonsteroidal anti-inflammatory drug without secondary packaging. Each prescription could be used repeatedly. Criteria for evaluating the stickers were used from Cabinet Regulation No 288. Stickers were analysed for its size, localization and information that included: pharmacies name, address, telephone number, patients name and surname, medications name, dosage, number of units, instructions for use, purchasing day. It was also noted if the information was repeated verbally. Data was statistically analysed with SPSS.

Results. 29 (82.9%) of 35 pharmacies did not apply a sticker on the primary packaging, but 7 (20.0%) gave the information about usage verbally. In 26 (74.3%) pharmacies nothing of pharmaceutical care was provided, only the purchasing process. Whereas 4 (11.4%) (p = 0.002) cases lead to full pharmaceutical care. Only 2 (33.3%) stickers corresponded all criteria. The most common inaccuracies were: information about patient (3; 75.0%), name of drug, dose and usage (1; 25.0%). They were mostly made by a similar design (5; 83.3%), with only one adjusted differently. Average length of the labels was 58.2 ± 0.4mm, width – 43.2 ± 7.8mm.

Conclusion. Prescription stickers in Latvia mostly corresponded all criteria described in Cabinet Regulation No 288. The issue was that these stickers usually did not apply on a packaging every time at the moment of purchase of drug, nor the usage was repeated verbally. Maybe the term since integration was too short by the time the experiment was made and all pharmacies did not adopt the new requirements at this time.

INDIVIDUAL VALUES, INDIVIDUAL ANOMIE AND DRIVING BEHAVIOR RELATIONSHIP

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Keywords. Driving behavior, individual anomie, individual values.

Introduction. Several countries have made fatal road accident reduction, but the total number of accidents remains unacceptably high – 1.24 million people a year. (World Health Organization, 2013).

Although in recent years the number of fatal collision in Latvia has decreased, but in comparison with other European Union countries, it is still quite high. In 2012 there was a significant reduction in road traffic accidents, but unfortunately, in 2013 and 2014, road traffic accidents occur on an upward trend (CSDD, 2015).

There is currently no clear evidence of whether individual available, essential values and anomie predict driving behavior, the author has not been able to find such studies, so it is necessary to examine whether individual anomie and values predict driving behavior.

Aim. To examine whether individual values and individual anomie predict driving behavior for drivers.

Materials and methods. In study participated 200 participants aged 21 – 65 years. All of participants were Latvian speaking. Participants propose to fill out a questionnaire on the internet by placing advertising on various social sites, like-minded groups and forums. First, participants had to answer questions on demographic information, then the questions represented by the three surveys. First was "Latvian driver behavior survey" (*Perepjolkina* & *Voita*, 2011). Participants in 5-point Likert scale (1 – never to 5 – very often) was proposed to estimate how often they proceed as described in the following statements. Final version of the survey consists of 26 statements, 4 scales measured distracted driving, aggressive behavior against other traffic participants, risky driving, safe and courteous driving. Cronbach's alpha coefficients for all subscales ranged α = .65 – .80.

Second was "The value and levels of availability relations in different spheres of life" (*Фанталова*, 2001). Respondents were offered 2 tables, first, to establish a hierarchy of 12 values, the second to assess which of these values, in his opinion, it is easier to reach.

The third questionnaire was "Anomie questionnaire" (Ļevina, Mārtinsone, 2015; Ļevina, Mārtinsone et al., 2014; Ļevina, Mārtinsone & Kamerāde, 2015). Anomie questionnaire measured three dimensions of anomie – social distrust as component of normlessness, social isolation and worthlessness. Cronbach's alpha coefficients for all subscales ranged α = .69 – .84.

Results. Results showed that individual values and individual anomie can significally predict driving behavior for drivers.

Conclusion. The study results provide depth coverage insight and understanding of possibilities to improve traffic and driving behavior in Latvia.

DEPRESSION, ANXIETY, EATING BEHAVIORS, BMI AND BODY IMAGE DISTRESS CORRELATIONS STUDENTS

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Keywords. Depression, anxiety, eating behavior, BMI, body image distress, students.

Introduction. Depression is a common illness worldwide, with an estimated 350 million people affected. If depression is prolonged and moderate or severe intensity, depression may become a serious health condition (WHO, 2015). Anxiety is the most widespread mental health disorders, about 16% of the population worldwide (Hovenkamp-Hermelink, Riese, Veen, Batelaan, Penninx, Schoevers, 2016). Based on Van Strien (Van Strien Fjiters, Bergers, Defares, 1986) theory is definitely 3 eating behaviors: emotional eating, restrained eating and external eating (Bailly, Maitre, Amanda, Herve, Alaphilippe, 2012). Body Mass Index furnish useful information for the world's population body weight and height relations. The World health Organization indicate that obesity has become an epidemic in today's society, which can lead to serious chronic diseases (WHO, 2015). Body image distress is like a motivator to improve their health behavior, although there are other views that body image distress is associated with other symptoms of psychological distress (Schwartz, Brownell, 2004).

Aim. Aim of the study was to identify depression, anxiety, eating behavior and body image distress correlations students, controlling sex and BMI.

Materials and methods. The study included 100 Riga Stradiņš university students (50 women (mean age 25 years) and 50 men (mean age 25 years)), who completed 4 questionnaires: socio-demographic data questionnaire, which includes questions about the respondents' gender, age, education level, body weight, height, physical activity level. "Dutch Eating Behaviour Questionnaire" (DEBQ); author – van Strien, 1986; adapted Latvian Majore Dūšele, Vāverniece, 2009; which includes 3 subscale: 1) Emotional eating, 2) External eating and 3) Restrained eating. "The Situational Inventory of Body Image Dysphoria" (SIBID). The author – Cash, 2000; adapted Latvian Majore Dūšele, Vāverniece, 2009. 20 questions – a 5 point Likert scale. "Latvijas klīniskais personības tests". The authors – Perepjolkina, Koļesņikova, Mārtinsone, Stepens. 600 questions – a 4 point Likert scale.

Results. It was found a positive correlation between depression and eating behavioral indicators, as well as between depression and emotional eating characteristics. It was found a positive correlation between anxiety and eating behavioral indicators, as well as between anxiety and emotional eating characteristics. It was observed that this commitment is more pronounced in women. A positive correlation exists between body image distress and BMI indicators and this relationship is more pronounced in women. It was found that eating behavior (emotional eating) more women predicts depression rather than anxiety.

Conclusions. The results obtained indicate that people with depression or anxiety disorders can be altered eating behavior, which can be as one of the causes of eating disorders. It was also found that students with increased BMI are lower rates of body image distress in the survey, from which it can be concluded that reducing BMI may increase satisfaction with body image.

16 March 2016

PARENTS KNOWLEDGE OF INFANT AND TODDLER ORAL HEALTH CARE IN LATVIA

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Keywords. Infant, toddler, oral health care, parents knowledge.

Introduction. Infant and toddler health care and well-being is highly dependent on their parent's knowledge and beliefs regarding various health issues. Assessment of mother's knowledge and attitudes regarding infant and toddler oral health and dental care will help to make infant and toddler oral health promotion programs more effective.

Aim. The aim of this study was to assess the knowledge and attitudes of mothers in maternity wards regarding oral health care of their infants and toddlers, and to evaluate the extent to which it is dependent on their socioeconomic status.

Materials and methods. In this quantitative study 1201 mothers of newborn children from 18 maternity wards in Latvia were asked to complete a survey consisting of 33 questions about their knowledge, attitudes and socioeconomic status. Descriptive statistics were obtained and percentage frequency distributions of parental responses to questions were calculated. Study data was analyzed using IBM SPSS software.

Results. Overall knowledge level regarding infant and toddler oral health care issues was low among the surveyed mothers, only 20.6% of the mothers were aware that a child's first visit to the dentist should be before he turns one, and only 1.6% knew how much fluoride should the toothpaste designed for an infant or toddler contain. Mothers under the age of 20, mothers living in rural areas, mothers living in households with income levels below 300 EUR per month and mothers with only primary school education had the lowest levels of knowledge. Mothers living in the capital, mothers with higher income and education levels, and mothers aged 30 – 40 had better knowledge, although the level of knowledge was still insufficient. Mothers living in rural areas and farmhouses were less knowledgable about infant and toddler oral health issues and had poorer access to dental health care. Mothers taking care of their first newborn were less knowledgable about the proper way to clean the teeth of infants and toddlers. In general, mothers had a positive attitude towards infant and toddler oral health care. Those with a negative attitude were most often mothers with only primary education, household income levels below 300 EUR per month, mothers under the age of 20 and mothers with three or more children.

Conclusions. The study shows that the overall knowledge level regarding infant and toddler oral health care issues is low among the surveyed mothers, and it is dependent upon their socioeconomic status and education level. Mothers' knowledge about the use of florideas as the most important part of infant and toddler dental care is extremely poor regardless of their socioeconomic status.

CORRELATION OF FACTORS DETERMINING THE CHOICE
OF NURSE'S CAREER AND STUDY MOTIVATION

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Keywords. Nursing profession, career choice, factors, student learning motivation, and professional orientation.

Introduction. Recently, the choice of profession has become a topical issue in our society. The nursing specialty is not prestigious in the context of other specialties, but its importance and necessity is undeniable (Kaliatkaite, 2011). Nursing is one of the most important parts of the health care system, because in this area the largest number of health care staff members are working. The average age of Lithuanian currently employed nurses is 40–50 years, depending on the county (Starkienė, 2015). This means that nursing staff in our country is aging. This problem is becoming more acute as there is a decreasing number of young nurses. According to the data of many world studies (Gwendoline, 2010; Mooney, 2008; Hyun, 2009), the interest in the nursing profession is low. It has been found that only 5.2 percent of all health professions (including veterinary) nursing receives the smallest interest (Prater 2006). Only about 3 percent in Tanzania, about 9 percent in Australia, 10 percent in Kuwait, and most of all about 28 percent in Hong Kong (Özpancar, 2008).

Recently, these figures have not changed in the world due to prevailing misconceptions that the nursing profession is undervalued (Seagate, 2006). The other reasons are heavy workload, stress at work, and lack of staff. It is estimated that without an increase in opting the nursing profession and rapid aging of the population, the demand of such employees will continue to grow, and this will become an even more sensitive issue in our country.

Aim. To clarify the links between the factors influencing the choice of nursing career and motivation to learn.

Methods and materials. Data collection methods: analysis of scientific literature, written survey (using a closed-ended questionnaire). Data analysis methods: statistical analysis using SPSS 21.0 for Windows statistical data processing programme.

Results. The research results revealed that the majority of the respondents (i. e. 94.60 percent) were women. The results show that nursing has remained a profession for women. Even 72.9 percent of the respondents indicated that at least one person in their immediate social environment has chosen the nurse's profession. 18.9 percent stated that their mother is a nurse. The research identified the factors which have the greatest impact on the choice of professions: the opportunity to work abroad, free studies, needs of the labour market, career opportunities, access to medical education, and a calling for nursing. The statistical analysis showed that students are most motivated to complete their studies by the following factors: work security, access to medical education, needs of the labour market, career opportunities, the opportunity to work abroad or become a good specialist in this field, and a desire to help others.

Conclusions. The most motivating factors in choosing the nursing profession is the opportunity to work abroad, the opportunity to study free of charge, needs of the labour market, career opportunities, access to medical education, and there are cases of feeling a calling for nursing. The following personal students' characteristics had the biggest influence on the choice of nursing studies: tolerance, self-confidence, wisdom, thoughtfulness, patience, honesty, punctuality. The strongest motives that influenced the choice of nursing studies were a possibility to get acquainted with various diseases and nusring, treatment; the opportunity to change the work environment; films seen on television (e.g.: Dr. House, Emergency Room).

PATIENT WITH ELEVATED CARDIOVASCULAR RISK WILLINGNESS TO PARTICIPATE IN CARDIOVASCULAR PROPHYLAXIS BEFORE AND AFTER CARDIOVASCULAR EVENT

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Keywords. Participation, cardiovascular disease, risk, prevention, prophylaxis.

Introduction. Cardiovascular diseases are the leading cause of death and the substantial reason for increased health costs in Latvia. Incidence remains high despite many effective prophylactic measures ranging from lifestyle changes to adequate medical therapy. Patient unwillingness to participate in prevention programs may be one of the main reasons for this persisting problem.

Aim. Aim of the research was to evaluate and compare patient with elevated cardiovascular risk willingness to participate in cardiovascular prophylaxis in two patient groups – one group with cardiovascular event in history and other without it.

Materials and methods. 120 persons were invited to participate in this study. Participants were selected based on presence of moderate to very high cardiovascular risk described in the European Guidelines on cardiovascular disease prevention in clinical practice. 60 patients with and 60 patients without cardiovascular event were interweaved, in period from December 2015 to January 2016, using questionnaire which included questions about life style, diet and medication use. The data were processed using MS Excel and SPSS software and analyzed by descriptive statistics, crosstabs, Chi square test and independent samples T test.

Results. Mean age was 66 years ranging from 40 to 93 years. Average BMI was 30 and there were no significant difference in both groups. Statistically significant difference was found in total cholesterol levels. In the group with event it was 5.05 mmol/l opposed to 6.03 mmol/l in patients without event. ($p < 0.05$) In the patient group with event active smokers were 15% against 31.7% in healthy patients. ($p < 0.05$) Only 25% of patients with event takes part in 30min aerobic physical activity at least 3 times a week compared to 45% other group. No significant difference was found in frequency of general practitioner visits. In the patient group without event 8.3% took cholesterol controlling medications regularly, against 50% in group with event. ($p < 0.05$) In the group with cardiovascular event 61.7% does not use alcohol compared to 43% in healthy group. ($p < 0.05$) 38.3% of healthy patient group took blood pressure medication regularly opposite to 61.7%, but in 31.7% of cases in group without event

no medications were prescribed. (p < 0.05) 60.8% of all patients limit salt intake, 50% eat vegetables but 57% eat fruits at least 2 times a day. 37.5% eat fish 2 times a week. There were no significant differences in dietary parameter measures in both groups.

Conclusion. Willingness to participate in the prophylaxis differs from group to group in some prevention measures while in some are overlooked in both. In either case patients should be educated about healthy dietary habits and weight control. Smoking, alcohol intake and cholesterol control proved to be problematic area for patients without cardiovascular event, while lack of physical activity should be addressed in patients with event in history.

DEPRESSION, ANXIETY AND OPTIMISM RELATIONSHIPS WITH SOCIAL PERCEIVED SUPPORT AND ADHERENCE IN CEREBROVASCULAR DISEASE PATIENTS

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Keywords. Cerebrovaskular disease, patients, optimism, depression, anxiety, social perceived support, adherence.

Introduction. Cerebrovascular dysfunction, occlusive and hemorrhagic, is the third most common cause of death in this country and is very high on the list of disorders causing morbidity. Approximately 2 million people are now disabled from the effects of one or more cerebrovascular events (WHO, 2007). Considering into account the statistical data, it can be concluded that it's important to reduce an individual's disease risk factors and encourage cerebrovascular disease patients' recovery process in which a significant part is also one of the psychologist's activity areas – rehabilitation, which includes stroke caused by psychological effects (eg, depression, and anxiety) reduction, promotion of adherence, social support for and the development of positive intervention (Sheldenkar, Crichton, Douiri, Rudd, Wolfel, & Chen, 2014).

Aim. The purpose of the master paper was to found out, if their correlations between depression, anxiety, optimisms, social perceived support and compliance in cerebrovascular disease patients, to controlling gender.

Materials and methods. In general 150 Latvian nationality respondents took a part in the research, where 100 questionnaires were useful. There were the questionnaires that were complete in paper format from 11.11.15. – 20.01.16 – 100 ($n_{(female)}$ = 50 (50%); $n_{(male)}$ = 50 (50%), between the age of 46 – 85 ($M_{(age)}$ = 55.6 years). Respondents were cerebrovascular disease patients, who voluntarily enrolled for 10 days at the National Rehabilitation Centre "Vaivari".

Results. Results obtained from the research, shows, that there is correlations between depression, anxiety and optimism with social perceived support and adherence indicators in cerebrovascular disease patients, controlling gender. Also research revealed that depression, anxiety and optimism indicators predict social perceived support and adherence in cerebrovascular disease patients, controlling gender.

Conclusion. Depression, anxiety and optimism are important factors which are related to social support and adherence of cerebrovascular disease patients. Research showed that cerebrovascular disease patients with anxiety, depression to feel the lack of social perceived support and adherence, but cerebrovascular disease patients who were more optimistic feel much more social perceived support and adherence (Gökçen, Furnham, Mavroveli, & Petrides, 2014).

STRENGTHENING COMMUNICATION WITH LUNG CANCER PATIENTS – INTERPROFESSIONAL PERSPECTIVES

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Keywords. Communication, lung cancer, concept.

Introduction. Lung cancer represents a "model disease" for metastatic oncological diseases with high rate of incidence and high rate of lethality. Despite medical treatment, many patients have a median survival rate of 10–12 months at the time of the diagnosis. In most cases brain and bone metastasis may occur. In these cases recovery is usually not possible and the prognosis is very limited. The patients and their relatives are under great physical and psychological strains which needs to be dealt with. In order to achieve the best possible quality of life for the patients during this time, good communication between patients, relatives and the medical team is of greatest importance.

Aim. The aim of this study is the exploration of health care objectives and support measures used to strengthen the individual quality of life of the patients with lung cancer. A longitudinal communication approach will be developed and implemented in the daily work-process of Thorax Clinic Heidelberg.

Materials and methods. A qualitative study with semi-structured interviews was conducted. Three focus groups (n = 15 participants) composed of health care providers from different occupational groups. Each focus group interview lasted on average 120 minutes. Interviews were conducted by an experienced researcher. All participants were audio- and videotaped, transcribed verbatim and pseudonymised.

Results. We have been able to identify 3 main subtopics which described the viewpoint of hospital staff at the different phases of the disease trajectory. The subtopics included "Patients' responses", "Patients' expectations" and "Social network attitudes". The contents of these subtopics were modified during the disease trajectory. When comparing the disease phases from disclosure of diagnosis to end-of-life (starting with diagnosis), there were more aspects at the time of diagnosis. Generally speaking, these aspects decreased in number from one phase of illness to the next phase. We also identified 3 main subtopics which we believed are applicable for all phases of the disease trajectory. The subtopics include "Communication", "Working structures" "Social network". Furthermore, we identified 2 main themes which are specified in "Team communication" and "Patient communication". Both categories revealed positive (n = 6) and negative (n = 6) aspects regarding the implementation of a standardised communication concept. However, most focus group participants highlighted the benefits of a communication concept. In addition, the focus group made concrete suggestions (n = 11) for the development and implementation of a concept.

Conclusions. Inter-professional communication is essential in dealing with lung patients, therefore the development and implementation of a concept may be necessary to overcome potential communication problems and to provide a better care. To accomplish this one should take into account that patients' responses, expectations and the whole social network are important.

PATIENTS' LEVEL OF KNOWLEDGE OF CARDIOVASCULAR RISK FACTORS IN FAMILY PHYSICAIN'S PRACTICE

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Keywords. Cardiovascular disease, risk factors, knowledge level, family medicine.

Introduction. Cardiovascular diseases are the leading cause of mortality in Europe, including Latvia. This disease group has well known and researched risk factors. Control and reduction or these factors is the basis of the prevention of cardiovascular diseases. The main condition to reduce cardiovascular diseases is to provide patients with knowledge and understanding of such risk factors and the possibilities of their modification.

Aim. To evaluate patients' awareness in context of cardiovascular diseases in family physician's practice setting. To compare the obtained results with the results with similar studies conducted in other countries.

Materials and methods. This is a prospective study was carried out in 2015 by random survey of family physicians' patients. Statistical analyses were performed using Ms Excel and IBM SPSS Statistics 22 software and $p < 0.05$ was considered statistically significant. Cross tabulation with χ^2 test and Fisher's exact test were used.

Results. A total of 110 patients aged 20–78 who had visited their family doctor at least once in the previous year were surveyed as a part of this research. The respondents were divided into groups according to their sex, age, level of education and cardiovascular disease anamnesis.

The results showed that only 16% (95% CI, 57.3 to 75.5) of respondents know about the effects of sufficient physical activity in reduction of cardiovascular risk. 32% (95% CI, 22.7 to 40.9) of the patients are informed that an overconsumption of red meat leaves a negative effect on the cardiovascular system. Only 27% (95% CI, 3.6 to 13.6) and 47% (95% CI, 38.2 to 56.4) of respondents know what HDL and LDL is and what their function in the organism is. 32% (95% CI, 26.4 to 43.6) of patients do not consider medication to be the basic therapy in case of increased cholesterol level. In the patient group with positive cardiovascular anamnesis 46% (95% CI, 42.8 to 62.7) know that an increased abdominal girth: more than 94 cm for men and more than 80 cm for women is a risk factor for cardiovascular diseases.

Conclusion. Despite the increased number of health promotion campaigns, lack of knowledge about the risk factors of cardiovascular diseases still exists, especially about unsufficient physical activity, poor diet habits, increased cholesterol level, and the role of pharmaceutical therapy.

LACK OF PATIENT COMPLIANCE = IRREGULAR USE OF DRUGS?

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Keywords. Arterial hypertension, ineffective therapy, compliance.

Introduction. The cause of premature death for 7.6 million people worldwide is arterial hypertension (AH). Owing to the high morbidity and mortality caused by AH, it is important to improve blood pressure (BP) control during therapy. Recent studies show that BP goals continue to be achieved in only 25–40% of the patients who take AH drug treatment. AH is a condition almost entirely managed by the variety of health professionals such as physicians, nurses and pharmacists. Through patient education, misconceptions that patients have about their therapy can be clarified and patient compliance improves.

Aim. To analyze the effect of fixed dose combination therapy on patient compliance depending on demographic factors.

Materials and methods. In December, 2015, and January, 2016, quantitative study was conducted including patients with fixed dose combination therapy for treatment of AH. The questionnaire was anonymous. Information about patients demographics, morbidities, daily used medicines and their administration, BP, evaluation of therapy, compliance and information about dividing of tablets were registered. All the data were analyzed using SPSS.

Results. In study participated 99 people, of them 63.6% were women with an average age of 64.4 ± 11.4 years, but men were statistically significantly younger – 58.5 ± 13.2 years ($t = 2.310$; $p = 0.023$). From all the patients 57.6% were employed. Almost half of study population (48.5%) took AH drugs irregularly. BP goal more often was not achieved in patient group with irregular intake of drugs than with regular, respectively 28.3% vs. 20.2% ($p = 0.262$). BP goal more often was achieved in patient group with regular intake of drugs than without it, respectively 27.3% vs. 24.2% ($p = 0.262$). In irregular drug intake group which did not achieve BP goal was observed similar patient compliance between gender, respectively 37.5% (women) vs. 20.8% (men) ($p = 0.762$). Using independent samples T test, was found that average age in patient group with irregular intake of AH drugs was similar to the group with regular intake of AH drugs, respectively 62.8 ± 13.9 years vs. 61.8 ± 10.9 years ($t = 0.379$; $p = 0.705$).

Conclusions. In study almost half of patients (48.5%) misused AH drugs. Irregular use of AH drugs was defined as self adjustment to AH therapy (smaller or higher drug doses), not taking drugs when BP is normal and forgetting to take drugs. Adding a drug with fixed dose combination in therapy was not always associated with regular use of AH drugs. The incidence of drug intake interpretation did not depend on patient gender or age.

PERSONAL CHANGES IN DRUG REGIMEN –
DELIBERATE HARM TO YOUR HEALTH?

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Keywords. Adherence, drug, regimen changes.

Introduction. Patient adherence is a key factor for a successful treatment and lack of it is the main reason for predicting treatment failure. One way of lack of adherence in patients is modifying their medication regime without consulting a doctor. It is essential to understand the causes of such behavior to continue to take steps to prevent it, including discussing the dosage and intake regime of medicinal products in the pharmacy at the time of purchase.

Aim. To analyze the patients comprehension of their drug regimen depending on the duration of hypertension and received treatment.

Materials and methods. During the period from December 2015 to January 2016 a quantitative survey was conducted to include participants who have been diagnosed with arterial hypertension and whose regimen includes at least one fixed dose combination drug. In an anonymous survey data was collected about their demographic information, co-morbidity, other prescribed medication, intake regime, the average blood pressure during treatment, and patient's assessment of the prescribed therapy. Collected data was analyzed with SPSS.

Results. The study included 103 participants, most of them (64.1%) were women. Participants average age was 62.5 ± 12.5 years and the median arterial hypertension duration was 8 (5;16) years. For the study participants, who sometimes consciously adjusted dosing regimen, we observed arterial hypertension for a longer period of time compared to the participants group, who followed the prescribed regimen according to their physician's recommendations, respectively, 10 (6;28) vs 8 (4;15); $p = 0.110$. Group of respondents (n = 16) who received ≥ 3 prescription drugs, more often deliberately adjusted treatment regimen compared to participants (n = 8) treated with ≤ 2 prescription drugs, respectively 26.7% vs 18.6%; $p = 0.310$. Participants who made changes in drug regimen themselves were more often not satisfied with the number of tablets per day (n = 13), especially during long-term treatment compared to the group (n = 11), who needed to intake fewer tablets every day according to individual therapy plan, respectively, 54.2% vs 45.8%; $p = 0.005$.

Conclusions. Arterial hypertension duration was associated with more frequent conscious adjustment of therapy without consulting a physician. More prescriptions (≥ 3) for one person and an increase in the number of tablets per day at the same time also elevated the risk that patients could deliberately change their dosing regimen. Long-term drug users should receive additional attention during pharmaceutical care process to their respective treatment schedule in order to promote proper use of medication.

TENDENCIES OF MEDICATION USE IN RURAL AND URBAN POPULATIONS

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Keywords. Medication use, rural, urban, elderly.

Introduction. In the studies was found that older people take more medication and therefore incidence of polypharmacy may be higher among senior citizens than any other age group, but there has not been any study in Latvia that aims to test this statement.

Aim. To examine senior citizens' medication use in urban and rural areas, to examine how much medication they take and if polypharmacy (taking 5 or more drugs at the same time) is common.

Materials and methods. A retrospective quantitative study was conducted from 1 to 8 October, 2015 in two different pharmacies, one in Riga – EUROAPTIEKA 4 SIA and one in Cesvaine – SIA Brutuss aptieka. Prescriptions for patients older than 65 years were analysed and data about patient's age, gender, distance from the patient's place of residence to the doctor and pharmacy, name of prescribed drug, code of diagnosis were gathered. The data was statistically analysed with SPSS software.

Results. Data was collected from 302 prescriptions about 130 patients. The majority of patients (76%) were women, the mean age in the study population was 76.5 ± 6.7 years between ages 65 and 96. No significant difference in age between genders or place of residence was found. 85% of all patients used less than 5 drugs. Of all prescriptions 50% were for cardiovascular system drugs (ATC C group), 18% for nervous system drugs (ATC N group) and 12% for alimentary tract and metabolism drugs (ATC A group). Of all prescriptions 44% were prescribed for circulatory system diseases, 13% for endocrine, nutritional and metabolic diseases and 6% for mental and behavioural disorders. Using independent-samples T test significant change was found in 1) count of medication used between urban and rural residents – urban 2.1 ± 1.7 and rural 3.4 ± 2.2 ($t = 3.791$; $p < 0.001$), 2) distance to physician's practise between urban and rural residents – urban 2.75 ± 2.60 km and rural 5.13 ± 5.88 km ($t = 2.914$; $p = 0.004$), 3) how much ATC classification system C group medication was used in rural and urban areas – urban 1.62 ± 1.08 and rural 2.15 ± 1.23 ($t = 2.086$; $p = 0.040$), 4) how often patients were diagnosed with M block diseases of ICD-10 classification system in rural and urban areas – urban 1.00 ± 0.00 and rural 1.75 ± 0.05 ($t = 3.795$; $p = 0.005$), 5) how much ACT classification system A group medication was used between women and men – men 1.71 ± 1.11 and women 1.09 ± 0.29 ($t = -2.528$; $p = 0.017$), 6) how often women and men were diagnosed with F block diseases of ICD-10 classification – men 2.50 ± 2.12 and women 1.18 ± 0.41 ($t = -2.296$; $p = 0.042$).

Conclusions. The incidence of polypharmacy was low among senior citizens, only 15% of study population used 5 or more drugs. More drugs were used in rural areas than in urban and also drugs used and diseases treated differ slightly between urban and rural areas.

INTEGRATION OF SEXUAL AND REPRODUCTIVE HEALTH IN PRIMARY HEALTH CARE

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Keywords. Reproductive health, primary health.

Introduction. Integration of sexual and reproduction health (SRH) care in primary health care (PHC) is quite new aspect in Europe. The role of PHC is not fully investigated. As main reason why it is so is that health care systems are very different in different countries as well as SRH care is quite fragmental, expensive and difficult access by patients. Based on different countries experts recommendations SRH care should be integrated into PHC and evaluation of this care could be included in PHC quality system. (Integrating sexual and reproductive health in primary health care in Europe: position paper of the European Forum for Primary Care.2010.) There are same problems in Latvia as well, as the proof is the report of situation in Latvian "Reproduction health of population" (2003–2011).

Aim. To evaluate integration aspects of SRV care into PHC.

Materials and methods. A retrospective study was conducted from 2015 November until 2016 January, using the statistical analysis of the questionnaire and SPSS data processing program.

Results. The study surveyed 100 Ogre and Riga resident women, who are in reproductive age (between 15–49 years). Research data shows that 63% of women are not hereditary diseases. 95% of women responding to a question about other illnesses, answers that where is no such. Around 53% of women admit that their sexual and reproductive health is good. There is no woman who suffered from sexually transmitted diseases. Half of the women were pregnant and 7% of responses had long term problems with getting there however no one did abortion during the life. Gynecological examination is done by 45% of women. Most preferable contraceptives between women are hormonal oral pills, condoms and other methods (for example, coitus interruptus). All respondents are aware how to get HIV and which contraceptive should be used for it prevention. On the question: "Is the family doctor consults on women's reproductive health issues?", 50% of respondents answered – never, and 45% stated that all the time, when themselves asking a doctor about it.

Conclusions
1. The integration of SRH care in the PHC could be better.
2. It is necessary to increase the competences of the family doctor, ensuring SRH services.
3. Significantly improve family doctor and gynecologist cooperation to achieve results.
4. It is desirable to evaluate SRH care in the FHC quality system.

GENOME-WIDE ASSOCIATION STUDY REVEALS TWO GENETIC MARKERS ASSOCIATED WITH MAXIMAL OXYGEN CONSUMPTION RATE IN ELITE RUSSIAN ENDURANCE ATHLETES

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Keywords. Genes, endurance, athletes.

Introduction. It is well recognized that humans vary in their ability to achieve success in endurance sports and their predisposition is based on genetic factors.

Aim. The aim of the study was to identify single nucleotide polymorphisms (SNPs) associated with elite endurance performance (maximal oxygen consumption rate, VO_{2max}) in Russian endurance athletes using a genome-wide association study (GWAS) approach.

Materials and methods. VO_{2max} was measured in 71 elite endurance Russian athletes (41 males and 30 females). HumanOmni1-Quad BeadChips (Illumina Inc, USA) were used for genotyping of 1.140.419 SNPs.

Results. We found that 568 SNPs were associated with VO_{2max} in the combined cohort of endurance athletes (with $P < 0.001$ adjusted for sex). Of those, two SNPs, namely *SLC16A10* rs9400467 ($P = 0.0002653$) and *SLC38A1* rs10785611 ($P = 0.00013$) are located in or near the genes expressions of which in the human skeletal muscle were previously reported to be linked with VO_{2max} (Su et al. 2015; PMID: 26457177). These genes are involved in the regulation of energy metabolism in skeletal muscles (*SLC16A10*) and glutamine uptake (*SLC38A1*). Interestingly, the rs9400467 polymorphism is also associated with tyrosine levels of human blood samples (Shin et al. 2014; PMID: 24816252) and tyrosine ingestion improves aerobic performance.

Conclusions. Our results suggest that at least *SLC16A10* rs9400467 and *SLC38A1* rs10785611 polymorphisms may predict human physical performance.

ANTHROPOMETRIC AND HEALTH-RELATED FITNESS CHARACTERISTICS IN PHYSIOTHERAPY STUDENTS SECOND AND FOURTH YEARS OF STUDYING

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Keywords. Anthropometric, fitness, students, Eurofit.

Introduction. The health-related benefits of physical activity are well known. Participation in a physical activity could improve social well-being, as well as physical and mental health, among children and adolescents.

Aim. To evaluate Anthropometric and health-related fitness characteristics in physiotherapy students second and fourth years of studying.

Materials and methods. Subjects:28 females and 12 males participated in this investigation (19–23 years old, healthy, physiotherapy students). Students were tested for Body mass index, were calculated heights and weights. Also students were assessed with Eurofit tests: flamingo test, plate tapping, Rufje test and chest excursion. All tests and measurements were obtained twice with one year between the two measurements. Standard statistical methods were used to calculate mean, standard deviation. Statistical comparison between the groups (second year and fourth year) were made using paired samples T-test. Data was calculated using IBM SPSS statistics 22. Statistical significance was set at $p < 0.05$.

Results. Women height mean 170.57 cm (± 6.56), man 184.75cm (± 6.74). BMI mean for women 21.25 (± 3.25), for man 21.89 (± 2.54). Weight mean for women decreased 4.24 kg, for men increased 3.89 kg, body fat percentage mean decreased for women 1.5%, for men 3.07% in fourth year of studying. By the results BMI was in norm scale, but body fat percentage were over norm scale for mans in second year of studying. Flamingo balance mean for man decreased from 66.83 seconds (± 23.12) to 50.67 s (± 15.84), for womans decreased from 65, 39 s (± 20.23) to 51.93 s (± 26.59) and was similar to left and right legs. Plate tapping mean for man increased from 63.87 taps (± 7.19) to 70.68taps (± 7.21), for womans from 60.97 taps (± 9.98) to 63.45 taps (± 10.44) and was similar with both hands. Chest excursion test mean increased for women 0.81cm, for man 1.07cm. Rufje test mean decreased for mans 1.67, for woman 2.48 in fourth year of studying. By Eurofit fitness test standard students fit norms in each category. Paired samples T test showed that there was no statistical significant difference between first test and retest in fourth year of studying.

Conclusions. Students by anthropometric and health-related fitness test characteristics matched norms. Physiotherapy students in second and fourth years of studying remain athletics by eurofit test standard. That's why we could claim that physiotherapy students devote sufficient time to their physical properties to develop and maintain good physical shape.

VIII. Paediatrics, Gynaecology, Obstetrics

INFLUENZA DURING PREGNANCY AND ITS VACCINATION: A COMPARISON BETWEEN GERMANY AND LATVIA

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Keywords. Influenza vaccination, pregnancy, Germany and Latvia.

Introduction. Influenza itself is rarely a fatal disease. If however one belongs to a risk group chances of a severe course of disease are increased. This disease can be prevented by a simple vaccination, which is especially important for risk groups, such as pregnant women.

Aim. The aims of the study were to analyze patient´s sociodemographic dates, their current knowledge about influenza, its outcome and prophylaxis.

However the primary aim was to show and compare possible differences regarding patient´s attitude towards influenza vaccination during pregnancy. All these aspects were analyzed in comparison between German and Latvian respondents.

Methods. We conducted a retrospective cohort study using a questionnaire with a sample size of 100 subjects. The size of each study group was 50 patients according to their nationality. Data were analyzed with Microsoft Excel and SPSS.

Results. According to the statistical tests, there are no significant differences between the two countries in regard to sociodemographic data or knowledge about Influenza. 76% of German and 62% of Latvian women do not know the risks of an infection during pregnancy. Also the attitude towards vaccination does not differ significantly between the countries. Almost none of the patients are currently vaccinated (98% Germans and 92% Latvians), but more than half of them expresses the willingness to get immunized (52% Germans and 58% Latvians). Statistical difference ($p < 0,05$) was achieved in regard to previous infection comparing both study groups. Latvian women demonstrated a 60% higher risk to acquire and Influenza infection.

Conclusion. Patient´s knowledge and attitude towards influenza and its vaccination does not differ regarding the two patient groups / countries. In either country patient education and vaccination status is more than suboptimal and needs to be improved. Further research is necessary to evaluate immunization determinants.

COMPARATIVE GENOMIC HYBRIDIZATION IS A NEW STANDARD OF USING IVF PROCEDURE AMONG PATIENTS OVER 40

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Keywords. In vitro fertilization, comparative genomic hybridization, 24-chromosome aneuploidy screening, blastomere biopsy.

Introduction. Aneuploidy and other chromosomal alterations are a major cause of miscarriages and children's birth with intractable diseases. In recent years, the treatment of infertility by means of ART has been commonly used, however, the effectiveness of assisted reproductive technology (ART) depends on the patient's age and it decreases after 40.The main reason of this decreasing, according to the morphological criteria, is the extremely high likelihood of aneuploidy carriage even in the case of high-quality embryos. Technologies allowing to determine the exact number of chromosomes in the oocyte and in the human embryo cells have been developed recently. These methods include comparative genomic hybridization (CGH), next-generation sequencing and quantitative real time polymerase chain reaction. CGH is the most clinically significant method of analysis among others. Specific cases of the use of the CGH technique in particular patients were studied.

Aim. The purpose of this study is to evaluate the peculiarities and application prospect of the CGH method in the centers of ART.

Materials and methods. The report discusses specific cases of the using of the CGH technique in individual patients. Retrospective analysis of the data of the effectiveness of the in vitro fertilization (IVF) procedure after using CGH technology have been carried out.

Results. Analysis of trophectoderm cells of blastocysts was more informative than fluorescence in situ hybridization (FISH) test. It was proved that the number of successful IVF cycles after the CGH has been increased; the number of multiple pregnancies and the frequency of spontaneous miscarriage have been decreased.

Conclusion. Due to obtained in this work results, it can be argued that the puncture of trophectoderm and CGH are the gold standard of IVF in the twenty-first century. This method has become especially popular among women over 40 whom the problem of primary infertility occurs very frequently.

RARE FORMS OF ECTOPIC PREGNANCY IN ARCHIVES OF SIA RAKUS FROM 2009 TO 2014

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Keywords. Ectopic pregnancy, rare forms.

Introduction. Ectopic pregnancy is pregnancy that develops outside endometrium of the normal uterine cavity. The most common place, where it ocurs is fallopian tube. 1–2% of ectopic pregnancy cases, it occurs somewhere else – in ovaries, abdominal cavity, cervix, intraligamentous, intersticial, in vesicovaginal space or in places after uterus surgery (after uterus amputation, in scar after caeserean section). In year 2014 in Latvia on every 1000 newborns were 18.4 ectopic pregnancies.

Aim. To find out how many cases of rare forms of ectopic has occured in SIA "RAKUS" stacionary "Gaiļezers" from 2009 to 2014. To compare risk factors, diagnostic and managment of rare forms of ectopic pregnancies in SIA "RAKUS" and worldwide.

Materials and methods. This research work is retrospective and case series descriptive. There were analyzed the medical records of patients, who were hospitalized in SIA "RAKUS"" stationary "Gaiļezers" with diagnosis O 00.0 – O 00.9 (ICD-10). The medical records covered the time period from 1.01.2009 to 31.12.2014. In this research the following diagnosis were included: ovarian, interstitial, caesarean scar, cervical and intraligamentary pregnancies.

Results. In the time period from 2009 to 2014, at SIA "RAKUS" stationary "Gaiļezers" there were hospitalized 29 women with diagnosis – rare form of ectopic pregnancy. In the same period there were hospitalized 571 women with fallopian tube pregnancy. There were analyzed 11 medical records of interstitial pregnancy; also 8 medical records of caesarean scar pregnancy; 7 records of ovarian pregnancy and one case of intraligamentary pregnancy (in mesovarium). The following risk factors were described: 13 out of 29 patients were older than 35; 23 patients previoulsy have had at least one childbirth; 14 patients have had abortions; 6 patients previously have had ectopic pregnancies; 5 patients previously have had abdominal or pelvic surgery; 4 patients have had STD. There were none risk factors mentioned in three medical records.

The most common complaints at the time of hospitalization were: amenorrhea (22 out of 29); vaginal bleeding or spotting (18 out of 29) and lower abdominal pain (15 out of 29). Two patients did not have any complaints (one with interstitial, one with ovarian pregnancy).

For 20 (out of 29) patients pregnancy after last menstruation corresponded to be more than 5 weeks; for 7 patients – less than 5 weeks. For two patients it was impossible to determine the length of pregnancy. Fetal heartbeat was observed in 5 cases (out of 29).

Therapy for rare forms of ectopic pregnancy mostly (in 25 cases out of 29) was chosen to be surgical. Therapy with per oral methotrexate was used in one case. Curretage of uterine cavity / cervix was used in two cases.

Conclusions. Risk factors, complaints and objective signs of the patients of SIA "RAKUS" stationary "Gaiļezers" mostly matches with scientific literature. Part of the factors could not be evaluated, because they (for example, smoking), were not mentioned in all medical records.

16 March 2016

ELECTROHYSTEROGRAPHIC SIGNALS CAN PREDICT THE ONSET OF DELIVERY IN PATIENTS WITH THREATENED PRETERM LABOR

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Keywords. Uterine contraction, electrohysterography, preterm labor.

Introduction. Early prediction of preterm labor is perinatal research priority as a main cause of mortality and morbidity of newborns. Although, the evident improvement in pre and postnatal care has been observed, the mechanism of preterm delivery and preterm uterine contractility is unknown. Nowadays, none of biophysical or biochemical methods are able to predict all cases of the preterm labor. Noninvasive method as electrohysterography (EHG), based on recordings of electrical uterine activity, seems to be promising diagnostic tool for patients with high risk of preterm labor.

Aim. The aim of the study was to evaluate EHG recordings in patients with threatened preterm delivery symptoms and assess the risk of onset of preterm delivery within and after 7 days from admission to the hospital.

Material and methods. Material of the study included 30-minutes electrohysterographic signals recordings from 102 patients between the 24th and the 37th week of pregnancy. The clinical symptoms of threatened preterm labor were observed in all patients. Inclusion criteria were: a shortened cervix (< 20 mm) without regular uterine contractions in cardiotocography; negative lab markers of chorioamnionitis; regular fetal and mother heart rate. The patients were divided into two groups: delivering within 7 days – group A (n = 42) and delivering after 7 days – group B (n = 60). Signals were registered from 8 points of the abdominal surface of pregnant woman. To obtain the recordings we used Neuron-Spectrum 5 system, (Neurosoft Ltd) and MatLab software. The uterine activity was analyzed using statistical method based on the empirical mode decomposition (EMD) and the spectral analysis – fast Fourier Transform (FFT). Dominant frequencies for different mode functions (IMF) were analyzed for each EHG recording.

Results. The mean values of dominant frequencies for different mode functions (IMFs) were observed: for IMF1 group A 1.4906 ± 0.1985 group B 1.2724 ± 0.2942, $p < 0.001$; for IMF2 group A 0.6828 ± 0.1358 group B 0.5849 ± 0.1473, $p < 0.001$; for IMF3 group A 0.3361 ± 0.0596 group B 0.3099 ± 0.0623, $p < 0.05$; for IMF4 group A 0.1753 ± 0.0257 group B 0.1647 ± 0.0298, $p = 0.08$. Significant increase of dominant frequency of uterine activity for IMF1, IMF2, IMF3 was found in patients who deliver prematurely before completed 7 days after EHG recordings.

Conclusions. EHG signals correlate with providing preterm labor date within and after 7 days and can be useful tool of predicting preterm delivery.

CONTRACEPTIVE UNDERSTANDING AMONG LATVIAN STUDENTS WHO ARE VISUALLY IMPAIRED

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Keywords. Visually Impaired, Students, Contraception.

Introduction. Most birth control techniques are demonstrated visually. For students who are visually impaired this gives an inadequate explanation of why they need to use contraception and how to use it.

Aim. To investigate visually impaired Latvian students' options for getting information about contraception and their understanding of birth control.

Materials and methods. Individual interviews were conducted with 36 students (12 girls and 24 boys) aged 16 to 21. In the visually impaired group 7 were blind and 11 had poor vision. The control group consisted of 18 students without visual impairment. All visually impaired students studied at the Riga Residential School of Blind and Visually Impaired. The students responded to questions about contraceptive methods that they would use and their sources for information about birth control.

Results. 6 of 18 visually impaired students were sure they would have sexual intercourse within the next year and 4 of 18 students admitted that during sex they may or may not use contraception. In the regular student group only 1 person admitted that during sex they may or may not use contraception. 72.2% of visually impaired students and 77.8% of regular students had never received any information about contraception from a doctor but thought it would be a very effective resource. 6 of 18 visually impaired and only 1 of 18 regular students had nev-er searched for information about contraception by themselves. 9 of 15 students who had had sexual intercourse felt it was a very effective way to get information. 94.4% of visually im-paired and 100% of regular students said they would choose a condom as a method of contra-ception. Most unlikely students would choose not to have any contraception during sexual intercourse. 44.4% of visually impaired and 66.7% of regular students were very confident that their preferred method was effective at preventing pregnancy. 50% of visually impaired and 77.8% of regular students were very confident that their chosen method was effective at preventing the spread of sexually transmitted diseases.

Conclusions. There were no significant differences between the groups because of inadequate sample size. It was noted that because of the limited ways to learn about birth control meth-ods, visually impaired students were more dependent on information that was given by other people. As the students were sure that information about birth control from doctors would be the most effective information resource, there should be a specific method for doctors to in-form students about birth control.

INFLUENZA AND PREGNANCY

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Keywords. Childbearing, influenza, vaccination, pregnancy.

Introduction. It has been reported that pregnant women have higher rates of influenza infection and hospital admission, and are at increased risk of maternal complications and serious neonatal outcomes.

Since 2005 World Health Organization recommends influenza immunization at any time during pregnancy. Despite existing recommendations and data on the effectiveness and safety of vaccine, the influenza vaccine is underused in most countries.

Aim. To investigate the perspective and attitude of pregnant women and physicians towards influenza infection and vaccination during pregnancy and to identify the rates of pregnant women who underwent influenza vaccination in Latvia.

Materials and methods. This is a prospective study was carried out in 2015 by random survey of pregnant women and physicians. Statistical analyses were performed using MS Excel and IBM SPSS Statistics 22 software and $p < 0.05$ was considered statistically significant. Cross tabulation with χ^2 test and Fisher's exact test were used.

Results. A total of 115 pregnant women aged 19–44 were surveyed as well as 100 obstetricians. Surveying pregnant women revealed that only in 10% (95% CI, 5.2 to 14.8) of cases pregnancy care provider has informed women about hazards of influenza during pregnancy and only 2% (95% CI, 0.0 to 4.3) of all surveyed pregnant women have received influenza vaccine. When question as to why they had not received influenza vaccine, 37% (95% CI, 29.9 to 45.1) of all women responded, that they were not informed enough.

However, 93% (95% CI, 92.9 to 100.0) of the surveyed gynecologists admit that they have informed their pregnant women about influenza. 58 (95% CI, 47.0 to 68.0) specialists recommend vaccination, 46% (95% CI, 35.7 to 56.1) do not know that the cost of influenza vaccine for pregnant women is reimbursed at 50% by the state. Only 16% (95% CI, 10.2 to 23.5) of physicians regularly are vaccinated against influenza.

Conclusion. Influenza vaccine is gravely underused amongst pregnant women in Latvia. Vaccination coverage mostly depends on pregnant women's and their pregnancy care providers' knowledge and motivation. More information and recommendation by healthcare workers, especially obstetricians, including safety of vaccination, might be critical for improving vaccination rate in women of childbearing age.

IRON DEFICIENCY ANAEMIA AND VAGINAL CANDIDIASIS IN PREGNANCY

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Keywords. Iron deficiency, iron deficiency anaemia, anaemia, vaginal candidiasis, pregnancy.

Introduction. Iron deficiency anaemia and vaginal candidiasis occurs in more than 30% of women during pregnancy, especially in the third trimester. Iron deficiency leads to immunosuppression, which promotes activation of opportunistic pathogen as Candida. There is no data in literature regarding iron deficiency and vaginal candidiasis during pregnancy.

Aim. To clarify the possible association between anaemia, iron deficiency, iron deficiency anaemia and vaginal candidiasis during pregnancy.

Materials and methods. Prospective, cross – sectional study was carried out, involving 60 pregnant women in seven gynecologist practices in Riga. Data were collected from October 2014 until March 2015, using patient questionnaires, medical records. Vaginal pH measurement and rapid vaginal yeast detection test Genitest was performed in 29th / 30th gestational week. The data analyzed by MS Excel and SPSS 22.0., using Chi-square, Kolmogorov–Smirnov, McNemar and Student–T tests. The statistical significance reached if $p < 0.05$.

Results. The average participant age was 29 years, 81% has incomplete / complete university education, average BMI – 23 kg/m^2.

In the first trimester of pregnancy Candida was detected in 30% of participants vaginal swabs, anaemia in 2%, iron deficiency in 16%, iron deficiency anaemia in 2% of participants. Concurrent iron deficiency and vaginal candidiasis was found in 2%, iron deficiency anaemia and vaginal candidiasis found in another 2%.

In 29th/30th gestational week Candida positive Genitest was in 18% of participants, anaemia detected in 5%, iron deficiency in 40%, iron deficiency anaemia in 12%. Concurrent iron deficiency and vaginal candidiasis detected in 9%, iron deficiency anaemia and vaginal candidiasis in 5%. Only the incidence of iron deficiency has statistically significant increase in the third trimester of pregnancy ($p = 0.001$). Pregnant women with vaginal candidiasis more often have anaemia or iron deficiency in 29th/30th gestational week ($p < 0.05$), as well greater rate of premature birth and newborns with low birth weight ($p < 0.001$). The lowest hemoglobin in 29th/30th gestational week was found in women with concurrent iron deficiency and vaginal candidiasis ($p < 0.05$).

Conclusions. There is association between anaemia, iron deficiency and vaginal candidiasis in the third trimester of pregnancy. Iron deficiency is more likely observed in the third trimester. Pregnant women in the third trimester has greater rate of anaemia, iron deficiency or iron deficiency anaemia with concurrent vaginal candidiasis, than those in the first trimester. Pregnant women with positive Candida have higher rate of prematurity and newborns with low birth weight.

ANALYSIS OF INVASIVE CERVICAL CANCER
CASES IN LATVIA

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Keywords. Cervical cancer, screening.

Introduction. Cervical cancer is the fourth most common malignancy in women worldwide, and it remains a leading cause of cancer-related death for women in developing countries. In 2014 there were 270 cervical cases identified and registered in *National Data basis* in Latvia, but only 18 of them (6.7%) with national screening program. 47 of patients included in the study (24.9%) had participated in this program. Screening program coverage in year 2014 was 27.8%.

Aim. To evaluate cervical cancer screening program in Latvia and to assess the significance of cytological sampling intervals in the context of early and late stage cervical cancer diagnosis.

Materials and methods. All invasive cervical cancer cases diagnosed in 2014 in *Oncology Centre of Latvia* (70.0% from all cases in Latvia) were included in the retrospective case-control study. Cervical cancer cases were classified according to the cytological sampling intervals: a "short" (< 3 years), a "normal" (3–5 years), a "long" (> 5 years) interval. Statistical data were analyzed using professional statistical data program SPSS.

Results. There were 189 patients identified during the study period. Information was obtained from 130 (68.7%) patients. The FIGO stage I cases comprised 49.7% (94/189) of the entire group, stage II – 8.5% (16/189), stage III – 24.8% (47/189), stage IV – 17.0% (32/189). 49.2% of all patients had had a cytological analysis within the last three years. For 11.6% women, the screening interval was normal, while 39.2% had had their last cytological examination more than five years ago. There was a tendency for more frequent early stage cervical cancer detection in the group of cytological intervals less than 3 years when compared with a 3 to 5 years sampling intervals (73.4% vs. 53.3%) although that difference did not reach statistical significance (P = 0.11). In the group of long sampling intervals early stage cervical cancer was diagnosed only in 41.2% of patients (compared with a normal interval P = 0.29).

Conclusions. The coverage of cervical cancer screening program in Latvia is insufficient. Further measures should be done and analyzed to guarantee higher coverage and to reduce mortality and morbidity in future. If screening is provided more frequent than a 3 to 5 years interval, cervical cancer can be detected at an earlier stage. However, because of a small number of patients included in the study, the difference did not reach statistical significance.

OVARIAN HEMORRHAGIC CYST RUPTURE INCIDENCE, CLINICAL FEATURES, DIAGNOSIS AND TREATMENT ANALYSIS

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Keywords. Ovarian, cyst, rupture.

Introduction. Ovarian cyst ruptures usually relates with *corpus luteum* cysts and most of them are self limited and can be treating conservatively. But in some cases operative treatment must be used, it depends on symptoms, hemodynamic instability and amount of intra-abdominal fluid.

Aim. Exploring Riga East Clinical University hospital patients with diagnosis "Ovarian cysts rupture bleeding", average age, onset of symptoms, patients gynecology-obstetrical anamnesis, diagnostic findings and compare the group of patients who received operative and conservative therapy.

Materials and methods. The study included 183 patients of two year period. Data obtained through the histories from the archives. Patients were divided into two groups, patients who received conservative treatment (first group = 145), and patients who received operative treatment (second group = 38).

Results. Most patients were aged between 20 and 24. Complaint began after coitus, after physical activity or suddenly. Most of the patients in both groups had problems with the right ovary. Complaints in both groups usually started in the secretory phase of the menstrual cycle. All patients first complained of pain in the lower abdomen, also nausea, vomiting. In both groups, the most used method of contraception is condom, as well as a large proportion of patients do not use any contraception, or use interrupted intercourse. Avg pulse in both groups of patients differed only slightly in the first group: it was 76x/min, and the second 82. Avg systolic blood pressure was equal to 117 mm Hg in both groups, but the second group patients it ranged larger amplitude, with a minimum value of 79 mm Hg, while first group patients it did not fall below 100 mm Hg. Free liquid into the abdominal cavity was found between the two groups quite similar, first group avg 2.2 cm layer, second group avg of 2.7 cm. Hemoglobin occurrence in both groups were similar and remained within the normal range. Ultrasonography of the abdominal cavity free liquid was found in: 24% of the cases the operated patients was found next to the liver, but first group patients free liquid to the liver was found in only 6% of the cases.

Conclusions. Ovarian corpus luteum cyst rupture is represented predominantly by young patients, who have not given birth, who are not using hormonal contraception. The most common beginning of the complaint is related to recent sexual activity, in luteal phase of the menstrual cycle. Statistically significant differences between the systolic and diastolic blood pressure, hemoglobin occurrence in both groups are not obtained. Statistically significant correlation between the hemodynamic parameters and the choice of therapy has not been established.

INFECTIOUS COMPLICATIONS AFTER EMERGENCY
AND ELECTIVE CESAREAN SECTION

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Keywords. Septic complications, cesarean section.

Introduction. The rate of cesarean section is increasing worldwide, but in Latvia according to statistics it is decreasing from 2010. Postpartum infections should be studied, because puerperal sepsis is one of five maternal mortality causes worldwide, and cesarean section is one of the most important risk factors.

Aim. The aim of this study is to investigate two hypotheses: 1) acute cesarean sections more often leads to septic complications comparing to elective cesarean sections; 2) preoperative antibiotic prophylaxis reduces the rate of postoperative infections.

Materials and methods. We conducted a retrospective study from obstetric histories from years 2010. and 2015. And gathered data from patients who had cesarean section in Rigas Maternity hospital. We analysed 587 patient histories from 2010 and 535 patient histories from 2015, all together 1,122. We recorded following data: age, week of delivery, indications for surgery, when the patient received antibacterial prophylaxis, type of antibiotic used, surgical technique and postoperative complications. We used Pearson Chi-Square test and Fisher's Exact Test to test our hypothesis in SPSS 2.0 program.

Results. We recorded postoperative infections: 10 cases of endometritis, 1 case of postoperative pneumonia and 1 surgical wound infection. There was a borderline statistical significance for the hypothesis that acute cesarean sections had higher rate of postoperative infections, Pearson Chi-Square test, $p = 0.084$. There were 10 (1.5%) cases of infections following emergency cesarean section and 2 (0.4%) cases after elective cesarean section. The recorded p value is greater than 0, 05, but we strongly believe that larger sample size would shift it to smaller than 0, 05, as it is seen in other researches. There were no statistical significance in postoperative infections between groups who received preoperative antibacterial prophylaxis, Fisher's Exact Test $p = 0.487$. There were 8 cases of postoperative infections in patients who didn`t receive preoperative antibacterial prophylaxis and 4 patients who received preoperative antibacterial prophylaxis and developed postoperative infectious complications.

Conclusion. Acute cesarean section is associated with an increased incidence of post-operative infections. Perioperative antibacterial prophylaxis was associated with two times lower rate of postoperative infectious complications, but for statistically proved significance more research is needed.

PATIENT, MIDWIFE, DOCTOR – MUTUAL COMMUNICATION

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Keywords. Childbirth, quality assurance, mutual communication.

Introduction. Patients come to the Maternity Department with a variety of thoughts and emotions, eagerly expecting the uncomplicated births of healthy babies. However, they also fear that the pain of giving birth will be unbearable or that something might go wrong during childbirth. The expectations arise from the patients' social conditioning: prenatal education and previous experiences of giving birth. Therefore it is vitally important to ensure that the patients are satisfied with their maternity care, especially during labour and soon after – while staying at the postpartum unit. Having a child is probably the biggest transition women face in life and their satisfaction with the care provided to them by medical staff can significantly impact upon their child bearing experience. Every patient expects that postnatal care will reduce the anxiety they have by providing them with the necessary skills and confidence to care for their newborn baby. It is important that midwifes and / or doctors share their knowledge not only of childbirth, but also of postpartum care with the parents-to-be, while they together create new unique knowledge, which is a necessity to carry the caring process forward.

Aim. The aim of this study is to collect and analyze the information given by patients in postpartum units in the Maternity Department about mutual communication between the patients and medical staff – midwives and / or doctors. The selected timeframe is up to but no more than 72 hours after labour.

Materials and methods. The authors chose to use a survey as a data collection method. A survey consisting of 60 questions was made and handed out to patients in postpartum units. Afterwards the data was collected and analyzed using Microsoft Excel.

Results. The total sample size of this survey was 240 patients (age 15–45 years). 33% (n = 80) of patients claimed that during pregnancy they did not receive enough information about the process of giving birth and the period after childbirth, including breastfeeding. Most of the patients agreed that the midwife and / or doctor did explain the birth process during the childbirth (77%, n = 184) and also did inform about their actions during labour (80%, n = 191). The Birth Centre specialist medical assistance was rated of a score 8 and higher on a scale 1 to 10 by 86% (n = 207) of patients. 93% (n = 215) of patients evaluated the professionalism of midwifes and 95% (n = 172) the professionalism of doctors with a score of 8 and higher. 87% and 85% (n = 208, n = 204) of patients assured that the information about their health status provided to them by midwives / doctors was sufficient. During postpartum care 65% (n = 156) of patients considered that they received enough information about the care of their newborn, however 30% (n = 72) considered that they received only partial information and 5% (n = 12) considered that they did not receive enough information. When asked about received information about newborn adaptation process, only 50% (n = 119) of patients considered that they received enough information about this process. 77% and 72% (n = 186; n = 174) of patients answered that the attention received from midwife / doctor during postpartum care was sufficient.

Conclusions. The results of this research indicate that most of the patients are completely satisfied with the care provided in the Maternity Department. They confirm that the midwife and / or doctor devoted enough time for them and provided them with sufficient amount of information both – during childbirth and postpartum. The information given postpartum about the newborn, especially about the adaptation process, could be improved. That way the new parents wouldn't have any doubts or worries about their child's health and could provide the child the best care possible.

ANTIBACTERIAL THERAPY AND PUERPERAL INFECTIONS IN RIGA MATERNITY HOSPITAL 2013 AND 2014 YEARS

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Keywords. Puerperal infection, antibacterial therapy, childbirth, caesarian section, sepsis.

Introduction. Puerperal infections is one of causes of maternal deaths in postnatal period. Incidence varies in different countries: in the USA approximately 6%, in Latvia 10% (year 2008). Lethality due to puerperal infections constitute 11–14% of all maternal deaths. Septic complication in caesarian section is more frequent than in vaginal birth (average 1.1 – 25% and 0.2 – 5.5%). To protect woman from these complications antibacterial prophylaxis is used, it can reduce complication incidence down to 0.6%. Several studies have shown the combination of clindamycin and gentamicin efficiency.

Aim. To clarify incidence of perioperative antibacterial prophylaxis, frequently used antibacterial therapy combinations and their efficiency in puerperal infections treatment.

Materials and methods. Retrospective childbirth history data examination and analysis from the Riga Maternity Hospital archives (from 1.01.2013 to 31.12.2014). Data processing with Microsoft Office Excel 2007 to 2010 and SPSS software.

Results. In time period from 1.01.2013 till 31.12.2014 in Riga Maternity Hospital incidence of puerperal infections was 0.7% in 2013 and 0.48% in 2014 year after caesarian section an0.21% in 2013 and 0.22% in 2014 year after vaginal childbirth. The absolute number of septic complications was 40. The most common antibiotics used in puerperal infections cases was Metronidazole, Cefazolin and Gentamycin (used in 30, 18, 11 cases). There was no maternal deaths because of septic complications. There were 2 (of 40) cases of sepsis after childbirth. Perioperative prophylaxis was used in 95.58% and 95.95% caesarian sections (respectively 2013 and 2014 years). The most common antibiotic used as perioperative prophylaxis was Cefuroxim (1.5g, intravenous use, 30 minutes before skin cut): 90.01% in 2013 year and 90.28% in 2014 year. Among all HIV / AIDS patients, antibacterial perioperative prophylaxis was used in 100% cases (in addition with antiretroviral therapy), and no puerperal infection was observed in this patients group. The average age of patients was 27.75 years (SD = 5.07).

Conclusions. Incidence of puerperal infections is lower than in literature, what can be explained with fact, that part of septic complications can appear when woman is already written from hospital. Antibacterial prophylaxis has shown high efficiency, to protect women from puerperal infections. Antibacterial drugs combination of Metronidazol, Cefazolin and Gentamicin has proven its effectiveness.

RELATIONSHIP BETWEEN CERVICAL LENGTH
AND THREATENED PRETERM LABOR

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Introduction. Women with symptoms of preterm labor are often overtreated with hospitalization and the administration of tocolytics and steroids. Sonographic measurement of cervical lenght is the main method for prediction of preterm delivery.

Aim. To determine whether the optimal clinical cut-off value to predict low risk of preterm delivery in women admitted for preterm labor.

Methodology. Retrospective study was conducted between November 2014 and November 2015 at the tertiary perinatal center in Kaunas. Data were selected using department's register. Patients with preeclampsia, severe haemorrhage, hypertensia, traumas, multiple pregnancy, fetal malformations or disstress or in active labour were excluded. Statistical data analysis was conducted using SPSS 20.0. The data was analyzed using descriptive statistics, Pearson's criteria, positive / negative predictive value, specificity and sensitivity. The level of significance < 0.05.

Results. During study time 460 women were admitted to the Kauno klinikos Gynecology for the threatened preterm labour, only 217 of them had birth in our hospital. The final study population consisted of 196 women. Maternal age mean 29.0 ± 6.3, gestational age at inclusion 30.2 ± 4.3, nulliparous – 46.1%. Asymptomatic were 6.5% of women, other complained of regular or irrregular contractions (53%), lower abdominal pain (18.5%), vaginal bleeding (22.6%). Cervical lenght mean was 25.5 ± 9.5 mm. From women who had birth in Kauno klinikos and were treated for preterm labour, only 7% women gave birth in 7 days after TVUS and 20.7% before 37 week of gestation. Patients who had shorter cervical lenght measured with TVUS-labored earlier (p = 0.001). When lenght of cervix was > 30 mm (N = 86), no one patient deliveried within 7 days, before 37 week – 9 (10.5%) patients. If cervical lenght was detected between 20–30 mm (N = 62), spontaneus delivery rate within 7 days was only 2 (3.2%) patients, before 37 week – in 11 (17.7%) patients. After measurement cervix lenght 10–20 mm (N = 35), in 7 days gave birth 4 (11.4%) of women, before 37 week – 12 (34.3%). Futhermore, the shorter than 10 mm cervix (N = 11) has determined birth in 7 days in 2 of studied women (18.2%), and before 37 week – in 6 (54.5%) patients. The cut-off value of 30 mm cervical length showed a sensitivity, negative predictive value and false positive rate for delivery within 7 days of 100%, 1%, 92.3%. For a cut-off point of 20 mm, these values were 71.4%, 98.6%, 89.1%, for 10 mm – they were 28.6%, 97.3%, 81.8%.

Conclusions. 1.217 women with threatened preterm birth laboures in Kauno Klinikos, 91 had shorter than 30 cervical lenght. The main patients' hospitalized for threatened preterm labor complains were lower abdomen pain and regular / irregular contractions. 2. Patients who had shorter cervical lenght measured with TVUS-labored earlier. Women who delivered baby in 7 days all had shorter when 30 mm cervical lenght. 9 women who had longer than 30 mm and 29 who had longer than 30 mm cervical lenght laboured before 37 week.

PREGNANCY CARE AND OUTCOME IN CASE
OF CERVICAL INSUFFICIENCY

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Keywords. Cervical insufficiency, cerclage, progesterone.

Introduction. Cervical insufficiency is inability of the uterine cervix to retain a pregnancy in the second trimester, in the absence of uterine contractions. Cervical length has a strong inverse correlation with the risk of spontaneous preterm birth, particularly in women with a history of preterm delivery. Babies born prematurely have a higher chance of dying soon after birth or becoming disabled.

Aim. To determine effect of cerclage, pessary and progesterone on the incidence of preterm delivery; usage of corticosteroids; rates of newborn respiratory distress syndrome and scores on the Apgar scale on the end of the 1st and 5th minute.

Materials and methods. This retrospective cohort study included data of pregnant women at 14^{+0}–27^{+7} weeks of gestation with a sonographic cervical length ≤ 25 mm between January 2013 and December 2015 at Rīga Maternity Hospital. The antenatal and delivery details were reviewed. The obtained data were statistically processed by MS Excel and SPSS.

Results. Research included 112 women at a mean maternal age of 31 years (SD 5.3; range, 18–44 years). Of 105 women, 13 (12.4%) had a cervical cerclage, 11 (10.5%) had a cervical pessary, 81 (77.1%) received vaginal progesterone. Spontaneous preterm birth before 34 weeks was reduced in the progesterone group 17.6% vs 30.8% in cerclage group and 40% in pessary group (p = 0.169). Mean gestational age at delivery was 37.2 weeks (SD, 3.27; range, 25–41) in progesterone group; in cerclage group 36.6 weeks (SD, 2.75; range, 32–41) and 35.9 weeks (SD, 3.41; range, 31–40) in pessary group. Women in the progesterone group statistically significantly used more corticosteroids 85.2% than in pessary and cerclage groups, respectively 81.8% and 53.8% (p = 0.03). Progesterone therapy was also associated with a reduction in the rate of respiratory distress syndrome 13.2% vs 23% in cerclage and 30% in pessary groups. Evaluating the Apgar scale of the 1st minute, it was found out that in 70.6% of progesterone group cases, the score was ≥8 points, while in the cerclage group 61.5% and 50% in pessary group (p = 0.37). The Apgar scale assessment in the fifth minute ≥8 points was, 90%, 88.2% and 76.9% (p = 0.5) in pessary, progesterone and cerclage groups, respectively.

Conclusion. The administration of vaginal progesterone to women with a sonographic short cervix in the mid-trimester is associated with reduced rate of preterm birth before 34 weeks, increased usage of corticosteroids and reduced rates of respiratory distress syndrome comparing with cervical cerclage and pessary. Also progesterone therapy is associated with elevating Apgar scale scores in the 1st and 5th minutes comparing other methods.

GESTATIONAL DIABETES INFLUENCE ON MOTHERS AND NEWBORNS HEALTH

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Keywords. Diabetes, pregnancy, OGTT.

Introduction. Gestational diabetes has been studied extensively, especially diagnostic criteria. HAPO study in 2002. raised the question about new diagnostic criteria and demonstrated that even woman with lover fasting glucose concentrations than diagnostic values are at increased risk for perinatal complications as: newborn hyperinsulinemia, hypoglycemia, weight above 90th percentile and primary cesarean section.

Aim. To test our hypothesis: gestational diabetes diagnosed with new criteria is associated with more complications for mother and newborns and lower HC / AC ratio than control group.

Materials and methods. Prospectively retrospective study from 2013. to 2016. in Maternity Care Center of Paula Stradins Clinical University Hospital. Data was gathered from written patient illness histories, interviews and analyzed with SPSS. Comparison was made between gestational diabetes group, n = 78 (GD) and control group, n = 43 (CG).

Results. GD group compared to CG had higher body mass index 68.2 kg/m² to 44.2 kg/m² (p < 0.001, Man-Whitney), GD group had OGTT later than CG 26.64 weeks compared to 24.4 weeks (p = 0.002, Man-Whitney). Women with CG had higher rate of natural birth 69.6% compared to 30.4% (p = 0.036, Pearson Chi-Square). New-borns in GD group were macrosomic (> 4kg) 36.6% compared to CG 4.6% (p < 0.001, Pearson Chi-Square) and had higher rate of hypoglycaemias (p = 0.019, Pearson Chi-Square) and need for i/v glucose infusions (Pearson Chi-Square, p = 0.024). There was statistical difference between groups regarding HC / AC ratio in 3rd trimester's ultrasonography protocols 0.94 to 1.07 (p < 0.01, Man-Whitney). Women with diabetes had raised blood pressure in 69.6% compared to 30.4% in CG, primary caesarean section 12.8% compared to 7.0% in CG, acute caesarean section 23.8% to 13.6%, elective caesarean section 21.3% to 6.8% and failure to progress in labour 27% to 22.2%, but these findings didn`t reach statistical significance. New-borns had higher rate of need for intensive care unit 13% compared to 7%, polycythemia 33.5% compared to 18.0% and phototherapy 30.5% compared to 25.5%, but these findings didn`t reach statistical significance. GD group women were breast fed as new-borns in 87.0% compared to 94.3% in CG, and had diabetes in family for 40.3% compared to 25.7% in CG.

Conclusion. Women who were diagnosed with gestational diabetes using new diagnostic criteria statistically significantly had higher BMI, their diagnosis was made later in gestational time, had altered HC / AC ratio in 3rd trimester and lower rate of natural births. Women with diabetes had more macrosomic infants and higher rate of hypoglycemias. Other complications rate didn't reach statistical significance.

SEXUAL ACTIVITY OF VISUALLY IMPAIRED LATVIAN STUDENTS

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Keywords. Visually Impaired, Sexual Activity, Students.

Introduction. Visually impaired people may act inappropriately by societal standards and may have different perceptions about sexual relationships. During puberty visually impaired people may misinterpret normal changes in their bodies which can inhibit meaningful sexual relationships.

Aim. Research the sexual experiences of visually impaired Latvian students who attend a school for visually impaired learners. Compare their sexual behaviour to regular high school students.

Materials and methods. Individual interviews were conducted with 36 students (12 girls and 24 boys) aged 16 to 21. In the visually impaired group 7 were blind and 11 had poor vision. The control group consisted of 18 students without visual impairment. All visually impaired students studied at the Riga Residential School for the Blind and Visually Impaired. The re-spondents answered questions about their sexual activity within a one year period.

Results. Within the last year 9 of 18 of the visually impaired student had not been on a ro-mantic date while 5 of 18 of regular students had been on a date with more than 5 different people. The same amount in both groups 14 of 18 had not experienced oral sex. 15 of 18 of visually impaired students had not had a one night stand experience while in the regular stu-dent group 2 students had had a one night stand with more than one person within last year. 6 visually impaired and 9 regular students had had sexual intercourse. The age of first sexual experience in the regular student group was 16 for 6 students while in the visually impaired group 2 students started their sexual activity at 15 and 2 students at 19. Counting both groups together 5 of 36 students had had sexual intercourse with 5 or more partners in their life. The same amount of people in both groups (3 people) did not see a likelihood of a sexual relation-ship and did not want to have sex within the next year. None of the visually impaired students felt pressure from others to be in sexual relationships while in the regular student group 13 of 18 did not felt pressured. 11 of the visually impaired and 7 of the regular students agreed that they would only have sexual relationships with people they were in love with.

Conclusions. There were no significant differences between the groups because of insuffi-cient sample size. However, visually impaired students seemed to be engaged in sexual activi-ties with less people than regular students and they did not feel any emotional pressure to be in a sexual relationship.

TICK BORNE ENCEPHALITIS IN CHILDREN'S CLINICAL UNIVERSITY HOSPITAL – CLINICAL COURSE AND NEUROLOGICAL OUTCOME

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Keywords. Tick, encephalitis, children.

Introduction. Tick-borne encephalitis (TBE) is considered a disease of the central nervous system (CNS) caused by infection with the TBE virus. Generally, it is characterized by biphasic fever after an incubation period of 1 to 2 weeks. First fever phase with nonspecific flu-like symptoms are followed by an asymptomatic interval and thereafter symptoms from meningitis to meningoencephalomyelitis. In children TBE course is considered to be relatively mild condition with favorable outcome compared with adults. Therefore, a better decription of milder TBE clinic in children is necessary to avoid misdiagnosis and delayed cases, that can increase the risk of further not only neurological sequelae as postinfectious encephalopathy, cranial nerve damage and others.

Aim. This study is aimed to re-evaluate symptomatology, clinical findings, early neurological outcome and epidemiological data of childhood TBE.

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 TBE diagnosis (ICD 10 – A84.7). Clinical registers were accurately checked. Collection of information was guided by a questionnaire relating to demographic data and clinical information (i. e. febrile illness, meningitis, other neurological symptoms). Data of posthospitalisation neurologic control, were also gathered when available. Data of TBE epidemiology were provided by Disease and Control centre of Latvia.

Results. Total 90 patients with initial TBE diagnosis were admitted to Children's Clinical University hospital during 2000 – 2015. In 82 of patients TBE diagnosis was approved by serological tests, therefore hospitalized TBE cases reflect more than 1/5 or 22% of total 366 registered childhood TBE in Latvia during this period. The most represented age group was 7–14 years – 60% (n = 49). 52% (n = 43) of patients were not vaccinated against tick born encephalitis according to national recommendation. Vaccination status was unknown for 42% (n = 34). Classic biphasic fever course was presented in 50% (n = 41) of patients. Neurological symptomatology was presented in 79% (n = 65). Discharge diagnosis for all patients initially hospitalized with TBE diagnosis – meningitis 55% (n = 50), meningoencephalitis 10% (n = 9), meningoencephalomyelitis 7% (n = 6), fever form 19% (n = 17), other diagnosis 9% (n = 8).

Conclusions. Although childhood TBE is considered to be a mild disease with benign outcome, results show that main hospitalization cause is neurological onset of the disease. Therefore, considering TBE topicality in Latvia, purposive knowledge is necessary to recognise early nonspecific TBE symptoms in children and to avoid further TBE impact on child's developing nervous system.

16 March 2016

TIME BETWEEN FIRST APPEARANCE OF SYMPTOMS AND HOSPITALIZATION IN INTENSIVE CARE UNIT AS A PROGNOSTIC FACTOR FOR MORTALITY AND MORBIDITY IN CHILDREN WITH SEPSIS

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Keywords. Sepsis, intensive care unit.

Introduction. Sepsis is a severe and serious bloodstream infection that can rapidly become life-threatening. This condition requires immediate and adequate treatment that is an unfortunate challenge for patients and hospitals since its multifaceted and versatile appearance and often it lacks arguments to admit these patients to intensive care unit that might lead to higher risk of mortality and morbidity.

Aim. The aim of our study was to evaluate the correlation between earlier sepsis patient admission to treatment in intensive care unit and increased chance of survival.

Materials and methods. In retrospective study medical records of 48 children admitted to PICU of Children's Clinical University Hospital of Latvia with severe sepsis during the period of 2009–2015 were examined. Statistical analysis was performed using IBM SPSS for Windows, version 22.0. The continuous data was compared between the groups using the t test. The Pearson chi-square test was used for categorical variables, the statistical effect size was calculated using a Phi coefficient. The data are presented as the means (M) and the standard deviations (SD). $P < 0.05$ was taken to indicate statistically significant differences.

Results. Independent t-test displayed that mean difference of days between first appearance of symptoms and hospitalization in intensive care unit amongst survivors (M = 4.21; SD = 4.77) and non survivors (M = 8.9, SD = 8.81) distinguishes from 4.68 (95% TI:0.54–8.83) and this distinction is statistically significant (p = 0.016), as shown in the calculations the period of time between the onset of first symptoms and admission to intensive care is practically two times longer in non survivors. The study also reveals patients with longer time between first appearance of symptoms and hospitalization in intensive care unit are more likely to develop multiple organ dysfunction syndrome. Though it comes with no statistically significant difference (p > 0.05) it should be considered to be clinically important since multiple organ dysfunction syndrome is associated with higher mortality risk as Pearson's chi squared test suggests (p < 0.05), and statistical effect size is average (Phi = 0.28), and all non survivors (100%) had multiple organ dysfunction syndrome.

Conclusions. Findings suggest that prolonged time between first appearance of symptoms and hospitalization in intensive care unit leads to higher mortality and morbidity in children with sepsis and it could be marked as a negative prognostic factor. Further research and larger studies are needed to be performed for stronger approval.

NEUROLOGICAL AND METABOLIC ASPECTS IN CHILDREN WITH NEONATAL DIABETES TREATED WITH SULFONYLUREA FOR TEN YEARS

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Keywords. Paediatrics, neonatal diabetes, neurology.

Introduction. Neonatal diabetes is a rare monogenic form of diabetes with a prevalence of 1/150 000. The most common cause is a dysfunction in the K-ATP channel of the pancreatic beta-cells. This form of diabetes can be treated with sulfonylurea (SU) instead of insulin because sulfonylurea works directly on the K-ATP channel. The K-ATP channel is also expressed in different parts of the brain and neurological findings have been noted in many of the patients with neonatal diabetes. Little is, however, known about the long-term course of the patients' metabolic and neurological phenotype after sulfonylurea treatment has been established.

Aims. To perform a metabolic and neurological characterization of patients with neonatal diabetes caused by mutations in the K-ATP subunit gene *KCNJ11*.

Material and methods. We did a medical follow up of six *KCNJ11*-mutated patients that had been on sulfonylurea for about 10 years. We did a general physical examination, followed by oral and intravenous glucose tolerance tests. For the neurological part of the study we did a general neurological examination and neuropsychological testing.

Results. After 10 years on sulfonylurea treatment, the patients had a good metabolic control with a mean HbA1c of 6.5%. This is under the ISPAD recommendation where they recommend a HbA1C below 7.5%. The mean HbA1c level in diabetic children in Norway is 8.2% (The Norwegian Childhood Diabetes Registry, 2014). We found neurological abnormalities such as psychomotor retardation, ADHD and learning disabilities in the patients included. Patients with the V59M mutation appeared to be more neurologically affected than the others and this mutation was associated with severe psychomotor retardation.

Conclusion. We found that patients with neonatal diabetes are metabolically well-regulated on long-term SU therapy. Our study also supports previous reports that neonatal diabetes is associated with a neurological phenotype. The nature of the *KCNJ11* mutation seems to influence the severity of the abnormalities.

CHILDHOOD ATOPIC DERMATITIS IMPACT ON FAMILY QUALITY OF LIFE AND CAREGIVER'S PSYCHOLOGICAL STATE

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Keywords. Atopic dermatitis, family impact, quality of life, HAD.

Introduction. Atopic dermatitis (AD) is chronic, relapsing, extremely pruritic skin disorder that usually starts in infancy. This condition is associated with a major influence on the quality of life of both affected children and their families. Although there exists lots of studies examining the impact of AD in children quality of life, there are little investigations how AD affects families and parent caregiver psychological state.

Aim. To examine the association between childhood AD severity and caregiver's psychological state and quality of life. A further aim is to identify the most affected areas of family life.

Materials and methods. We performed a prospective study conducted in Lithuanian University of Health Sciences Kaunas Clinics Department of Pediatrics. 80 families, whose children suffer AD, were asked to participate in this study but only 67 have attended. Three questionnaires were prepared: Sociodemographic (contained questions about caregiver and affected child), Family Impact questionnaire (to evaluate the most affected areas of family life) and Hospital Anxiety and Depression scale (HAD) (to measure how much child's condition has affected caregiver's psychological state). Each item in Family Impact scale has four responses, which are scores as: very much (3 points), a lot (2 points), a little (1 point), not at all (0 points). A total score range is from 0 (not affected at all) to 30 (very much affected). Data were analyzed using IBM SPSS version 19.0 software.

Results. The average responder's Family Impact rate was 14.1. That means family quality of life is affected moderately. The most affected areas were emotional state (1.86), food preparation and feeding (1.85) and expenses (1.82) while at least touched areas were leisure activities (1.08) and relationships between other family members (0.81). The correlation between child's AD severity and family quality of life was significant ($r = 0.31$; $p < 0.05$). No significant results were found in the correlation between child's AD severity and caregiver's anxiety and depression ($r = 0.151$, $r = 0.84$, $p > 0.05$). In addition we found statistically significant association between family quality of life and caregiver's anxiety and depression ($r = 0.489$, $r = 0.488$, $p < 0.01$).

Conclusions. Parents of children with a higher severity of AD has a significantly higher impact on family quality of life. The worse family quality of life the bigger anxiety and depression for caregiver. The most affected fields are emotional state, food preparation, feeding and increased expenses.

EPIDEMIOLOGY OF PEDIATRIC ACUTE LYMPHOID LEUKEMIA IN LATVIA IN 1988–2015: INCREASED INCIDENCE AND ETHNIC VARIABILITY

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Keywords. Acute lymphoid leukemia, epidemiology, pediatrics.

Introduction. Acute lymphoid leukemia (ALL) is the most common pediatric malignancy in developed countries, with morbidity peak at age 2–5 and slight male predisposition [Pui, 2008]. ALL incidence varies worldwide: 35–40 primary cases per million children have been reported in USA and Nordic countries and 30–35 per million in Russian Federation, Byelorussia and Ukraine [Lanzkowsky, 2011]. There are reports of growing ALL incidence, though the issue is debatable [Pui, 2012]. Epidemiological study of childhood ALL in Latvia could be of considerable interest, due to the existence of two large well-separated ethnic groups of native Latvians and others, mainly of Slavic origin [Eurostat, 2014].

Aims, Materials and methods. The aim of the study was to retrospectively study ALL epidemiology in Latvian pediatric population (0–14). Registry of the Children's Clinical University Hospital Oncohematological department was accessed for anonymized patients' data for 1988–2015 period: year of diagnosis, age, gender and nationality (by self-assessment and language preference). 332 consecutive patients were included. Demographic indices were acquired from Central Bureau of Statistics (csb.gov.lv), database "Population and Social Processes", including extrapolated yearly pediatric (0–14) population, ethnic distribution of the total population and yearly fertility. MS Excel database was designed for data collection and basic statistics; Mann-Whitney U test for differences was performed by IBM SPSS v.21.

Results. Median 11.5 new cases of pediatric ALL were diagnosed yearly in 1988–2015; there was no statistical difference between 1988–2000 and 2001–2015. Median incidence for the whole period was 28.4 per million children 0–14 years of age; it significantly increased from 24.7 per million in 1988–2000 to 33.1 in 2001–2015 (p = 0.018). There was a slight male prevalence (M:F = 1.2), median age was 4; both parameters did not change with time. Age group 2–6 was the most affected (62% patients). 209 patients were defined as ethnic Latvians and 123 were of other nationalities. Pediatric ALL incidence in total Latvian population was significantly higher – 5.9 per million versus 4.1 per million in non-Latvians (p = 0.033), the difference decreased between 1988–2000 and 2001–2015. M:F ratio was lower in Latvian patients (1.13 versus 1.34, difference non-significant). Age structure was similar in both ethnic groups. Patients' distribution by birth year didn't reveal definite clustering.

Conclusions. The incidence of pediatric ALL in Latvia is nearer to Eastern European level with a statistically significant increasing trend. Age and gender structure of the patient cohort resembles developed countries. Statistically proven differences in pediatric ALL incidence between Latvians and non-Latvians should be verified by age-standardized approach, since indirect data point at possibly different age structure of the groups.

16 March 2016

PROMINENT GEOGRAPHIC VARIABILITY OF ACUTE LYMPHOID LEUKEMIA INCIDENCE IN LATVIAN PEDIATRIC POPULATION IN 1988–2009

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Keywords. Acute lymphoid leukemia, epidemiology, pediatrics.

Introduction. Acute lymphoid leukemia is the most common pediatric malignancy (25% tumors in 0–14 years old population worldwide). Its incidence is not uniform: 35–40 primary cases per million children were reported in USA and Nordic countries and 30–35 per million in Russia, Ukraine and Byelorussia. The differences may be related to socio-economic status or ethnic factor [Lanzkowsky, 2011]. Epidemiology of childhood ALL in Latvia could be of interest, because geographic distribution of population had been rather stable due to low internal migration and immigration [Eurostat, 2014].

Aim. The aim of the study was to retrospectively analyze epidemiology of pediatric ALL in Latvia in 1988–2009 (later period was considered non-representative due to sharply increased internal resettlement).

Materials and methods. Data of 268 consecutive 0–14 years old patients for the period were available in Registry of the Oncohematology Department. Demographic indices were obtained from Central Bureau of Statistics (csb.gov.lv), database "Population and Social Processes", including total population by year, by cities / countryside and by district; pediatric (0–14) population by year and by region. MS Excel database was created for data collection and basic statistics; Mann-Whitney U test for differences was performed by IBM SPSS v.21.

Results. Overall ALL incidence for the 1988–2009 period was 5.02 per million population and 28.7 per million children (0–14). Regional differences were found: the incidence was 30.5 per million children in Kurzeme, 30.4 in Vidzeme, 29.4 in Riga region, 28.8 in Riga city, 23.5 in Zemgale and 21.8 in Latgale. The difference was statistically significant both for Latgale vs the rest of the country (p = 0.031) and Latgale with Zemgale vs the rest of the country (p = 0.039).

ALL incidence in territorial districts was unexpectedly variable: the highest one was in Saldus district – 10.40 per million population, followed by 8.69 in Alūksne, 7.46 in Cēsis –, 7.45 in Ventspils, 7.21 in Tukums, 6.0 in Bauska and Valmiera, 5.96 in Kuldīga, 5.18 in Aizkraukle, 5.08 in Jelgava, 5.04 in Liepāja, 4.95 in Daugavpils, 4.94 in Krāslava, 4.91 in Valka, 4.90 in Gulbene, 4.70 in Jūrmala, 4.61in Madona, 4.42 in Dobele, 3.26 in Rēzekne, 2.84 in Balvi, 2.81 in Ogre, 2.69 in Talsi, 2.44 in Jēkabpils, 2.23 in Preiļi and 1.27 in Ludza. The incidence was 4.2 per million population in cities and 6.8 per million in the countryside, the difference was significant (p = 0.030).

Conclusions. The incidence of pediatric ALL in Latvia during the studied period was nearer to Eastern European level. Significant differences were found between cities and countryside, historical regions and territorial districts (where the incidence varied 8-fold).

Variable geographic distribution of pediatric ALL may be related to the ethnic factor, different age structure in the districts, or unknown environmental factors may be responsible. A more detailed further study seems to be indicated.

ALVARADO SCORING SYSTEM IN EARLY DIAGNOSIS OF ACUTE APPENDICITIS AND ACUTE MESENTERIC LYMPHADREN IN CHILDREN

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Keywords. Acute appendicitis, acute mesenteric lymphadenitis, Alvarado Scoring System.

Introduction. Acute appendicitis (AA) is the most common intra-abdominal surgical emergency in children. However, it is easily mistaken with acute mesenteric lymphadenitis (AML) – a self-limiting, non-specific mesenteric lymph node inflammation and hyperplasia.

Aim. To evaluate significance of clinical signs and symptoms using the Alvarado Scoring System (ASS) in early diagnosis of AA and AML.

Materials and methods. Retrospective medical records of 74 children (aged 7–18 years) who were discharged from Children's Clinical University Hospital (CCUH) with diagnosis of AA or AML and who didn't recieve surgical treatment from January 2012 till January 2015 were reviewed. Clinical symptoms such as pain migrating to the right lower quadrant (RLQ) of abdomen, anorexia, nausea / vomiting, a fever ≥37.3°C, objective symptoms of RLQ tenderness, rebound tenderness and white blood cell (WBC) count and elevated neutrophils ≥75% were selected. Finally the reliability of ASS was assessed using 10 point scoring system. Statistical analysis were conducted using SPSS software. Chi-square test was used to determine the significance ($p < 0.05$).

Results. 74 patients, 38 (51.4%) boys and 36 (48.6%) girls. Of these 56 (75.7%) were AML and 18 (24.3%) AA patients. Alvarado score ≥7 was significantly related to AA and excluded AML ($x^2 = 5.1$; $p = 0.024$). 7 (38.9%) AA patients collected ≥7 points and 8 (14.3%) AML patients recieved ≥ 7 points of ASS, which indicates "probable appendicitis" ($p = 0.04$). Among the ASS components, the pain migration to RLQ (5 (8.9%) vs. 8 (44.4%); $p = 0.02$) and nausea / vomiting (16 (88.9%) vs.31 (55.4%); $p = 0.01$) were significantly differentiated between AA and AML. There was no significance in relation to the localization of pain, anorexia, rebound tenderness, fever, elevated WBC count and neutrophils between groups.

Conclusions. The Alvarado Scoring System can provide assistance in setting diagnosis of acute appendicitis and acute mesenteric lymphadenitis. Acute appendicitis patients tend to recieve higher total point score of ASS. Some of the symptoms (nausea / vomiting, pain migraiting to the RLQ) are more significant in AA than AML patients. ASS should be used in combination with other radiological and laboratory diagnostic methods.

ASSESSMENT OF BODY MASS INDEX (BMI) IN CHILDREN'S HOSPITAL, AFFILIATE OF VILNIUS UNIVERSITY HOSPITAL SANTARISKIU KLINIKOS: ONE WEEK'S DATA

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Keywords. Body mass index, nutritional status, malnutrition.

Introduction. Nutritional assessment helps to evaluate the condition of patients' health, treatment efficiency and disease prognosis. One of the best ways to assess nutritional status is to measure the body mass index (BMI).

Aim. The aim of this study was to assess data of children's BMI deviation regarding the age and sex, compare results with emergency room (ER) data and evaluate BMI affiliation with the type of disease and length of hospitalization.

Materials and methods. 180 patients (85 boys, 95 girls) were examined, who were treated at Children's Hospital, Affiliate of Vilnius University Hospital Santariskiu Klinikos between 3rd and 7th November 2014. 120 of them met the inclusion criteria (59 boys, 61 girls). Weight, height and BMI were estimated and compared with the data collected on hospitalization day. Afterwards, the results were compared with children's growth rate in Lithuania.

Results. The mean of age of examinees was 9.97 ± 5.2 years. The average BMI calculated from the data collected during hospitalization day was 18.73 ± 3.9, while mean calculated from our conducted measurements was 19.14 ± 4.4. 82 patients had acute disease (68.3%) and 38 (31.7%) had chronic disease. No statistically significant correlation was found between type of disease and BMI or between sex and BMI. However, some findings showed that the older the children were, the bigger was their BMI ($r = 0.571$; $p = 0.00$). During the study 6 cases of malnutrition (5%) and 22 cases of obesity (18.3%) were discovered.

Conclusions. The average BMI during the days of data collection was bigger than that of ER data only for children who were hospitalized less than 7 days. While growing, children's BMI increases and corresponds to children growth rate in Lithuania. There was no statistically significant value between sex, type of disease and length of hospitalization. Finally, 5% of examinees were malnourished and 18% were obese.

ANALYSIS OF DIAGNOSES IN NEONATES REQUIRING RESPIRATORY SUPPORT IN NICU OF CHILDREN'S CLINICAL UNIVERSITY HOSPITAL, LATVIA

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Keywords. NICU, respiratory support.

Introduction. Respiratory support is an important element of neonatal care. Use of various methods allows for a better outcome in the diseased newborn. The structure of diseases in neonates requiring respiratory support is diverse and varies between preterm and term newborns.

Aim. The purpose of this study is to analyse the methods and duration of respiratory support in Neonatal Intensive Care Unit (NICU) and the structure of patients requiring respiratory support.

Materials and methods. In a retrospective study data from Children's Clinical University Hospital was obtained using an electronic data base. Patients requiring respiratory support (mechanical ventilation (MV), continuous positive airway pressure (CPAP), high frequency oscillatory ventilation (HFOV) or supplemental oxygen) in NICU from January 2012 until December 2015 were included; patients were excluded if there was any substantial information missing. Patients were divided into preterm and term infants. We also obtained data on the disease structure for each infant using the International Classification of Diseases 10th revision.

Data was analysed using IBM SPSS Statistics 22. Normal distribution was determined using tests of normality. Descriptive statistics (median, interquartile range) was used to describe the cohort. Mann-Whitney, Pearson's Chi-squared, Fisher's Exact test were used to determine the differences and the significance of these differences in the two groups. A P value ≤0.05 was considered statistically significant for all analyses.

Results. The study included 587 neonates, both preterm (61.5%) and term (38.5%). In the preterm group the most common condition was respiratory distress (48.8%), followed by bacterial sepsis (42.4%), congenital heart disease (CHD) (28.3%) and intraventricular hemorrhage (24.9%). In term infants the most common conditions were CHD (32.3%), bacterial sepsis (27%) and perinatal asphyxia (24.3%). There was a significant difference in the duration of MV, CPAP and supplemental oxygen between premature and mature infants: median 101.25 h (IQR 43.88–225.00) vs. 86.77 h (IQR 45.00–136.08), $p = 0.033$; 132.18 h (IQR 45.13–357.16) vs. 46.70 h (IQR 22.00–100.58), $p < 0.001$; 121.19 h (IQR 48.00–354.35) vs. 46.00 h (IQR 21.38–96.10), $p < 0.001$, respectively. There was no significant difference in duration of HFOV between the two groups: median 141.00 h (IQR 71.79–272.66) vs. 111.00 h (IQR 83.00–178.26), $p = 0.445$, respectively.

Conclusions. The duration of respiratory support was longer in preterm infants. The structure of diseases in neonates requiring respiratory support is diverse; the most common condition in preterm infants was respiratory distress, in term – congenital heart disease.

16 March 2016

DIAGNOSCTICS AND MANAGMENT IN CASES OF INTUSSUSCEPTION AT RIGA CHILDREN´S CLINICAL UNIVERSITY HOSPITAL FROM 1/01/2009 – 31/12/2015

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Keywords. Intussusception, Pneumatic enema, Laparoscopy.

Introduction. Intussusception is a process in which a segment of intestine invaginates into the adjoining intestinal lumen, causing bowel obstruction. A common disease in paediatric surgery that requires urgent diagnostics and management.

Aim. To determine and evaluate the diagnostics applied and management used at Riga Children´s Clinical University Hospital.

Materials and methods. Retrospective study that consisted of all the patients admitted to Riga Children´s Clinical University Hospital from 1/01/2009 – 31/12/2015 and had been diagnosed with intussusception. Patients were analysed by the diagnostics applied and management used.

Results. Data collected during time period from 1/01/2009 to 31/12/2015 117 patients of intussusception had been reported (male infants 75, female infants 42). Re-intussusception occurred in 21 case. Youngest child 3 months old and the eldest reported 13.5 years old. Abdominal X-ray taken in 83 patient cases. Abdominal ultrasound used for 103 patients and based on diagnostic found intussusception in 97% cases. 55 patients presented co-morbidities, in 91% it was mesenteric lymphadenitis. Forms of intussusception: ileocolic in 118 cases, entero-entero in 7 cases, colo-colic in 3 cases and appendiceal in 2 cases. Image-guided pneumatic enema is preferred first treatment in most cases of intussusception preformed in 57% of cases. Laparascopy in the management (with desinvagination, intestinal reduction or stoma creation) of intussusception was chosen in the rest of the 43% cases.

Conclusions. 1.Intussusception rates were higher for boys. 2.Vast majority of cases of intussusception in children are ileocolic but rare forms like ileocecal form may also occur and interfere with diagnostics. 3.Abdominal ultrasound appears highly sensitive and specific for diagnosis of intussusception. 4.Image-guided pneumatic enema is preferred first treatment in most cases of intussusception.

THE IMPACT OF CARDIOPULMONARY BYPASS TIME AND PREOPERATIVE NYHA HEART FAILURE CLASS ON THE EARLY POSTOPERATIVE OUTCOME AFTER SURGICAL CLOSURE OF CONGENITAL VENTRICULAR SEPTAL DEFECT

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Keywords. VSD, cardiopulmonary bypass, early postoperative outcome.

Introduction. Ventricular septal defect (VSD) is the most common congenital heart lesion. Some VSD may cause significant hemodynamic consequences and therefore should be closed. In Riga Children's Clinical University hospital (CCUH) most of these cardiac lesions are managed operatively with trans-atrial approach. The operation requires the use of cardiopulmonary bypass (CBP), which inflicts an additional challenge for the already abnormal circulation.

Aim. The aim of our study was to determine whether the duration of CBP and the preoperative heart failure class has a significant effect on the early postoperative outcome for patients after VSD closure operation.

Materials and methods. In a retrospective study data from patient medical documentation and in hospital database were collected and analysed. Patients were selected from CCUH cardiology and cardio surgery registry. All patients, who had undergone VSD closure operation for isolated heart defect during time period from 2008 to 2011, were included. The data were analysed using IBM SPSS Statistics 23 and Microsoft Excel. Tests of normality were used to assess the distribution of data. Early postoperative outcome for patients with preoperative NYHA class 2 heart failure were compared to NYHA class 3 heart failure patients by median mechanical pulmonary ventilation (MPV) time and intensive care unit (ICU) length of stay, using Mann Whitney test. To determine association between the duration of CPB and postoperative MPV time and ICU length of stay Spearman's rank correlation coefficient was used. The significance threshold was set at 0.05.

Results. In total 65 patients with median age of 13 months (IQR 9 – 16) were analysed. There were no perioperative deaths in our study group. 2% (n = 1) had NYHA 1, 58% (n = 38) – NYHA 2 and 40% (n = 26) – NYHA 3 heart failure. Patients with preoperative NYHA 3 heart failure required longer MPV support (median 1.76 days; IQR 0.82 – 4.24) than NYHA 2 patients (median 0.44 days; IQR 0.27 – 0.91), $p < 0.001$. The ICU length of stay was significantly shorter in the NYHA 2 group (median 2.44 days; IQR 1.90 – 2.92) compared to NYHA 3 group (median 4.38 days; IQR 2.90 – 6.14), $p = 0.001$. Aortic cross clamp time and total CPB time correlated moderately with MPV time (Spearman's rho accordingly 0.40; $p = 0.001$ and 0.55; $p < 0.001$). Weak correlation was observed for total CPB time and ICU length of stay (Spearman's rho 0.26; $p = 0.036$), however there was no significant association between aortic cross clamp time and ICU length of stay detected (Spearman's rho 0.17; $p = 0.167$).

Conclusion. Higher preoperative NYHA heart failure class and longer duration of cardiopulmonary bypass is associated with worse early postoperative outcome after VSD closure operation.

16 March 2016

PEDIATRIC CONVULSIVE STATUS EPILEPTICUS
IN LITHUANIA

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Keywords. Convulsive status epilepticus, Epidemiology, Etiology, Outcome.

Introduction. Convulsive status epilepticus (CSE) is one of the most common neurological emergencies and requires an urgent treatment. Durations required for diagnosis of CSE have been plummeting for decades. There is a paucity of data and there is needed a review of underlying etiology and outcomes of pediatric CSE in Lithuania.

Aim. To assess causes, epidemiological rates, treatment and outcomes of pediatric CSE in Vilnius district.

Materials and methods. Retrospectively were analyzed all case histories of children, who were admitted to Vilnius hospitals with intensive care units during the 10 year period (2005–2014). We recorded all seizures lasting 5 minutes or more. Two groups were formed: children with epilepsy (E1) and children without epilepsy (E2). Statistical methods we used – Student t-test, Mann-Whitney U, χ^2 test, Pearson's and Spearman's tests.

Results. We identified 468 cases – 246 (52.6%) boys and 222 (47.4%) girls experienced CSE, there was no significant differences between sexes. A crude incidence – 31.8/100,000/year.

The mean age – 6 years (1 month – 17 years, Mo = 3). CSE mostly affected 1–6 year-old children (48.5%), while just 48 (10.3%) children from 1 month to 1 year had prolonged seizures (39.6% boys and 60.4% girls).

42.3% of children had epilepsy and they were twice older (8.2 years) than those in E2 group (4.3 years) (Z = −8.9, p < 0.001). The most common causes of CSE in E1 group were: epilepsy (50%), acute symptomatic causes (23.7%), antiepileptic drugs (AED) withdrawal / dose reduction (16.2%) and febrile state (10.1%). In E2 group the most common CSE etiology was a febrile seizures (51.3%), especially in 1 month – 6 year-old children (64.6%, r = 0.413, p < 0.001). 33.8% of all CSE were febrile CSE. CSE continued from 5 minutes to 33 hours, Mo = 5.4 minutes.

Those in E1 group (Z = −2.01, p = 0.044) received the treatment later. The first drugs which were administered during CSE were diazepam (79.8%) and midazolam (20.2%). Benzodiazepine-resistant CSE (22.2%) was treated with phenobarbital (56.2%), valproic acid (31.3%) and phenytoin (6.3%).

Children spent 5.2 days (1–57 days, Mo = 3) in hospital because of CSE. Children spent more days in hospital, if their CSE lasted longer (r = 0.125, p = 0.007). There were no death cases.

Conclusion. An incidence of CSE among children 31.8/100,000/year. CSE mostly affected 1–6 year-old children (48.5%). The most common causes of CSE in children – epilepsy (50%) and a febrile CSE (33.8%). It caused more cases of CSE among children without epilepsy (51.3%). No deaths were recorded.

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16 March 2016

RELATIVE AND ABSOLUTE COUNTS OF DOUBLE-NEGATIVE T-CELLS IN CHILDREN CORRELATE WITH AGE AND GENDER

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Keywords. Double negative cells; hematology; T-lymphocytes.

Introduction. Double negative cells (DNC) is a small population of T-lymphocytes that are negative for both CD4 and CD8; DNC comprise 1–5% of peripheral lymphocytes in adults, little is known about DNC in children. DNC may exhibit helper (particularly in AIDS) or regulatory and suppressive properties. DNC relation to other T-cell populations and their biological role remain unclear. Multicolor flow cytometry (at least 4 fluorochromes) is necessary for direct assessment of DNC. BD Multitest 6-Color TBNK kit for lymphocyte subsets calculates DNC counts as an additional parameter during routine testing.

Matherial and methods. The aim of the study was to evaluate age- and gender-related variations of DNC count in pediatric patients tested in 2012–2015 in Children's Clinical University Hospital. Anonymized patients' data (age and gender) were obtained from the Clinical Laboratory LIS. The 6-color TBNK test was performed by BD FACSCanto II flow cytometer, DNC were routinely measured by "% T-Sum" parameter and their absolute counts were calculated manually. MS Excel database was created, IBM SPSS v.21 software was used for Mann-Whitney and Wilcoxon test.

Results. Reports of 3411 representative consecutive samples entered the study. Median DNC relative content in the whole cohort was 3.8% of T-cells, median absolute count was 0.074E9/L. DNC counts significantly correlated with age ($p < 0.001$ for relative and $p = 0.009$ for absolute counts). Further analysis revealed that relative counts gradually increased until age 7, then formed plateau until age 13, followed by decrease. Absolute counts increased until age 2, remained high until age 7 and then gradually decreased.

Furthermore, significant difference between genders was observed, male patients tended to have higher numbers of DNC: their median relative count was 3.8% of T-cells vs 3.7% in girls ($p = 0.03$) and absolute – 0.078E9/L vs 0.069E9/L ($p < 0.001$). Comparison of yearly medians showed significant differences for both groups, too ($p = 0.002$ for relative counts and $p = 0.012$ for absolute counts).

Conclusions. DNC population varies significantly in pediatric patients. The study demonstrated the age-related dynamics of both relative and absolute DNC counts from infancy into adolescence. Unexpectedly, the study revealed gender-related variability, DNC counts in boys being higher. Biological and clinical significance of these findings is unclear and requires further research.

EVALUATION OF INFANTS HEALTH STATUS IN GENERAL PRACTITIONER'S PRACTICE

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Keywords. Infant, general practitioner, prophylaxis.

Introduction. According to the Cabinet of Ministers regulation Nr.1046 the prophylactic medical examination for infants has to be done at the general practitioners practice on the following schedule: The first visit must be done within 3days of discharge from the hospital. The second follow up visit will be done on the third week from the time of birth. For infants age of 1–6 month the follow up visits are done once a month. The medical examination visits for infant age of 7–11 months will be done twice during this period and the last visit will end at 12 months. It is very important to follow the schedule regulated by Cabinet of Ministers, regulation Nr.1046. During these visits the general practitioner will perform all medical examination in order to prevent any pathological abnormalities.

Aim. The goal is to summarize the data of infant visits at the general practitioner's office to find out how many infants are being examined within the schedule set by Cabinet of Ministers, No.1046. The other goal is to determine the most common illnesses for infants.

Materials and methods. Retrospective study, in three General practitioners practices (located in different cities in Latvia), using patient ambulatory cards for infant patients born in the period from 2012 to 2014.

Results. The study included 103 patients, 47.6% (n = 49) were girls and 52.4% (n = 54) were boys. The first infant visits were with 97% compliance (n = 100) (within 3 days from the day of discharge from the hospital. The next month data was summarized with the following results: for the first month at 98.06% compliance (n = 101), the second month at 99.03% (n = 102), the third month at 95.15% (n = 98), the fourth month at 94.17% (n = 97), the fifth month at 85.44% (n = 88), the sixth month 89.32% (n = 92). The overall 93.53% infants age of 1–6 months complied with the visit requirement schedule. The medical examination visits for infants age of 7–11 months were done within the schedule at 77.67% compliance (n = 80), and 74.76% (n = 77) on 12 months. The most common illnesses was acute respiratory viral infection 45.63% (n = 47), acute bronchitis 19.41% (n = 20), dermatitis 16.50% (n = 17), gastrointestinal disorders 11.65% (n = 12) and conjunctivitis 10.67% (n = 11).

Conclusions. According to the data 93.53% infants were examined for age group 1–6 months but in the period of age 7–11 month only 77.67% were done within the schedule. The most common acute diseases were illnesses related to the respiratory system – acute respiratory viral infection and acute bronchitis. That shows that general practitioners should educate parents about respiratory diseases and to motivate to do prophylactic medical examination within the schedule after period of 6 month.

RISK FACTORS ASSOCIATED WITH HEARING IMPAIRMENT AND COMPARISON OF OTOACOUSTIC EMISSION METHODS IN PREMATURE INFANTS

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Keywords. Hearing loss, screening, risk factors, premature infants.

Introduction. Premature infants are subject to various risk factors that can significantly affect their hearing. Timely detection of hearing impairment is important not only for development of language and communication but also for the ability to integrate in the community. A new screening instrument – *Otoacoustic Emission* (*OAE*) – *GSI Corti* is available in the CN of CCUH. It allows to assess hearing using 2 different screening methods (DPOAEsMER+distortion product otoacoustic emissions, TEOAEs – transient evoked otoacoustic emissions). It is important to evaluate, which method is more easily and effectively usable in practice.

Aim. To assess hearing of premature infants treated in the CCUE using GSI Corti OAE screening methods. To evalute the interdependence between hearing impairment and amount of risk factors. To compare the results of DPOAEs and TEOAEs methods.

Materials and methods. Data about hearing risk factors was gathered from medical histories and used in prospectively analytical reasearch. Information about birth indicators, illnesses, received therapy, family anamneses was analysed. GSI Corti OAE was used to test hearing. Two screening methods – DPOAEs and TEOAEs were used for each infant in 34–36 postconceptual week. SPSS 20.0 and MS Excel were used to analyse the results.

Results. 37 infants born in 23–26 gestational week were included in research (18 girls, 19 boys). Such risk factors as gestational age (100% premature), weight < 1500g (53%), Apgar score 5min < 5 (6%), resus incompatibility (11%), substitution of gentamicine (69%) and other ototoxic (33%) medicaments, blood transfusion (28%), sepsis (44%), prenatal hypoxia (86%), breathing support > 5 days (44%), mother's diabetes mellitus (17%), heredity (19%), and pregnancy preservation (25%) were assessed. For 21 infant DPOAEs test was positive for both ears, 10 – for one ear, 5 – negative. For 11 infants TEOAEs test was positive for both ears, 12 – for one ear, 11 – negative. Higher number of risk factors corresponds with higher amount of infants with hearing impairment (for DP4 p = 0.018, for TE32 p = 0.006). Different results between both methods were observed for right (p = 0.017) and left (p = 0.006) ear.

Conclusions

1. Higher amount of risk factors corresponds to higher amount for infants with worse OAE screening test results.
2. Different hearing impairment results were observed using DPOAEs and TEOAEs methods.
3. A more detailed assessment of screening methods is required to assess, which method is more effective for screening of premature children in the CCUE.

16 March 2016

ACUTE KIDNEY INJURY IN NEWBORNS WITH PERINATAL ASPHYXIA AND THERAPEUTIC HYPOTHERMIA TREATMENT

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Keywords. Acute kidney injury, therapeutic hypothermia, perinatal asphyxia.

Introduction. Acute kidney injury (AKI) is a frequent complication of perinatal asphyxia and often accompanies hypoxic ischemic encephalopathy (HIE). The incidence of AKI in neonates with HIE treated with therapeutic hypothermia varies between 11.7% and 56% as there is no one, clear definition of AKI in newborns.

Aims. To ascertain if AKI would increase morbidity, length of hospital stay and length of mechanical ventilation in asphyxiated newborns treated with therapeutic hypothermia.

Materials and methods. In a retrospective study data from Children's Clinical University Hospital and Riga Maternity Hospital was obtained using patient charts and electronic data bases and analysed in a retrospective manner. Patients treated with therapeutic hypothermia from June 2012 until August 2015 were included; patients were excluded if there was any substantial information missing from the patient chart or in the case of an early death. Patients were divided into groups of AKI and no AKI based on modified Acute Kidney Injury Network criteria. The outcomes in the two groups were compared.

Data was analysed using IBM SPSS Statistics 22. Normal distribution was determined using tests of normality. Descriptive statistics (median, interquartile range) was used to describe the cohort. Mann-Whitney, Fisher's Exact test were used to determine the differences and the significance of these differences in the two groups. A P value ≤0.05 was considered statistically significant for all analyses.

Results. 59 newborns were included in the study. AKI occurred in 19% (n = 11). Overall mortality was 5% (n = 3). Mortality did not differ significantly between AKI and no AKI groups (2 vs. 1 patient, p = 0.086). There was no statistically significant difference in hospitalization time in the NICU – median 10 (IQR = 7–13) vs. 9.5 (IQR = 8–14) days, p = 0.685. The duration of mechanical ventilation did not differ significantly in survivors 133.38 h (IQR = 104.32–158.45) vs. 126.33 h (IQR = 104.00–143.20 h), p = 0.595.

Conclusions. There was no significant difference in mortality, length of NICU stay and length of mechanical ventilation between neonates with AKI or without it.

DETECTION RATE OF DUCTUS DEPENDENT CONGENITAL HEART DISEASES IN LATVIA 2010–2015

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Keywords. Congenital heart disease, ductal- dependent, prenatal screening.

Introduction. Patients with ductus arteriosus (DA) dependent congenital heart disease (CHD) may be asymptomatic at birth, but will develop symptoms with life-threatening consequences after spontaneous closure of the DA. Prenatal diagnosis of these anomalies gives the opportunity of an early initiation of prostaglandin E1 (PGE1), which prevents closure of the DA. Fetal echocardiographic (FE) screening is recommended for pregnancies with a higher risk of CHD.

Aim. To define the frequency of prenatal and postnatal detection of DA dependent CHD and the median diagnostic and PGE1 initiation time for both diagnostic groups in Latvia from year 2010 to 2015. To identify high risk pregnancies with indications for FE screening and the frequency of prenatal diagnosis made within these group.

Materials and methods. A retrospective study was made, including patients presenting to the Children's Clinical University Hospital with DA dependent CHD between 2010 and 2015. Necessary data were collected from medical documentation of these patients and analysed using IBM SPSS Statistics 23 and Microsoft Excel. Test of normality was used to determine if the data is normally distributed. Test of frequencies was used to describe the groups. Crosstabulation, Pearson's Chi-squared test and Mann-Whitney test were used to determine the difference and the significance of the difference between two groups.

Results. In total 92 cases of ductal- dependent CHD were identified with 40 (43.5%) diagnosed antenatal. There was no significant difference in the time of diagnosis between children living in Riga or outside of Riga (p = 0.173). The mean time of prenatal diagnosis was 30th week of gestation (CI 95% 27.27–31.99). The median time of postnatal diagnosis was 4th day of life (IQR 2–7). 1st day of life was the median for PGE1 initiation in the prenatal diagnosed group (IQR 1–1), 4th – in the postnatal (IQR 2–9). The difference was statistically significant (p < 0.001). Prenatal risk factors were identified in 30 pregnancies (32.6%). Prenatal diagnosis of CHD was made in 46.7% of these pregnancies.

Conclusion. Prenatal diagnosis of ductal- dependent CHD was made in less than half of all cases. PGE1 therapy was initiated earlier in prenatal diagnosed patients. The proportion of prenatal diagnosis was approximately the same for higher risk pregnancies. Better quality of prenatal screening for higher risk profile pregnancies could improve prenatal diagnostic of CHD and timely initiation of PGE1 therapy in Latvia.

FIRST-TIME AND RECURRENT DIABETIC KETOACIDOSIS: COMPARISON IN PEDIATRIC POPULATION

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Keywords. Type 1 diabetes, Diabetic ketoacidosis.

Introduction. Diabetic ketoacidosis (DKA) is a metabolic emergency and is characterized by elevated serum glucose level > 11 mmol/l, decreased blood pH level pH < 7.3 and serum bicarbonate level HCO_3 < 15 mmol/l with coexisting ketonemia and ketonuria. DKA occurs mainly in patients with type 1 diabetes (T1D), in about 30% of children and adolescents DKA may be the initial presentation of a new–onset T1D, more often involving females and children < 3 years.

Aim. To establish age and sex difference in new–onset T1D presenting as DKA. Determine DKA severity level and distribution and identify pH and serum glucose level peculiarities between patients with DKA as initial presentation of a new–onset T1D and recurrent DKA sequences. Analyze correlations between pH and serum glucose levels.

Materials and methods. Retrospective study analyzing patients admitted to Children's Clinical University Hospital Pediatric Intensive Care Unit (PICU) with diabetic ketoacidosis from January 1st 2009 – December 31st 2015, excluding patients with acute intercurrent illness or exacerbation of a chronic illness. 2 groups of patients were made – new–onset T1D with DKA (n = 75) and recurrent DKA group (n = 75).

Data was analyzed using IBM SPSS Statistics 23. Test of normality were used to determine if the data is normaly distributed. Test of frequencies were used to describe the groups. Crosstabulation, Pearson's Chi-squared test, Mann-Whitney test and ANOVA were used to determine the difference and the significance of the difference between 2 groups. Correlations between 2 variables were tested with Spearman's rho test.

Results. Total of 75 patients were hospitalized with DKA as initial presentation of a new – onset T1D, 40% male and 60% female, median age 9 years (range 1 – 17 y). In this group 20% were admitted to PICU with mild DKA, 32% with moderate and 48% with severe DKA. In the recurrent DKA group 5% had mild, 36% moderate and 59% severe DKA. The difference in severity of DKA between 2 groups was statistically significant p = 0.0025.

Serum glucose levels in the recurrent DKA group (median value 24.4 mmol/l; IQR = 18.5–29.3) were higher than the new–onset T1D with DKA group (median value 20.2 mmol/l; IQR = 15.3–25.5); p = 0.028. In the recurrent DKA group mean pH value pH = 7.093 (std.dev. 0.114) were lower than the new–onset T1D with DKA group pH = 7.147 (std. dev. 0.124); p = 0.006. There was mild but statistically significant correlation between pH and serum glucose levels in both study groups (Spearman's rho respectively -0.267; p = 0.021 and -0.282; p = 0.014).

Conclusion. DKA as the initial manifestation of a new–onset T1D affects more female patients. Severe DKA occured more frequently in the recurrent DKA group, as well as higher serum glucose levels and lower pH levels. Serum glucose levels and pH levels were reversely related in both study groups.

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INITIAL EPISODE OF IDIOPATHIC NEPHROTIC SYNDROME IN CHILDREN: AGE RELATED CLINICAL AND LABORATORY FEATURES

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Keywords. Nephrotic syndrome, paediatrics, clinical, laboratory features, complications.

Introduction. Nephrotic syndrome (NS) is defined as massive proteinuria leading to hypoalbuminaemia and edema. Incidence is 1–3 per 100,000 children below 16 years of age. Most of pediatric patients are diagnosed with NS before age of six. Older age correlates with less favorable histologic findings associated with NS. The complications of NS, related to the disease itself, and adverse effects of its treatment can be potentially serious.

Aim. To analyze clinical and laboratory features and complication development in children with initial episode of idiopathic NS in correlation with age.

Materials and methods. Sixty-six patients with initial episode of idiopathic NS hospitalized for treatment in Children's Clinical University Hospital Nephrology Unit between 2004 and 2014 were included in a retrospective study. Age, anamnesis of acute viral infections (AVI) two weeks before hospitalization, extent of edema, presence of complications, and laboratory features, including 24-hour urine protein excretion (UPE), hematuria, serum albumin (SA), estimated glomerular filtration rate (GFR, using creatinine-based "Bedside Schwartz" equation, 2009) on admission were determined. Statistical analysis of data was performed, using descriptive statistics, non-parametric independent samples tests, Spearman's rank correlation test.

Results. Median age of patients was 5.0 (IQR = 3.0–9.5; range: 0.8–16.6) years with a slight male predominance (56.1% vs. 43.9%). AVI two weeks prior to hospitalization was reported in 26 patients (39.4%), with 16 cases – one week before hospitalization. Patients with AVI were insignificantly younger than without (Median (IQR) = 3.4 (2.5–9.5) vs. Median (IQR) = 5.4 (3.3–9.7); p = 0.26). Periorbital region and lower extremities were the most frequent localizations of edema: 65.2% and 77.2%, respectively. Less frequent was facial edema (59.1%), edema of anterior abdominal wall (42.4%), and anasarca (22.7%). There was a weak negative correlation between age and the number of edema affected regions (r = −0.36, p < 0.01). Reduced urination on admission was reported in 42.4% of cases. Median level of 24-hour UPE was 10.2 (IQR = 5.1–19.2) mg/kg/h. Mean SA level was 18.0 ± 7.5 g/L. There was moderate negative correlation between age and UPE (r = −0.50, p < 0.01) and weak positive correlation between age and SA level (r = 0.29, p = 0.03), and no correlation between age and level of hematuria (p = 0.86). GFR on admission was < 90 ml/min/1.73m^2 in 7 (11.9%) patients and < 75 in 2 patients; none had GFR < 60. Median age in patients with GFR < 90 ml/min/1.73m^2 was higher than in patients with GFR≥90 (Median (IQR) = 11.3 (11.1–16.2) vs. Median (IQR) = 4.1 (2.9–7.8); p < 0.01). Arterial hypertension (AH) developed in 36.4% of patients. Median age among patients with AH was insignificantly higher than in those without (Median (IQR) = 6.2 (3.3–11.2) vs. Median (IQR) = 5.0 (2.9–8.5); p = 0.80). Retinal angiopathy signs and invasive bacterial infection developed in five and two patients, respectively. One case of hepatic steatosis was found. Ten patients underwent kidney biopsy due to atypical clinical or laboratory features; four of them were < 12 years old (the youngest was 8.3).

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Conclusion. On admission significant correlation was found between patients' age and laboratory findings: 24-hour urine protein excretion, serum albumin level. More than one-third of patients developed complications, arterial hypertension being the most frequent. A high number of patients had acute viral infections two weeks prior to the initial episode of idiopathic NS.

SEASONAL VARIATION OF TYPE 1 DIABETES MELLITUS DIAGNOSIS IN POLISH CHILDREN – A MULTICENTRE STUDY

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Keywords. Seasonal variation, type 1 diabetes, temperature.

Introduction. Type 1 diabetes (T1D) is the most common form of diabetes in children and adolescents. It is an immune-mediated multifactorial disease characterized by destruction of pancreatic beta cells leading to insulin deficiency. The current concept of damage of beta cells includes environmental factors in genetically susceptible individuals. Among them the important role seems to be played by climate conditions such as temperature and insolation. Weather conditions can regulate patient's level of vitamin D. Also they might increase risk of viral infection. Both of them might play an important role in T1D development.

Aim. The aim of the study was the evaluation of the seasonal variation of type 1 diabetes mellitus in Polish children < 18 years of age.

Material and methods. The study group consisted of 2174 children (1007 girls) with the mean age 9.3 SD 4.5 years, with newly diagnosed T1D in the years 2010–2014. This cohort study included data of children at the age of 0–17 years with newly recognized T1D correlated with weather conditions such as temperature and hours of sunshine. The data was obtained from east and central Poland. The population living in these areas accounts for 35% of the Polish population. The data was collected retrospectively from paper and electronic documentation as well as prospectively from electronic databases. In all centers T1D was diagnosed according to the International Society for Pediatric and Adolescent Diabetes criteria. The meteorological data was provided by the Institute of Meteorology and Water Management.

Results. We noted significant seasonality in the incidence of Type 1 diabetes (p < 0.001). The lowest number of children was diagnosed with T1D during May, June and July and the highest incidence was observed from September to February with peak in January. 423 (19%) children were diagnosed in the warmest months (June to August with the mean temperature 16.8°C) compared to 636 (29%) recognised in the coldest months (December to February with the mean temperature −1.6°C), p < 0.0001. T1D onset was noted more frequently in Autumn-Winter (September to February) than in Spring-Summer (March to August); 1270 (58%) vs. 904 (42%) cases, p < 0.0001. The seasonal variation demonstrated different pattern in the youngest children 0–4 years of age than in older groups. There were no significant differences between boys and girls (p = 0.142) with regard to the seasonal variation of diabetes onset.

Conclusion. Significant seasonality in T1D onset with peak values during the cold months might support the hypothesis that some environmental factors (e.g. infections) may interfere with T1D onset. Different seasonal variation pattern in younger ages suggests that environmental factors may have a different effect in the youngest children compared to older subjects.

ASSESSMENT OF FACTORS AFFECTING INDUCTION OF REMISSION IN CHILDREN WITH INITIAL EPISODE OF IDIOPATHIC NEPHROTIC SYNDROME

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Keywords. Nephrotic syndrome, paediatrics, corticosteroid therapy, initial remission.

Introduction. Nephrotic syndrome (NS) is characterized by massive proteinuria, hypoalbuminaemia and edema. Incidence is 1–3 per 100,000 children below 16 years of age. Complete remission is achieved in 80–90% of patients with first episode of childhood nephrotic syndrome using corticosteroid therapy.

Aim. To assess factors affecting induction of remission in children with initial episode of idiopathic NS.

Materials and methods. Sixty-six patients with initial episode of idiopathic NS hospitalized for treatment in Children's Clinical University Hospital Nephrology Unit between 2004 and 2014 were included in a retrospective study. Age, 24-hour urine protein excretion, hematuria, serum albumin level on admission and time taken to complete (< 1+ of protein on urine dipstick for 3 consecutive days) or partial remission (proteinuria reduction of 50% or greater than the presenting value) were determined. Patients were stratified into three groups according to therapy: Group 1 (G1) received corticosteroids (CS) according to 2012 Kidney Disease: Improving Global Outcomes clinical practice guideline for management of glomerulonephritis: daily oral prednisone 2 mg/kg/d to a maximum 60 mg/d or equivalent oral methylprednisolone (MP) 1.6 mg/kg/d to a maximum 48 mg/d for 4–6 weeks; Group 2 (G2) were given a higher dose of CS (MP $\geq$1.75 mg/kg/d); Group 3 (G3) received a lower dose (MP$\leq$1.45 mg/kg/d), intravenous or a shorter duration of CS therapy. Statistical analysis of data was performed, using descriptive statistics, Mann-Whitney Test, Spearman's rank correlation test, linear regression.

Results. Complete remission during first hospitalization was achieved in 75.8% of patients, partial remission – in 19.7%, and no remission – in 4.5%. Time taken to complete remission was Median (IQR) = 13 (10–16) days and to partial remission was Median (IQR) = 20 (12–28) days. There were 16 (24.2%) patients in G1, 27 patients (40.9%) in G2, and 20 (30.3%) patients in G3. Time taken to complete remission did not significantly differ between G1 and G2 (Median (IQR) = 13 (10–14) vs. Median (IQR) = 12 (9–14); $p = 0.57$) or G1 and G3 (Median (IQR) = 13 (10–14) vs Median (IQR) = 14 (13–22); $p = 0.13$); however, significant difference was found between G2 and G3 ($p = 0.04$). Furthermore, time taken to complete remission in G3 was significantly longer than in G1 and G2 combined (Median (IQR) = 14 (13–22) vs. Median (IQR) = 13 (10–14); $p = 0.04$). Complete remission was achieved insignificantly less often in G3 (65.0%) than in G1 and G2 combined (86.0%) ($p > 0.05$). Median time to complete remission did not differ in patients who developed arterial hypertension ($p = 0.94$). There was a moderate negative correlation between age and time taken to complete remission ($r = −0.53$, $p < 0.01$). However, assessing combined influence of age, 24-h proteinuria, hematuria, and serum albumin level when hospitalized on time to complete remission, no significant linear association was found ($p > 0.05$).

Conclusion. Corticosteroid intravenous regimen or lower dosage, or shorter therapy duration than recommended in guidelines was associated with longer median time to complete remission. Significant correlation was found between patients' age and time to complete remission.

MYELOPEROXIDASE ENZYME INDEX, INFLAMMATORY MARKER AND WHITE BLOOD CELL RELATION AND MUTABILITY TO PEDIATRIC PATIENTS WITH SIRS

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Keywords. SIRS, myeloperoxidase, CRO.

Introduction. Myeloperoxidase (MPO) is a human enzyme in the azurophilic granules of neutrophils and also in lesser extent in the lysosomes of monocytes. Its major role is to be a part of microbial killing. MPO is eliminated by neutrophil activation, thus destroying pathogens and causing tissue damage, as well as reducing the amount of intracellular MPO. Neutrophils are functionally immature for newborns therefore cellular MPO might be dependent on the age and disease for children.

Aim. Aim of the study was to evaluate the MPO enzyme mutability index and the relation between the number of white blood cells and inflammatory markers (CRP, IL-6) in Children's Clinical University Hospital (CCUH) for patients with a diagnosis of pneumonia in the time period from March 2011 to January 2013.

Materials and methods. The study group included 45 patients with a diagnosis of pneumonia, who were treated in CCUH in the time period from March 2011 to January 2013. Patients were divided into two groups – the control group of patients who does not fulfill the criteria for the system inflammatory response syndrome (SIRS) and the research group of patients who fulfi the criteria. Hematologic analyzer ad- VIA 2120 (Siemens AG) was used for MPO index determination. Statistical analysis was made using SPSS V.21.

Results. The study included 45 patients. 55% (25) of the 45 patients enrolled in the study are girls and 45% (20) are boys. 71% (32) 45 of patients are SIRS positive, and 29% (13) of 45 patients – SIRS negative. 40% (18) of the 45 patients the diagnosis of sepsis was verified. Age ranges from one to 291 month in the study group. The duration of disease until hospitalization for boys were 3.5 days and for girls were 4.7 days. The average amount of MPO index in hospitalization day for girls was -5.2619 and for boys 1.9826 and the average amount of leukocytes in hospitalization day for girls was 14.0124×10^9/L and for boys 15.3270×10^9/L. The mean value for CRP in the first day of hospitalization for the control group (SIRS negative) was 63.2331 mg/L but for the research group (SIRS positive) was 117.0231 mg/L.

Conclusions
1. In the research group no statistically significant correlation was found between the age of the child, leukocytes count and MPO index.
2. There was no statistically significant difference of MPO index in the control and study group. There is possibility that major researched group should be required.
3. There was statistically significant difference of CRP value in the control and study group. It was significaly higher for SIRS positive patients.

IX. Otorhinolaryngology,
Oral Cavity Pathology, Ophthalmology

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ANALYSIS OF GENETIC POLYMORPHISMS IN LATVIAN PATIENTS WITH PRIMARY OPEN ANGLE GLAUCOMA

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Keywords. Glaucoma, SNP, genotyping.

Introduction. Glaucoma is one of the most common cause of irreversible blindness in the world. Primary open-angle glaucoma (POAG), the most common type of the disease, often goes undetected until irreparable damage has been done.

It has been assumed that POAG does not result from a single pathological mechanism, but rather a combination of pathways that are influenced by genes, age, and environment. Several large scale genome-wide association studies were performed during last years aimed to discover common genetic factors for this disease; several genetic loci associated with development of POAG were identified.

Aim. The aim of this study was to determine a possible association of several single nucleotide polymorphisms (SNPs) that were previously reported as candidate SNPs, with POAG in Latvian population.

Materials and methods. The study included 95patients with POAG and 46patients with cataract (as a control group). In total, three SNPs were genotyped in all samples:SNP rs4656461 near the TMCO1 gene, rs1063192 near the CDKN2B gene and rs10483727 near SIX1/SIX6 gene. For genotyping, a real-time PCR with TaqMan SNP Genotyping Assay (Life Technologies, USA) was used, performed specified by manufacturer's protocol. Obtained results were processed by the software IBM SPSS statistics 20.0.

Results. The obtained results for all SNPs were in accordance to Hardy-Weinberg Equilibrium. For *TMCO1* gene mutant allele frequency was similar for both groups: q = 0.12 and q = 0.1 for glaucoma patients and controls, respectively (OR = 1.227; 95% CI = 0.504–2.986; p = 0.651). Genotype A/A dominated both in cases (77%) and controls (81%). For *CDKN2B* gene, the mutant allele was more common, with q = 0.45 and q = 0.49 for glaucoma patients and controls (OR = 0.851; 95% CI = 0.488–1.484; p = 0.571). Both A/G (49%) and G/G (20%) genotype frequency in cases were similar to the frequency in controls A/G (50%) and for G/G (24%). For the *SIX1/SIX6* genes the frequency of the minor allele T was similar for cases and control group (q = 0.30 and q = 0.28, respectively; OR = 0.907;95% CI = 0.492–1.671; p = 0.755). The genotype distribution frequency in glaucoma group genotype C/T (40.3%) and T/T (7%) was similar in the control group C/T (42%) and T/T (9%). Average IOP for glaucoma patients was 30.77 ± 9.7 (p = 0.018).

Conclusions. Overall, genotyping results for three SNPs studied were similar with previous reports of allele and genotype frequency in white Europeans. All three SNPs were not significantly associated with POAG in Latvian population. Additional replication studies in larger cohorts and other populations are necessary.

REFRACTION DEPENDENT ON RETINAL THICKNESS AFTER PHACOEMULSIFICATION CATARACT SURGERY

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Keywords. Refraction, Phacoemulsification, Retinal thickness, Cystoid retinal edema.

Introduction. Phacoemulsification cataract surgery is most common type of ophthalmologic operation, and in Paul Stradins Clinical University Hospital about 4000 people undergo this type of surgery each year. After this type of surgery a patient may develop cystoid retinal edema, which as research shows may in turn impact patients refraction.

Aim. To study changes in retinal thickness 7 days after phacoemulsification cataract surgery, and deduce, if those changes impact patients refraction.

Methods. Research was conducted measuring patients retinal thickness using Heidelberg Engineering SPECTRALIS® Tracking Laser Tomography before operation and 7 days after. Patients refraction was measured using Nidek Tonoreff II autorefractometer 7 days after surgery. To analyze results Microsoft Excel and Stata were used.

Results. From 22 examined patients 68% are female, 32% male, 23% were discovered to have a positive thickness change after surgery, while other 77% had a negative change. Correlations between change in retinal thickness (ΔRT) and measurements of autorefractometer (sphere (S), cylinder (C) and axis (A)) were calculated, and tested for statistical reliability. While it was found that the correlation between ΔRT, S, C and A exists: correlation coefficients ΔRT/S = 0.462074, ΔRT/C = 0.307845, ΔRT/A = 0.359414, it was determined using Kruskal-Wallis statistical test, that only correlation between ΔRT/C has statistical reliability, $p = 0.1586$. p ΔRT/S = 0.0425, p ΔRT/A = 0.0001.

Conclusions. There is no statistical reliability to prove that retinal thickness changes 7 days after cataract surgery have impact on refraction. Further research should be conducted to expand time frame in which the measurements are made, and increasing number of cases, to increase statistical reliability.

ASSOCIATION OF MMP-2 Rs243865 VARIANT
WITH OPTIC NEURITIS

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Keywords. Gene polymorphism, optic neuritis, matrix metalloproteinase-2.

Introduction. MMPs a family of zinc-dependent endopeptidases, play an important role in the process of degradation of the extracellular matrix and basement membrane. MMP-2 is found in optic nerve head astrocytes and retina, possibly contributing to optic nerve changes, demyelination and could be important in autoimmune inflammatory disease, like optic neuritis (ON). ON is demyelinating condition characterized by acute, painful, usually monocular, visual loss with decreased visual acuity, defects of the visual field and color vision.

Aim. To determine the influence of *MMP-2* (*-1306 C/T*) *Rs243865* genotype on the development of ON.

Material and methods. We selected 40 patients with ON and 318 control subjects (reference group) to perform a case – control study. The genotyping test of *MMP-2* (*-1306 C/T*) was carried out using the real-time polymerase chain reaction method. The genotype distribution was analyzed between the patients with ON and the reference groups using the SPSS/W 20.0 software (Statistical Package for the Social Sciences for Windows, Inc., Chicago, Illinois, USA).

Results. In our study *MMP-2* (*-1306 C/T*) gene polymorphism has not revealed any differences in the genotype (*C/C*, *C/T* and *T/T*) distribution between patients and the control subjects (as follows, 59.75%, 33.96%, and 6.29% vs. 75%, 25%, and 0%, p = 0.175).

Conclusion. This study did not show any statistically significant differences of *MMP-2* (*-1306 C/T*) *Rs243865* gene polymorphism between patients with ON and healthy controls.

RS 2108622 GENE POLYMORPHISM ASSOCIATION WITH EXUDATIVE AGE-RELATED MACULAR DEGENERATION

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Background. Age-related macular degeneration is the leading cause of blindness in the elderly individuals in developed countries. The aetiology and pathophysiology of age-related macular degeneration is not absolutely clear. Knowing that the main pathological changes of age-related macular degeneration are drusen formation, which include about 30% lipids, there have been attempts to find relation with age-related macular degeneration and genes controling lipid metabolism.

Purpose. To determine the frequency of the genotype of Rs 2108622 in patients with exudative age-related macular degeneration.

Methods. The study enrolled n = 181 patients with exudativeage-related macular degeneration and a random sample of the population n = 210 (reference group). The genotyping of Rs2108622 was carried out using the real-time polymerase chain reaction method.

Results. The analysis of Rs 2108622 gene polymorphism did not reveal any differences in the distribution of C/C, C/T, and T/T genotypes between the exudative AMD group and the control group (56.35%, 39.78%, and 3.87% in the exudative AMD group and 53.33%, 39.05% and 7.62%, in the control group, respectively).

Conclusion. Rs 2108622 gene polymorphism had no predominant effect on the development of exudative AMD.

LONG – TERM INTRAOCULAR PRESSURE CHANGES AFTER INTRAVITREAL INJECTIONS

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Keywords. Intravitreal injections, intraocular pressure, age-related macular degeneration.

Introduction. Direct drug delivery by intravitreal injection is an essential tool in the treatment of retinal diseases and the studies have demonstrated that patients undergoing treatment with intravitreal anti-VEGF agents may experience sustained and delayed elevation of IOP. According to literature, the incidence of sustained elevation of IOP varied from 3.45% – 11.6%.

Aim. To research the changes of intraocular pressure after intravitreal injections in patients of PSCUH from November 2015 – January 2016 with a diagnosis of age-related macular degeneration, diabetic maculopathy and retinal vein occlusions.

Methods. A prospective study was done in PSCUH from November 2015 – January 2016. In this study were interviewed and examined 31 patients who had had intravitreal injections. For data analysis SPSS 23 was used.

Results. From 31 patient there were 20 (65.5%) females and 11 (35.5%) males. The mean age of patients was 76.13 ± 13.36. They were divided into three groups depending on the diagnosis. There were 26 (83.9%) patients with age-related macular degeneration (AMD), 3 (9.7%) with diabetic retinopathy and 2 (6.5%) with retinal vein thrombosis. From 31 patient the IOP after intravitreal injections was increased in 21 (67.7%) patient – 13 (41.9%) in the right eye and 10 (32.2%) in the left eye. In both eyes the pressure was increased from 14 to 17 mmHg (14.08 to 17.08 mmHg in the right eye and 14.1 to 17.3 in the left eye). From 6 (19.3%) patients who had glaucoma before intravitreal injections, in 4 (66%) IOP had increased from 14.7 to 18.5 mmHg in the right eye and from 12.5 to 17 mmHg in the left eye. The mean number of injections in the right eye were 7.6 (in a range from 3 to 40) and in the left eye 6.3 (in a range from 3 to 24). There were no statistically significant differences between injection number and the rise of intraocular pressure (p = 0.840 in the right eye and p = 0.334 in the left eye).

Conclusions. A greater number of intravitreal injections is not associated with an increased risk of intraocular pressure. Patients with previously diagnosed glaucoma had a greater rise in IOP compared to patients with no glaucoma diagnosis. Further studies with a greater number of patients and identical IOP measuring method before and after injections are needed to better evaluate the effects of intravitreal injections on intraocular pressure.

EYE EXERCISES INFLUENCE ON
MYOPIA MANIFESTATION

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Keywords. Myopia, eye exercises, refraction.

Introduction. Worldwide, more than 150 million people are estimated to be visually impaired because of uncorrected refractive error, of which 8 million are functionally blind. Myopia is a complex disease, and genetic variations can increase the susceptibility to environmental factors and cause an early onset and / or aggressive progression. Myopia (or nearsightedness) occurs when distant objects focus anteriorly to the retina.

The aim of our study was to determine the eye exercises influence the occurrence of myopia, for children who came to LUHS KK Children's outpatient department.

Materials and methods. We examined 31 children (62eyes), who came to LUHS KKChildren's outpatient department. All children were assigned for eyes exercises for 10 days. The age of children was between 10 and 18 years old. Subject exclusion criteria – patients with other refractive errors and patients with other eye disorders. Visual acuity with and without correction, refractive error, accommodation and convergence reserves, relative positive and negative accommodation before and after eye exercises were examined.

Results. A total of 31 children (62 eyes) were examined; 15 were girls and 16 were boys. Visual acuity before eye exercises was 0.34 ± 0.37, after exercises was 0.38 ± 0.04. Accommodation reserves before eye exercises was $6.97 \pm 0.36D$, after exercises was $12.79 \pm 0.39D$. Convergence reserves before eye exercises was $17.67 \pm 0.97D$, after exercises was $25.36 \pm 1.0D$. Positive relative accommodation before eye exercises was $-4.86 \pm 0.18D$, after exercises $-5.4 \pm 0.15D$. Negative relative accommodation before eye exercises was $4.86 \pm 0.22D$, after exercises $6.1 \pm 0.17D$. Visual acuity, accommodation reserves, convergence reserves, relative positive and negative accommodation were increased after eye exercises, $p < 0.05$.

Conclusions. Eye exercises can reduce the progression of myopia.

REFRACTION AFTER CATARACT SURGERY DEPENDING ON CALCULATION FORMULA

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Keywords. IOL power, calculation formula, Zeiss IOLMaster.

Introduction. The postoperative refractive expectations of patients having cataract surgery have been increased due to the advances in technology. Therefore, accurate intraocular lens (IOL) power calculation is very important to attain the postoperative target refraction [*Kaya et al.*, 2015]. Results between each formula could not differ, but frequently there are patients with a radical difference in calculations.

Aim. To evaluate and compare predictability and accuracy of three IOL power calculation formulas (SRK/T, SRK II and Haigis) for IOL power calculation.

Methods. Prospective study included 25 eyes of 25 patients who underwent phacoemulsification with IOL implantation. Postoperative refraction and refraction predicted by the SRK II, SRK/T and Haigis formulas were analyzed. The mean estimation error (EE), mean absolute estimation error (AEE) and the percentage of eyes within target refraction (EWTR) ($\pm$ 0.50D and $\pm$ 1.00D) for all three formulas were compared. Analysis was repeated in three groups with three subgroups in each group. These groups formed based on axial length (AL) (group 1.1: < 23mm, group 1.2: 23 – 24mm, group 1.3: > 24mm), keratometry (K value) (group 2.1: < 43D, group 2.2: 43 – 45D, group 2.3: > 45D) and anterior chamber depth (ACD) (group 3.1: < 3mm, group 3.2: 3 – 3.5mm, group 3.3: > 3.5mm).

Results. In the overall study group, the smallest mean AEE (0.33 $\pm$ 0.17) was provided by the SRK/T formula. The highest percentage of EWTR $\pm$ 0.50D and $\pm$ 1.00D was also found by using SRK/T (80% and 100%). SRK/T provided the smallest mean AEE (0.55 $\pm$ 0.25 and 0.26 $\pm$ 0.18) for groups 1.1 (n = 8) and 1.3 (n = 7), however, there was no statistically significant difference between all three formulas in group 1.3 (P = 0.22). In group 1.2 (n = 10), the smallest mean AEE (0.37 $\pm$ 0.26) was obtained using SRK II. Haigis provided the smallest mean AEE (0.31 $\pm$ 0.09) in group 2.1 (n = 4). In both, group 2.2 (n = 11) and 2.3 (n = 10) the smallest mean AEE was found by using SRK/T (0.43 $\pm$ 0.18) and 0.21 $\pm$ 0.09. In all subgroups of group 3 (group 3.1 (n = 4), group 3.2 (n = 14) and group 3.3 (n = 7), SRK/T showed the smallest mean AEE (0.26 $\pm$ 0.12), (0.40 $\pm$ 0.19) and (0.23 $\pm$ 0.09), however, no significant difference was found between all three formulas (P = 0.17, P = 0.24 and P = 0.31). SRK/T provided the highest percentage of EWTR $\pm$ 0.50D and $\pm$ 1.00D in all subgroups, except 2.2, where Haigis showed better percentage of EWTR $\pm$ 0.50D. (54% < 63%).

Conclusions. Better results can be obtained using SRK/T formula in almost every eye, except SRK II formula may be preferred in eyes with moderate AL and Haigis formula in eyes with K value under 43D.

INFLUENCE OF CORNEAL EDEMA ON REFRACTION
AFTER CATARACT SURGERY

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Keywords. Cataract surgery, corneal edema, refraction.

Introduction. Nowadays age-related cataract is the leading cause of blindness accounting for 47.8% of all cases worldwide. Transient corneal edema is one of the most common side effects of cataract surgery (*Kausar et al. 2015*). Corneal edema after phacoemulsification can cause refractive changes that limit fast visual rehabilitation (*Juan et al. 2013*).

Aim. To evaluate objective refraction and changes of central corneal thickness (CCT) as well patients' subjective refraction 1 week after cataract surgery.

Materials and methods. This was prospective, nonrandomized, case series study of 23 eyes undergoing uneventful cataract surgery in a single university hospital. Informed consent was obtained in all cases. Central corneal thickness measurements with *Heidelberg Spectralis* Optical Coherence Tomography (OCT) and evaluations of subjective refraction were done before the surgery and on follow-up visits after first week. Corneal swelling was determined as the percentage change in CCT after surgery. Automated refraction was done on follow-up visits after week 1. All data were analyzed by SPSS 20.0.

Results. The study was composed of 23 eyes of 23 patients with age range from 53 to 88 years. The mean age ± standard deviation (SD) was 72.7 ± 9.52 [95% confidence interval (CI) = 68.8–76.59]. Among the patients, 16 or 69.6% [50.8–88.4] were females and 7 or 30.4% [11.6–49.2] were males.

The mean CCT was 532.57 ± 29.35μm [520.58–544.56] at baseline visit, but after 1 week – 570.13 ± 40.56μm [553.55–586.71]. The average CCT changes 1 week after cataract surgery was 7.10 ± 5.5% [4.85–9.35]. The minimal change of CCT was 0%, maximal – increased 19.4% of thickness. The correlation coefficient of CCT value before and after cataract surgery was $r = 0.703$ with $p = 0.001$ (paired t-test). No statistically significant difference was found between patient's age, gender and increase of CCT ($p > 0.05$).

At baseline, the average subjective refraction was 0.23 ± 0.114 [0.18–0.28]. One week after surgery, the best corrected visual acuity (BCVA) improved in all cases with value of subjective refraction 0.7 ± 0.21 [0.61–0.79]. In addition, 17.4% [1.91–32.89] of cases had BCVA = 1. At baseline visual error correction to obtain BCVA was necessary for 34.8% [15.33–54.27] but 1 week after phacoemulsification – 60.1% [40.09–80.11]. Before surgery plus lens were used in 4.3% [0–12.59], after a week – in 21.8% [4.93–38.67] of all cases.

After 1 postsurgical week automated spherical refraction was +0.32 ± 0.76D [0.01–0.63]. In addition, automated cylindrical refraction was -0.57 ± 1.05D [-1-(-0.14)].

Conclusions

1. CCT after cataract surgery increased for about 7% in the end of first postsurgical week.
2. Although in most of cases corneal swelling was seen, subjective and objective refraction highly improved after cataract surgery.

Results of automated refraction showed tendency to hyperopia and astigmatism of eye.

THE INCIDENCE OF PERIODONTAL DISEASE
IN CHILDREN WITH TYPE 1 DIABETES

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Keywords. Type 1 diabetes, periodontal disease, preventive maintenance.

Introduction. There are from 160 till 245 million diabetic patients in the world (2–4% of the total population). According to the literature, oral diseases with diabetes mellitus (caries, gingivitis, periodontitis, oral candidiasis, angular cheilitis, etc.) observed in 87.9% of patients.

Aim. To study the prevalence and intensity of periodontal disease in children with type 1 diabetes which are hospitalized.

Materials and methods. The study involved 78 patients who are hospitalized, including 40 children with type I diabetes. Patients were divided into three groups: the first group contained children with the blood sugar level less than 10 mmol/L, the second group – 10 mmol/l to 20 mmol/l, and the third group – more than 20 mmol/l. OHI-S, CPITN, PMA indexes were defined.

Results. Abnormalities of periodontal tissue were observed in 100% of cases among the examined children. Bleeding gums (100%), the presence of the supra- and subgingival calculus (100%), inflammation of the gingival papilla (87.5%), marginal (80%) and alveolar gum (55%) were identified.

Individual analysis of the periodontal tissue in patients with type 1 diabetes showed that with an increase of the blood sugar the progressive changes in the periodontal tissues are observed.

Conclusion. 1. The incidence of periodontal disease in children with type 1 diabetes is high – 100%. 2. The intensity of periodontal disease is estimated as an average – M = 2.28, SD = 0.47 by CPITN index.

EFFECT OF ENDOCRINE DISEASES ON THE DENTAL STATUS OF CHILDREN

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Keywords. Diabetes mellitus, hypothyroidism, hypogonadism.

Introduction. Despite the advances of modern medicine, today the problem of endocrine diseases is relevant for most countries in the world. According to WHO, 415 million people suffering from diseases of the endocrine system were registered.

Aim. To determine the prevalence and intensity of oral diseases in children with endocrine diseases.

Materials and methods. A dental examination of 60 patients which were hospitalized in the endocrinology department of Karaganda Regional Children's Hospital The age of patients ranged from 7 to 17 years.

Children and adolescents were divided into 3 groups: 20 children with type 1 diabetes, 20 children with diseases of the thyroid gland (hypothyroidism), and 20 children with abnormal sexual glands (hypogonadism). OHI-S, PMA, CPITN, DMFT, DMFT and dft were determined to all the patients.

Results. 1. A high prevalence of dental caries was marked in children with hypothyroidism, which amounted to 85%. The intensity of dental caries in children with hypothyroidism in permanent occlusion was M = 9.52 SD = 2.63 by DMFT index, in mixed dentition M = 6.21 SD = 1.58 by DMFT and dft index. 2. In children with diabetes, periodontal pathology occurred in 100% of cases. The intensity of periodontal disease in children with type 1 diabetes by CPITN index was M = 2.28 SD = 0.47 (p = 0.023). 3. Changes in the oral mucosa and the vermilion border have been identified in patients with type 1 diabetes in 65% of cases in children with hypothyroidism in 20% of cases. 4. The incidence of dentoalveolar anomalies with hypothyroidism was 60% in children with abnormal sexual glands (hypogonadism) malocclusion was observed in 25% of cases.

Conclusion. The study results allow to draw conclusions about the existence of a direct link between endocrine and dental diseases. The basic principles of endocrinologists and dentists joint work about prevention and treatment of endocrine diseases were developed.

THE EFFECT OF POURING TIME AND STORAGE CONDITIONS ON THE DIMENSIONAL STABILITY OF CASTS MADE FROM ALGINATE IMPRESSIONS BY 3D MODELLING

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Keywords. Irreversible hydrocolloid, alginate, dimensional stability.

Introduction. The accuracy of gypsum casts play major role in making high quality dental restorations. Widely used material in opposite jaw impressions is alginate due to its low price and simple use but it is well known that this material is dimensional unstable. This quality of alginate can lead in deformed opposite jaw cast which later results in occlusal inaccuracies.

Aim. The aim of this study was to determine the accuracy of casts made from irreversible hydrocolloid impressions with delayed pouring and different storage conditions.

Materials and methods. A master model was mounted on a modified articulator designed to standardize impression procedures. A total of 90 impressions were taken and grouped into 6 groups ($n = 15$) according to storage time (1 hour, 24 hours, 72 hours) and storage conditions (in sealed plastic bag and in sealed plastic bag containing wetted paper sheet). Impressions were stored at $22 \pm 1°C$ and poured with gypsum at the predetermined storage time. Casts were scanned with a three-dimensional (3D) model scanner. The digital models were measured and subtracted from the measurements obtained from the master model. The absolute values of dimensional differences in transpalatal distance were statistically analyzed using two-way analysis of variance (ANOVA) and *post hoc* Fisher LSD test ($P < 0.05$).

Results. Results of this study showed no statistically significant differences in the accuracy of casts depending on tested storage conditions ($P > 0.05$). But pouring time showed significant difference on dimensional stability of casts ($P < 0.001$). After 1h casts the average reduction of transpalatal distance was 0.03 mm and didn't show statistically significant difference from master model ($P > 0.05$) but after 24h and 72h average reduction of transpalatinal distance was 0.14 mm and 0.16 mm and statistically significant difference from master model was found ($P < 0.05$).

Conclusion. Dimensional stability of casts made from alginate impressions is not statistically significant influenced by tested storage conditions ($P > 0.05$). Pouring time has statistically significant influence on dimensional stability of casts made from alginate impressions ($P < 0.001$). With limitations of this study it is advised not to use alginate in oposite jaw impression if it is going to be poured in next day or later otherwise it can cause occlusal inaccuracies.

COMPLICATIONS IN PATIENTS WITH MALIGNANT NEOPLASMS OF ORAL MUCOSA AFTER RADIOTHERAPY

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Keywords. Radiotherapy, oral, cancer, complications.

Introduction. 640 000 new cases of oral cancer will be diagnosed this year worldwide, unfortunately the majority of them will be diagnosed as late stage cancer. To improve the already low survival rates the treatment has to be radical and that will often cause complications. The risk of complications can be decrease by implementing the correct prophylaxis.

Aim. To review the potential side effects of oral radiotherapy and the preventive measures that could minimize the risk of complications and also to analyze patient questionnaire answers about their quality of life, knowledge about the disease and their involvement in treatment, and finally to construct an educational handout material for patients.

Materials and methods. University of Washington Quality of Life Questionnaire (UWQOL v4) with added questions about patient knowledge and need for educational handout materials was given to patients who were in the final stage of radiotherapy treatment for malignant oral tumors and a total of 56 questionnaires were used to asses patient quality of life and knowledge. This paper also reviews publications on etiopathogenesis, treatment and prevention methods used for radiotherapy complications. A total of 141 scientific articles were reviewed.

Results. Using answers from 56 patients who filled out the modified University of Washington Quality of Life Questionnaire most common early complications were isolated and most promising preventive methods were reviewed. Vast majority of patients noted that they wanted to learn more about their disease and measures they can implement to improve treatment and lessen the risks of complications witch means that there is a need for educational handout materials.

Conclusion. With the aggressive treatment methods of oral cancer the likelihood of complications developing is high. Most patients develop some side effects ranging from mild discomfort to complications that require stopping the treatment completely. By engaging the patient in his treatment and complication prophylaxis we can decrease the chance and severity of side effects and improve quality of life for the patient and costs for the health system.

BIOMECHANICAL PARAMETRS OF PLASTIC
TEETH PREPARED FOR PFM CROWNS
IN THE PRECLINICAL SETTING

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Keywords. Biomechanics, TOC angle, preparation, occlusal reduction, length.

Introduction. Biomechanical parameters such as total occlusal convergence angle (TOC), the length of the prepared teeth and occlusal reduction of the teeth are important for achieving correct form of retention, resistance of the prepared teeth and resistance of the actual fixed restoration.

Aim. To find out the total occlusal convergence angle, the length of the prepared teeth and amount of the occlusal reduction of plastic teeth (analogs of the mandibular first molars).

Materials and methods. Dental students (preclinical prosthetic dentistry) had a task to prepare first mandibular molar for fabrication of the porcelain fused-to-metal crown during the final test of the semester. Before the test students have recieved both theoretical and practical training. Test was performed on KaVo DSEplus dental simulation units, appropriate diamond burs of abrasivity 50–150 μm with air-water cooling were used for preparation. Lightning were provided by using ceiling lights in the room, lamp of the dental simulation unit and LED lightning of the high-speed handpiece. Operational speed of the burs were 200.000–300.000 rpm. 35 teeth prepared by 35 different students were collected and parameters necessary for calculations measured. TOC angle was calculated by using the equation and the length of the teeth were measured mesially or distally by using digital caliper and the occlusal reduction calculated.

Results. 1. The TOC angle of prepared teeth is in the range from 1.62º till 43.01º, 28.57% (10 teeth) of them are into the optimal range from 10–20º with median TOC angle 14.23º 65.71% (23 teeth) of the teeth were prepared with TOC angle exceeding the 20º, in the range from 20.02º till 43.01º with median TOC angle 32.40º. 5.72% (2 teeth) were prepared with TOC angle less than 10º. 2. The length of the prepared teeth was in the range from 0.82 mm till 3.7 mm. 34.29% (12 teeth) of the teeth were more than 2.5 mm long. 3. The occlusal reduction of the teeth was in the range between 0.64 mm and 2.60 mm. In the 40% (10 teeth) occlusal reduction was more than 1.5 mm.

Conclusions. 1. 28.57% of the teeth are prepared with optimal TOC angle. 2. The length of the prepared teeth is insufficient in the all cases. 3. 40% of the teeth have a occlusal reduction necessary for fabrication of the PFM crowns. 4. All prepared teeth dont't comply the requirements of the optimal form of retention and resistance. 5. More attention should be paid for preclinical teaching of the biomechanical principles in the fixed prosthodontics.

ORAL HEALTH ASSESSMENT OF RSU DENTAL STUDENTS BASED ON THEIR DIETARY HABITS

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Keywords. Dental caries, periodontitis, vegetables, fruits, apples, nutrition, carbohydrates, sugar.

Introduction. Information about dental health and food intake from students attending Riga Stradins University (RSU) in the years 2012 to 2014 was assessed in relation to each other. Food consumption and dental health information from these students were compared to the corresponding information from students attending RSU in 2003 (based on the article "Uztura loma student mutes veselibas nodrosinasana" by Anda Brinkmane and Guntars Selga, 2003).

Aim. 1) Assess consumption of grain in relation to decayed, missed and filled teeth (DMFt) from the recordings made during the years 2012–2014. 2) Asses vegetable and fruit consumption in relation to DMF based on the recordings made during the years 2012–2014. 3) Assess milk product consumption in relation to DMF based on the recordings made during the years 2012–2014. 4) Assess sweet consumption in relation to dental health (DMFt), based on the recordings made during the years 2012–2014. 5) Compare the DMF index between the students from 2003 and the students from 2012–2014. 6) Compare eating habits of the student from the year 2003 to students from the years 2012–2014.

Materials and methods. 58 students from 2012–2014 were compared to 65 students from 2003. Information obtained was collected from the dental charts students complete in the "preventive" course, which includes assessment of dental status, assessment of plaque, assessment of periodontium, and assessment of diet (grain, fruit / vegetable, milk, meat and fish consumption). In addition to this, the students from 2012–2014 had to write a three-day food diary, where sugar intake was recorded.

Conclusion. 1) Eating normal amounts of grain gave the lowest DMF number, while eating less than normal gave a slightly higher DMF. Exceeding normal amounts of grain intake gave the highest DMF score. 2) Eating normal amounts of fruit and vegetables gave the lowest DMF number, while the ones consuming less than normal amounts showed a slightly higher DMF index. Exceeding normal amounts of grain intake gave the highest DMF score. However, fruits and vegetables show different DMF outcome in literature, but were regarded as one unit in the questionnaire. 3) Consuming less than normal amount of milk products gave the lowest score of DMF, followed by students with normal milk product intake. Consuming more than normal amounts of milk products gave the highest DMF score. 4) Consuming no sweets during the three-day food diary gave the lowest DMF score, followed by students eating sweets 1–2 days during the three days. Intake of sweets during all the three days recorded was seen to give the highest DMF number. 5) The students from 2012–2014 showed a lower DMFt, and lower Dt, but higher Mt and Ft than students from 2003. 6) Students from both years show a lack of grain, fruits, vegetables, milk products, and a normal intake of lean meat. Students from 2012–2014 consume more sweets than that of 2003, but they also drink normal amounts of water, in diference to the students from 2003 who do not drink enough water.

OUTCOME OF PRIMARY ROOT CANAL TREATMENT USING VERTICAL CONDENSATION FILLING TECHNIQUE, ANALYSIS

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Introduction. A fundamental aim of endodontic treatment is to prevent or cure apical periodontitis. (Ørstavik, 1998). Over the past 100 years, an extensive volume of studies about materials and methods has been carried out, that focuses on the prognosis of apical periodontitis after endodontic therapy. It is relevant to find out if vertical compaction filling technique can provide and improve prognosis of primary endodontic treatment, because compared with lateral condensation, vertical condensation technique can provide a high-density filling and better sealing at all portals of entry between the root canal and the periodontium and can be more effective in filling lateral canals than lateral condensation.

Aim. To analyse and determine outcome of primary endodontic treatment using vertical condensation and compare it to lateral condensation technique.

Materials and methods. A computerized literature search was performed using PubMed, Clinical Key and EBSCO host data base from 2000–2015. Randomized controlled trials, controlled clinical trials, clinical studies and case series studies were identified using following Keywords from PICOS formula (vertical condensation, vertical compaction, vertical obturation, root canal treatment, outcome, success and healing) in different variations. Strict inclusion and exclusion criteria were used.

Results. After exclusion a total of 8 articles were included and analysed. Analysed articles were divided in two groups (loose and strict evaluation criteria after endodontic treatment). Strict criteria – no signs of apical periodontitis and loose criteria apical periodontitis in healing phase.

• 1st group (strict evaluation criteria after treatment) – A total of 741 teeth were included in analysis, 84.04% or 623 were healed.

• 2nd group (loose evaluation criteria after treatment) – A total of 430 teeth were included in analysis and 395 or 91.86% were healed or in healing phase.

Conclusion. In comparative studies endodontic treatment outcome using vertical compaction shows significantly higher results (at least 10%) if compared with lateral condensation. In systematic analysis endodontic outcome using strict evaluation criteria is 84% and using loose criteria 92%. Characteristics of selected studies were different, therefore qualitative randomised clinical trials are required to evaluate primary root canal treatment outcome.

EVALUATION OF GLASS IONOMER CEMENTS
IN PRIMARY AND YOUNG PERMANENT TEETH

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Keywords. High viscosity glass ionomer cements, pediatric restorative dentistry, primary teeth, permanent teeth, Class I, Class II.

Introduction. Today, the new generation of glass ionomers may be able to provide better aesthetics, stronger bond and longterm results. The development of GICs has been the subject of several studies due to the many advantages they provide. The introduction of GIC was connected with the hope of being able to replace amalgam. Over the years many modifications has been made to improve GIC properties to use it as a permanent dental filling material.

Aim. The aim of this study was to evaluate the clinical results of three different high viscosity glass ionomer cements (Equia, Fuji IX, ChemFil Rock) in primary and young permanent teeth.

Materials and methods. This prospective study was carried out on 46 permanent (20 Class I and 26 Class II) and 56 primary (28 Class I and 28 Class II) teeth of 68 children with mean age of 8 years (SD = 3.38). Lesions in primary molars and young permanent molars of patient were restored using different restorative materials. Two examiners evaluated the restorations according to modified Ryge criteria and their survival rates were determined. There was special form created for parents to find out patient's hygiene and eating habits. It was used to find out if there are some correlation between evaluation of restoration and everyday habits of a patient. The statistical analyses were carried out with Pearson Chi-square, Mann Whitney U, Fisher exact and Kaplan Meier tests ($p < 0.05$).

Results. After a mean of 16 months none of the restorations showed trends to downgrade in marginal adaptation ($p < 0.05$). There were 7 restoration (3 Class I and 4 Class II) missing from primary teeth. Marginal deficiencies were more frequently observed in Class II restorations in permanent teeth. Significant difference in color match were found between Equia and ChemFil Rock ($p = 0.05$). Secondary caries were noticed in 8 Class I and 1 Class II in primary teeth ($p = 0.01$). There are significant correlation between patient eating and hygiene habits and Equia's anatomical form (0.002), color match ($p = 0.05$) and surface texture ($p = 0.045$). The cumulative survival rates of the restorations was 93% in permanent and 90% in primary teeth.

Conclusions. The highly viscous GIC showed acceptable clinical performance according to modified Ryge criteria in Class I and Class II cavities in primary and young permanent teeth. Failures appeared mostly in anatomical form and secondary caries criteria. There are significant correlation between evaluation of restorations and patient everyday habits.

DEEP NECK INFECTION: REVIEW OF 263 CASES

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Keywords. Deep neck infection, phlegmon of deep neck spaces, dental infection.

Introduction. deep neck infection (DNI) occurs in the spaces between muscles and organs in the floor of the mouth and neck. In 21st century odontogenic origin is the most common etiology in adult population. Complex anatomy of this region plays a major role in the development of the complications as well as surgical approach.

Aim. to analyse patients' records from Pauls Stradins Clinical University Hospital, who were hospitalized due to DNI. Reveal any possible association between demographic parameters, etiology, DNI localization, complications, comorbidities, treatment and bacterial culture.

Materials and methods. a retrospective study using 263 patient's records with DNI who were hospitalized in Pauls Stradins Clinical University Hospital's department of Otorhinolaryngology and Centre of Dentistry and Facial Surgery in the period from January 1st 2012 to December 31st 2014. The inclusion diagnosis was phlegmon and / or abscess of the deep spaces in adult patients. Statistical analysis was conducted using SPSS 22.0 software, significance level was set at maximum of 5% ($p < 0.05$). Descriptive Statistics, Binary Logistic Regression and Mann-Whitney tests were used.

Results. 263 patients were viewed retrospectively – 57% male and 43% female. Median age was 44 years (IQR 29–60), median hospital stay was 7 days (IQR 5–11). Most frequent diagnosis was dental infection 70.6% (n = 139), most frequent DNI was submandibular abscess 36.6% (n = 95) and phlegmon of neck 29.8% (n = 78). 74.9% of patients had only one DNI localization (n = 197). At 11.4% (n = 30) of cases there were complications, the most frequent – airway obstruction 90.0% (n = 27). The most frequently perscribed antibiotic was Metronidazole in 79.5% (n = 209). 93.5% of patients had surgery (n = 246), incision and drainage in 96.3% (n = 237). Reoperation was performed in 19.8% (n = 52); 6.1% of patients were admitted to the ICU (n = 16). One lethal case. In 12.5% there was a postitive bacterial culture (n = 33), most frequently found pathogen was *Acinetobacter baumanii* in 38.2% (n = 13), which indicates intrahospital infection. Metacillin sensitive coagulase negative Staphylococcus was found in 32.4% (n = 11), which also increase a risk of complication development (OR = 7.56, $p = 0.002$).

Conclusion. DNI tends to affect both genders equally, usually in middle age. The most frequent etiology is dental infection which corresponds to the world data. Despite antibacterial and surgical treatment complications occurs quite often, mostly as airway obstruction. If the DNI has developed, surgical incision and drainage combined with aggressive antibacterial therapy is the treatment of choice.

THE IMPACT OF COTTON SWAB USE ON
THE EXTERNAL AUDITORY CANAL

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Keywords. Cotton swabs, otitis externa, cerumen plug.

Introduction. The ear has a self cleaning mechanism – it expels mix of cerumen, dust and skin cells by outward migration of the epithelium of the auditory canal. Misuse or overuse of cotton swabs can cause external otitis and cerumen impaction, which can manifest as itching, pain, hearing impairment and other symptoms.

Aim. To assess the frequency of the cotton swab use among students of Rīga Stradiņš University and to rate external auditory canal skin changes and cerumen plug formation among students who use and do not use cotton swabs.

Materials and methods. A prospective study was conducted, involving students of Rīga Stradiņš University, Latvia. An annonymous survery and otoscopic examination was performed. The obtained data were statistically processed with MS Excel and IBM SPSS software.

Results. The study involved 405 students, 31.6% (n = 128) men, 68.4% (n = 277) women. 69.1% (n = 280) of the respondents used cotton swabs, 30.9% (n = 125) did not use cotton swabs at least one year. 12.5% (n = 35) of respondents who used cotton swabs, used them every day, 36.8% (n = 103) used 2–3 times a week. Comparing the otoscopy test results in both groups, the skin in the right external auditory canal was traumatized in 21.1% (n = 59) of respondents who used cotton swabs, and in 12.7% (n = 16) of cases in group who did not use cotton swabs (p = 0.044). The skin in the left external auditory canal was traumatized in 22.1% (n = 62) of respondents who used cotton swabs, and in 15.9% (n = 20) who did not use cotton swabs. Cerumen plugs in the right ear were observed in 3.9% (n = 11) of cases in the group who used cotton swabs and in 5.6% (n = 7) in the group did not use. Cerumen plugs in the left ear were observed in 3.6% (n = 10) of cases in the group who used cotton swabs and in 7.9% (n = 10) did not use. 67.3% (n = 187) of respondents who used cotton swabs knew that cotton swabs should not be used unlike 88.7% (n = 110) of respondents who did not use them.

Conclusions. Cotton swabs are widely used among students of Riga Stradiņš University, although most students know, that they should not be used. In the group who used cotton swabs, traumatized skin in the external auditory canal was observed more often, especially on the right side. Unlike described in medical literature, significant relevance between use of cotton swabs and cerumen impaction was not observed among students of Riga Stradiņš University.

ETIOLOGY AND TREATMENT OF OTOGENIC MENINGITIS IN PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL IN 2006–2015

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Keywords. Otitis media, intracranial complications, meningitis.

Introduction. Incidence of acute bacterial meningitis as a complication of acute or chronic otitis media has significantly decreased in developed countries thanks to availability of effective antibiotics. Although it remains an important cause of morbidity and mortality in developing countries.

Aim. To evaluate characteristics of patients, etiology and treatment in cases with acute bacterial meningitis due to acute or chronic otitis media in Pauls Stradins Clinical University Hospital. To reveal possible association between age, gender, CSF analysis / culture, blood count, otoscopy, surgical and antibacterial treatment and the outcome of the disease.

Materials and methods. A retrospective study using 47 patients' records with bacterial meningitis due to acute or chronic otitis media who were hospitalized in Pauls Stradins Clinical University Hospital's Department of Otorhinolaryngology in the period of January 1st 2006 to December 31st 2015. Patients younger than 18 years and with post-traumatic otogenic meningitis were excluded.

Statistical analysis was conducted using SPSS 23.00 software and $p < 0.05$ was considered statistically significant. Descriptive statistics, T-test and Spearman's correlations were used.

Results. 47 patients were viewed retrospectively – 61.7% male (n = 29) and 38.3% female (n = 18). There was no statistically significant difference between genders (p = 0.109). Mean age was 56 years (± 17). Mean hospital stay – 19 days (± 10). 74.5% of patients had acute otitis media (n = 35). 61.7% – otitis media of the right ear (n = 29). Positive CSF bacterial culture was found in 21.3% of cases (n = 10). Most frequently found microorganism – *Str. pneumoniae* 80.0% (n = 8). Positive bacterial culture from the ear – in 27.7% of cases (n = 13), group A β hemolytic *Str. pyogenes* in 23.1% (n = 3) and methicillin sensitive coagulase negative staphylococci in 23.1% (n = 3). All patients received antibacterial treatment, in 93.6% – Ceftriaxone (n = 44). Paracentesis was performed in 51.1% (n = 24). Otologic surgery was performed in 85.1% (n = 40), form which mastoid antrotomy in 70.2% (n = 33). Neurosurgery was performed in 12.8% (n = 6). 68.3% of patients were admitted to the ICU (n = 30). Eight lethal cases – 17.0%.

Conclusions. Intracranial complications of otitis media still occur and even in antibiotic era the mortality from meningitis remains significant. Early diagnosis and careful analysis is essential to decrease morbidity and mortality. All patients should receive broad spectrum intravenous antibiotics. Investigation of the primary source of the infection should be performed to choose if immediate surgery is necessary.

TASTE DISORDERS AFTER TONSILLECTOMY

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Keywords. Tonsillectomy, taste disorders, taste test.

Introduction. Tonsillectomy is one of the most common surgical procedures in otolaryngology. There are two main indications for the operation: peritonsillar abscess and recurrent tonsillitis. Taste disorder is an unusual complication of tonsillectomy and in most cases transient. Possible cause of it is direct or indirect damage to the glossopharyngeal nerve or its lingual branch during the procedure. The damage depends on anatomical localization of the nerve. There are four main types of taste disturbances: ageusia (complete taste loss), dysgeusia (distorted taste perception), hypogeusia (reduced ability to taste) and phantogeusia (gustatory hallucination). Taste disorders can cause weight loss, malnutrition and reduced quality of life.

Aim. To prove that some patients who had undergone tonsillectomy in Pauls Stradins Clinical University Hospital's Otolaryngology clinic can experience transient taste disorders during two weeks after the surgery.

Materials and methods. A prospective study was conducted, involving patients who had undergone tonsillectomy and healthy people who had not undergone tonsillectomy as a control group. An anonymous survey in pre-operative period, in second post-operative day and at third week after operation was performed. Testing with chlorhexidine (0.025%; 0.05%), glucose (2%; 10%), citric acid (0.5%; 7.5%) and sodium chloride (0.5%; 2.5%) at second post-operative day also was performed.

Results. In study were involved patients who had undergone tonsillectomy in Pauls Stradins Clinical University Hospital's Otolaryngology clinic. As a result of the study there is a reason to suspect that minor part of patients who had undergone tonsillectomy had experienced transient taste disorders during two weeks after the operation. At the same time part of those patients whom had this complication observed subjective taste disturbances not only after but also before the operation. Taste test in control group did not reveal taste disorders.

Conclusions. Obtained results allow to conclude that some patients who undergo tonsillectomy in Pauls Stradins Clinical University Hospital's Otolaryngology clinic can experience transient taste disorders during two weeks after operation. At the same time it is necessary to take into account that methods of study are based on patient's subjective perceptions of his taste (annonymous survey, taste test with chemical solutions). It is necessary to continue the study in order to get more accurate statistical results. If it is possible, use more objective methods, e.g. taste test with more graded chemical solutions, chemogustometry.

CHRONIC OTITIS MEDIA PATIENT DATABASE DEVELOPMENT AND APPROBATION

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Keywords. Chronic otitis media, database, cholesteatoma.

Introduction. Chronic otitis media is a common disease in children, often with recurrent course and frequent physician visits. In Children's Clinical University Hospital there is no diagnosis-specific database of patients with chronic otitis media to monitor and register data. As a result, patient follow-up can be challenging.

Aim. The aim of the study was to summarize the latest data of patients with chronic suppurative otitis media, explore the course of the disease and assess the prevalence of cholesteatoma among the patients.

Materials and methods. A retrospective descriptive study among patients that were admitted to Children's Clinical University Hospital due to chronic otitis media from January 1, 2009 to January 1, 2016. Children's Clinical University Hospital archives and patient database Andromeda were used to compile data accordingly to diagnosis codes and surgical procedures. Patients from 3 to 17 years of age were included. Data were analyzed using SPSS Statistics software (Shapiro-Wilk test, Chi-Square test, Independent Sample t-test.).

Results. A diagnosis-specific database of patients with chronic otitis media was developed and successfully approbated by otorhinolaryngologists in Children's Clinical University Hospital. 124 patients were included, of whom 62.9% (n = 78) were male and 37.1% (n = 46) female. The average age was M = 12.31, SD = ± 3.47 years. Median age was 13 years (IQR = 10–15). 25.8% (n = 32) of patients live in Riga, 74.2% (n = 92) live outside of Riga. 14.5% (n = 18) patients were diagnosed with chronic tubotympanic suppurative otitis media, 43.5% (n = 54) chronic aticoantral suppurative otitis media, 41.9% (n = 52) other chronic suppurative otitis media. Cholesteatoma was found in 25.8% (n = 32) of cases. Surgical interventions including mastoidantrotomy, tympanoplasty and radical ear operation were performed in 90 cases (72.6%). The median of surgical procedures per patient was 2 procedures (IQR = 1–3) There was a significant difference between number of surgeries for patients with cholesteatoma (M = 3; SD = ± 1.85) and patients without cholesteatoma (M = 2.20; SD = ± 1.93), t (122) = 2.05; p = 0.043. The median of hospitalization episodes due to chronic suppurative otitis media was 3 episodes (IQR = 1–5).

Conclusion. Chronic otitis media has a recurrent course, causing relapses, frequent hospitalizations and multiple surgical interventions. Cholesteatoma is one of the factors contributing to higher number of surgeries. The majority of chronic otitis media patients are young teenagers, most of them live outside of Riga, therefore, monitoring and regular follow-ups by otorhinolaryngologists are necessary.

CONGENITAL STRIDOR

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Keywords. Congenital stridor. Children. Causes. Comorbidities.

Introduction. Congenital stridor is defined as monophonic, audible breath sounds that originate from extrathoracic airways and represents a partial obstruction of upper airways, glottis or trachea. It is tipically inspiratory and is an important physical finding that requires prompt evaluation and occasionally requires emergency intervention. Stridor`s causes can be divided into supralaryngeal (nasal defomities, craniofacial anomalies, tongue malformations), laryngeal (laryngomalacia, vocal cord paralysis, subglottic stenosis etc), tracheal (tracheal stenosis, vascular rings or slings, tracheomalacia) and nonanatomic cathegories (gastroesophageal reflux). Congenital stridor develops at birth or within first few weeks. It is often associated with medical comorbidities that impact symptoms and disease course. The most common comorbidities are gastroesophageal and laryngopharyngeal reflux, neurologic diseases, secondary airway lesions and congenital anomalies, syndromes and genetic disorders.

Aim. To summarize and analyze current information on congenital stridor in children (age group from 0–12 months) and congenital stridor`s comorbidities in Children`s Clinical University Hospital from 2012–2015.

Materials and methods. A retrospective research was designed in Children`s Clinical University Hospital with programme "Andromeda" help by using 40 Clinic patients medical records for time period 2012–2015. Was created a table where was represented information of all patients, their gender, age, diagnosis, disease cause, comorbidities and disease`s dynamic changes. The obtained data was processed with Microsoft Exel programme and SPSS.

Results. 40 patients with congenital stridor were selected in Children`s Clinical University Hospital in time period 2012–2015. There were 21 males (52%) and 19 females (48%). Congenital stridor manifestation from birth was performed in 19 patients (47.5%), represented by 12 males (63%) and 7 females (37%). Congenital stridor was diagnosed in 5 patients less than one month old (12.5%), 10 one month old patients (25%), 3 two month old patients (7.5%), 2 three month old patients (5%) and one 5 month old patient (2.5%). Only one case was represented by both inspiratory and expiratory stridor (2.5%), all other 39 cases (97.5%) were represented by inspiratory stridor. Patients were divided in three groups depending on the cause of congenital stridor: supralaryngeal malformations 0%, laryngeal malformations – 17 cases (42.5%), both laryngeal and tracheal malformations – 5 cases (12.5%), tracheal malformations – 8 cases (20%), other causes – 10 (25%). Laryngeal malformations were performed by subglottic hemangioma – 2 cases (11.8%), thickness of the vocal cord – 4 cases (23.5%), laryngomalacia – 8 cases (47%), laryngeal neoplasm – 1 (5.9%), laryngospasm – 2 cases (11.8%). Both laryngeal and tracheal lessions included laryngomalacia and tracheal dyskinesia – 2 cases (40%) and laryngomalacia and tracheomalacia – 3 cases (60%). Tracheal causes were represented by tracheal dyskinesia – 3 cases (37.5%) and tracheomalacia – 5 cases (62.5%). Other causes were gl. tymus hyperplasia – 5 cases (50%), bronchial drainage disorders – 3 cases (30%), GERD

associated lessions – 1 case (10%), no lessions were detected – 1 case (10%). 50% patients held congenital stridor`s comorbidities. Comorbidities within patients were GERD – 12 cases (30%), neurologic disorders – 6 cases (15%), congenital syndrome (Down syndrome) – 1 case (2.5%), bronchial astma – 1 case (2.5%). In 20 cases (50%) patients have got no comorbidities. Patients were analyzed by stridor`s dynamic changes within one year period: 17 patients (42.5%) performed stable dynamic, 5 patients (12.5%) performed positive dynamic (symptoms did not occur), 12 patients (30%) performed negative dynamic (symptoms got more severe) and in 6 cases (15%) there was no information about stridor`s dynamic changes.

Conclusions

1. Due to small patient group it was not possible to make trustworthy evaluations for gender predisposition to congenital stridor.
2. It is not been payed enough attention to congenital stridor diagnosis due to small patient group with congenital stridor diagnosis available for analysis.
3. Congenital stridor develops mostly at birth within investigated group of patients.
4. Laryngeal malformations were more common within investigated group of patients. The most often laryngeal malformation was laryngomalacia.
5. The most common congenital stridor`s comorbidity was GERD within investigated group of patients.
6. Almost half part of patients (42.5%) remained stable congenital stidor`s dynamic in time period of one year.

INCIDENTAL ABNORMALITIES OF PARANASAL SINUSES IN PATIENTS REFERRED FOR HEAD CT SCAN FOR SUSPECTED INTRACRANIAL PATHOLOGY IN LATVIA

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Keywords. Computer tomography (CT), incidental findings, paranasal sinuses.

Introduction. An incidental finding is any abnormality not related to the illness or causes that prompted the diagnostic imaging test. Abnormalities of the paranasal sinuses are frequently encountered as incidental findings during spiral CT evaluation of head. The growing number of imaging techniques performed per patient causes an increase in the number of incidental findings. How these findings should be managed is far from settled.

Aim. The aim of this study was to retrospectively analyze the occurrence and type of incidental abnormalities of paranasal sinuses detected by radiographic examinations in the Latvian population.

Materials and methods. The research work includes retrospective data of 300 patients. They underwent spiral CT scan of the head referred for non-sinus pathologies in Pauls Stradins Clinical University Hospital between February 2013 and October 2015.

Results. Three hundred patients were included in this study. There were 159 (53.0%) women and 141 (47%) men. The mean age was 70.29 (IQR = 17) years (M = 76, IQR = 15 for women and M = 67, IQR = 18 for men). Analysing CT scan descriptions made by radiologists for primary pathology following data was obtained: incidental pathology in paranasal sinuses was mentioned in 32.61% (90 of 276) of descriptions. Three more frequent pathologies were mucosal thickening (72.22%, 65 of 90), pathological substrate (20%, 18 of 90) and retention cyst (25.55%, 23 of 90). After evaluating CT scans it was found that most frequently affected was maxillary sinus (48.95%, n = 147). Mucosal thickening and retention cysts were most frequent pathologies (35.3, n = 106 and 10.3%, n = 31 respectively) found within maxillary cavities. Therefore the degree of mucosal pathology in maxillary sinus was measured. Bilateral severe mucosal pathology (> 9.00mm at least on one of the axial slices) found in 11.22% (11 of 98) and unilateral severe in 16.25% (13 of 80). Bilateral total Lund-Mackay score was 0 (complete lucency of all sinuses) in 62.3% of scans (187 of 300). The study does not reveal any statistically significant association between incidental finding and age, season or septal deviation ($p > 0.05$).

Conclusions

1. Radiological incidental findings in paranasal sinuses are common in Latvian population. They are not influenced by age, season or septal deviation.
2. The most frequent is mucosal thickening or retention cyst in maxillary cavities, rarely bigger than 9 mm.
3. Incidental findings may be considered in the individual clinical context of signs and symptoms, reducing the risk of overestimation of the real impact of radiographic findings.

A RETROSPECTIVE ANALYSIS OF NASAL BONE FRACTURES IN ADULTS IN P. STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

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Keywords. Otorhinolaryngology, nasal trauma, nasal bone fracture, adolescent, violence.

Introduction. Nasal trauma plays a large and important role in the field of craniofacial injury. Nasal bone fractures account for greater than 50% of all facial fractures in adults. The most common mechanism of injury is blunt trauma to the midface, most frequently due to the physical altercations and falls. As the bones and cartilage of the nose provide aesthetic and structural support for the midface and airway, it is necessary to ensure proper evaluation and management to decrease the rate of complications such as nasal airway compromise and nasal deformity.

Aim. To obtain descriptive statistics regarding the adult population with the diagnosis "Fracture of nasal bones", to determine the most common traumatic causes, as well as to establish a typical patient profile and nasal trauma risk groups to prevent further injuries and optimize patient care.

Materials and methods. Retrospectively collect and analyze medical records of patients admitted to the ENT department and Emergency Care centre of Pauls Stradiņš Clinical University Hospital with the diagnosis "Fracture of nasal bones" S02.2 (ICD-10) in a time period 01.01.12 – 31.12.14. Statistical analysis of data performed using IBM SPSS software (descriptive statistics, crosstabs with χ^2 test). $p < 0.05$ was considered statistically significant.

Results. A total of 297 patients in the age group of 15 to 91 years old were evaluated for the study. The overall ratio of males to females was 3.6:1. Younger adults under the age of 30 were significantly more likely to sustain nose fractures – 55.22% of all cases. Nose fractures most commonly tend to occur in autumn – 32.5%. The most frequent emergency care visiting hours were between 0 AM and 4 AM – 81 (27%) patients, 71.43% of them had alcohol intoxication. 133 (48.2%) of all patients sough for medical help during weekends. The most common cause of injury was violence (n = 171, 57.6%), followed by falls (n = 63, 21.2%), sports trauma (n = 32, 10.8%) and other causes (road accidents, occupational trauma, epilepsy) (n = 20, 6.6%). Moreover, among those who were involved in violence – 98 (78.4%) patients were under the influence of alcohol when receiving emergency care. There is no evidence that dislocation to the left side is more frequent in criminal trauma than dislocations to the right. No correlation between the etiology of trauma and full moon phase period was found ($p > 0.05$).

Conclusions. This study provides an overview of nasal fractures in adult population that helps illustrate the trends and characteristics of this type of trauma. It is useful to predict the most frequent time of the day, day of the week and moth of the year when patient visits otorhinolaryngologist in emergency care department. The study has shown a typical profile of the patient with a nasal trauma presenting to ENT specialist – a 33 years old man after alcohol intake with tendency of aggressive behaviour.

16 March 2016

EVALUATION OF NASAL BONE FRACTURE IMAGING
IN ADOLESCENTS AND YOUNG ADULTS

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Keywords. Otorhinolaryngology, nasal, trauma, adolescent, x-ray, computed tomography.

Introduction. Children and adolescents frequently experience maxillofacial trauma, but there is a great disparity between pediatric and adult patients. Nasal bones are less common site of fractures in pediatric population compared to adults, although fracture frequency in adolescent population more closely resembles that of adults. Modern computed tomography (CT) is the gold standard for viewing craniofacial fractures, but one of the main disadvantages of CT is the high radiation dose. For this reason it is not first line method to prove the clinical diagnosis of nose fracture in pediatrics in the Children's Clinical University Hospital.

Aim. To find out the most appropriate method for proving the diagnosis in adolescents and young adults.

Materials and methods. Retrospectively collect and analyze medical records of adult patients in age from 18 to 21 admitted to the Pauls Stradiņš Clinical University Hospital and children from age 13 (females) and 14 (males) to 17 admitted to the Children's Clinical University Hospital Otorhinolaryngology department with diagnosis "Fracture of nasal bones" S02.2 (ICD-10) in a time period 01.01.12 – 31.12.14. Statistical analyses were performed using SPSS software and $p < 0.05$ was considered statistically significant. Cross tabulation with χ^2 test was used to determine if there was any connection between positive radiologic findings on plain film radiography (x-ray), CT and treated patient rate as well as between visual deformity of the nose on initial physical exam and treated patient rate.

Results. X-ray proved to be an unreliable evaluation method of nasal bone fractures. In the age group of adolescents and young adults it has no or little impact on choice of therapy made by ENT specialist ($p = 0.541$). Unsurprisingly, CT scans yield positive results in most of the cases, however, statistically the result of CT has no influence on specialists decision to perform the reduction of nasal fracture ($p = 0.874$). Visual deformation of the nose on initial physical exam proves to be the key factor in making the decision to reduce the fracture ($p = 0.001$).

Conclusion. This study presents x-ray and CT as inefficient methods for assessment of nasal trauma, because the positive result is not essential for evaluating the need for operative treatment. We demonstrate that the decision regarding operative treatment of nasal trauma is based on clinical findings as suggested by variety of studies and textbooks on the subject. Moreover, the results of this study puts up for debate how should clinicians examine nasal bone fractures in young adults, especially in those who are under-aged. If nasal bone documentation by imaging is required due to legal reasons, physicians should seek alternative imaging modalities such as high resolution ultrasonography.

INFLUENCE OF SLEEP DEPRIVATION ON BALANCE DURING NIGHT WORK

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Keywords. Fatigue, stability, posturography.

Introduction. Medical staff fatigue is an important problem, because it might lead to serious mistakes at work and damage. However, subjectively fatigue may be underestimated, so there is a need to find a practical, non-invasive, but reliable tool to measure fatigue. Various studies offer the tetra-ataxiometric posturography as suitable tool.

Aim. To find out, whether the objective stability test will correlate with subjective fatigue characterization. To find out, if even the easiest NO position (eyes open, solid surface) will lead to greater body instability caused by fatigue.

Materials and methods. Survey was performed in Centre for Ear, nose and throat. Prospectively examined 15 doctors, who matched the criteria: healthy, not using drugs; without stability, orthopedic or sleeping problems; haven't had any alcohol or caffeine containing drinks during shift. Objectively body stability was measured using tetra-ataxiometric posturography ("Tetrax"). Doctors were examined before and after their shift. The following parameters were analyzed: fall risk index (FI), on NO position – stability index (ST), weight distribution index (WDI) and Fourier transformation F1-F8 spectral analysis. Subjectively fatigue was evaluated by filling questionnaire before and after shift. Data was analyzed using SPSS 20.0 program. Statistical reliability between groups was evaluated using the Paired Samples T Test.

Results. Examined 24–28 years old doctors: 4 (26.7%) men and 11 (73.3%) women. Subjects revealed working 4.1 ± 1.6 shifts per month. During their shift 7 (46.7%) doctors have slept 2–3 h, 7 (46.7%) 4–5 h, 1 (6.6%) 0–1 h. Difficult shift was for 5 of 15 (33.3%), and to continue work after shift remained 9 of 15 (60%) (5 after difficult, and 4 after easy shift). Posturography parameters before shift – FI 11.3 (0–20), ST 10.6 (7.7–14.7), WDI 4.6 (1.9–8.9). Parameters after shift – FI 24.2 (12–54), ST 12.1 (9.3–16.4), WDI 5.8 (2.4–8.7). After shift there was a statistically significant increase of FI, ST and postural sway at F1 and F4 frequencies. After shift 14 (93.3%) subjects felt bearable: 10 had FI increase up to median – 14, and 4 had an increase ≥14. FI among women mostly changed less than 14, and among men – ≥14. ($p < 0.05$).

Conclusion. Fall risk significantly increased after shift and objectively represents influence of sleep deprivation on balance. Subjectively most doctors claimed to feel bearable. General instability and postural sways increased on the easiest position, but women remained more stable after shift than men.

HEAD AND NECK CANCER: CHANGES IN INCIDENCE AMONG YOUNG PEOPLE AND ANALYSIS OF SURVIVAL DETERMINANTS

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Keywords. Head and neck cancer, human papilloma virus, Statistics Lithuania, survival, morbidity.

Introduction. Nowadays, our environment is particularly rich in harmful factors, such as alcohol, cigarette smoking, environmental pollution and others that can cause head and neck cancer (HNC). But one of them is rapidly increasing due to sexual transmission – it is human papilloma virus. However, majority of sexually active people are young adults under the age of 50, and this study was conducted to evaluate changes of HNC incidence among young people.

Aim. To identify the factors, which influence survival of patients, who have HNC. To compare morbidity rates of HNC among young people (under 50 years) from 2003 to 2012 years.

Materials and methods. A retrospective data analysis from National Cancer Register was performed. Study included 7389 patients who have had HNC from 1998 to 2014 years. Several of factors were analyzed – demographics, dates of diagnosis and death, diagnosis by tumors localization / stage, histological types and grading. Statistics Lithuania was used to obtain data on population by age groups. SPSS 22.0 and Excel 2013 was used for statistical analysis. Pearson's correlation was used to estimate correlation between morbidity from HNC and time when diagnosed. Cox regression analysis was used to determine the dependence of survival on a variety of factors.

Results. 7389 patients, consisted of 6427 (87%) men and 962 (13%) women, average age 60.55 ± 10.77. The distribution of patients with HNC: tongue tumors 7.1%, oral cavity – 13.3%, major salivary glands – 7.6%, tonsils – 4.8%, oropharyngeal – 9.7%, nasopharyngeal – 2.6%, other – 2.6%, laryngopharyngeal – 12%, larynx – 40.3%. Pearson correlation coefficient of young people incidence and time when diagnosed 0.514 ($p = 0.158$), people over 50 years – 0.464 ($p = 0.176$), the overall incidence 0.464 ($p = 0.176$). The Cox regression analysis showed that the risk of death from HNC higher by: age (HR = 1.014, Cl (95%) 1.011–1.016) ($p < 0.0001$); gender: the patient is male (HR = 1.361, Cl (95%) 1.256–1.475) ($p < 0.0001$); stage of cancer: compared with the 1st stage: 2nd stage (HR = 1.737, Cl (95%) 1.521–1.983) ($p < 0.0001$), 3rd stage (HR = 2.724, Cl (95%) 2.408–3.081) ($p < 0.0001$), 4th stage (HR = 4.839, Cl (95%) 4.288–5.461) ($p < 0.0001$); settlement: compared with living in a city, living in small town (HR = 1.064, Cl (95%) 0.994–1.140) ($p = 0.075$), living in rural areas (HR = 1.260, Cl (95%) 1.190–1.335) ($p < 0.0001$); differentiation grade: compared with the 1st degree, 2nd degree (H = 1.130, Cl (95%) 1.017–1.256) ($p = 0.023$), 3rd degree (HR = 1.337, Cl (95%) 1.195–1.495) ($p < 0.0001$), 4th degree (HR = 0.883, Cl (95%) 0.558–1.397) ($p = 0.596$), the 5th degree (HR = 1.323, Cl (95%) 1.198–1.460) ($p < 0.0001$).

Conclusion. Male gender, older age, living in rural areas, higher tumor stage and degree of differentiation significantly reduces survival of patients with HNC. An increasing tendency of young people with HNC was observed.

16 March 2016

RETROSPECTIVE ANALYSIS OF NECK MASS IMAGING AT EMERGENCY CARE CENTRE OF P. STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

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Keywords. ENT, radiology, neck mass, emergency.

Introduction. An isolated neck mass is a common clinical scenario. Imaging may be valuable in the management of a neck mass. Computer tomography (CT) with or without intravenous contrast and ultrasonography (US) are the most commonly used imaging modalities to evaluate neck mass at P. Stradiņš Clinical University hospital's Emergency Care Centre (ECC). However, due to broad differential diagnosis, ensuring that the optimal study is performed can be challenging.

Aim. To find out the distribution of neck lesion types diagnosed at ECC and factors that can aid the decision to perform the right imaging modality.

Materials and methods. Using retrospective study design patients who underwent imaging (CT, US) investigations involving the neck at ECC from 01.01.2014. till 31.12.2015. were selected from AIRIS. MELISA and "Ārsta birojs" databases were used to obtain the results of blood analyses and final diagnosis respectively. All statistical analyses were performed in IBM SPSS Statistics 23.0 and PAST. P < 0.05 was considered statistically significant.

Results. 334 patients were selected for this study. Patients were from 19 to 93 years old. 57.32% male and 42.68% female. According to radiologists' conclusions the distribution of neck masses is – 39.95% inflammatory, 3.66% congenital, 9.66% neoplastic, 11.49% thyroid, 16.45% salivary gland, 18.80% only nonspecific lymphadenopathy. The differences in radiologists' and clinicians' diagnoses are statistically insignificant (p = 0.08). All six types of neck masses have statistically significant disparity concerning patients' age, leukocytosis (Leu) and CRP levels (p < 0.01). Congenital neck masses are more frequent in younger people, < 36 years old (p = 0.03), neoplastic and thyroid masses are more frequent in older people, > 50 years old (p < 0.01 and p = 0.03 respectively). Results show that congenital and salivary gland masses are more often diagnosed by means of CT – in 85.71% and 57.14% accordingly.

Conclusions. This study proves that imaging is valuable at the evaluation of neck masses as the final diagnosis most often corresponds with radiologists' **Conclusions.** However, US should be used more often in the investigation of congenital and salivary gland neck masses as suggested by current literature. This points out the necessity for a guideline approach to neck imaging to minimize expenses and needless patient irradiation. CRP and Leu levels can be useful in choosing the more informative imaging method. The high prevalence of nonspecific lymphadenopathy at the ECC calls for a solution to avoid unnecessary overload of ECC specialists.

MOST FREQUENT DIAGNOSIS FOR PATIENTS SEEKING OTORHINOLARYNGOLOGIC CARE DURING NIGHT TIME IN THE DEPARTMENT OF EMERGENCY AT PAULS STRADINS CLINICAL UNIVERSITY HOSPITAL FROM JULY 2015 UNTIL DECEMBER 2015

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Keywords. Emergency department, otorhinolaryngology, night-time medical care.

Introduction. At hospital, hours from 10 PM until 6 AM are considered night-time. This is a unconventional time for patients to show up and the reasons for doing so vary dramatically compared to daytime. Patients arrive at the emergency department for various reasons, which are not yet statistically described in Latvia.

Aim. Two objectives were nominated for this study. First objective was to determine the most frequent diagnosis made to the patients seeking night-time (10 PM until 6 AM) otorhinolaryngologic care at the Department of Emergency at Pauls Stradins Clinical University Hospital during six month period in year 2015. Second objective was to clarify if the patients were hospitalized or treated as out-patients.

Materials and methods. Data for this study were obtained using Pauls Stradins Clinical University Hospitals information system "Ārsta Birojs" (Doctor's Office). Selection rules were implemented to determine the validity of data available, rules included: patients seeking otorhinolaryngologic care at the Department of Emergency at Pauls Stradins Clinical University Hospitals overnight, admission date from 01.07.2015 until 31.12.2015, admission time form 10 PM until 6 AM. Statistical analysis was done by MS Excel and SPSS 20.0.

Results. A total of 405 entries from information system "Ārsta Birojs" met the requirements for this study. Out of 405 cases, majority were men (n = 245) and n = 160 women. Average age for a person was 38 y.o. with the oldest being 88 y.o and the youngest 16 y.o. Most common time of arrival was from 10 PM until midnight with 63% of all patients. 87% of patients who arrive at emergency medicine department were treated as out-patients compared to 13% who were hospitalized. Majority of diagnoses (33%) were connected with inflammatory disorders, followed by traumas with 27%. The most common diagnosis was fractured nasal bone with 26% of all patients seeking medical attention.

Conclusion. Most commonly patients seek emergency otorhinolaryngologic care after hours due to number of inflammatory disorders or trauma, with the most frequent diagnosis being fractured nasal bone. The fact that most of the patient were treated as out-patients suggests that the reason for them to seek medical care during night time is minor, most likely not life threatening and might as well be addressed by family physician.

SUBJECTIVE FEELINGS DURNING FLIGHTS AND HEARING PROBLEMS ASSOCIATED WITH THEM

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Keywords. Subjective feelings in ear, flights.

Introduction. Traveling by plane is common nowadays. Air pressure changes that happen during planes take-off and landing may result in disturbing feelings in ear.

Aim. To find out occurrence of different subjective feelings in ear durning flights and factors that affect occurrence of these feelings. Learn about respondents experiance with methods that decrease development of these feelings.

Materials and methods. During the research 216 people were surveyed about their experience with different subjective feelings in ear (pain, tinnitus, pressure and hearing loss) during flights and methods to prevent them (Valsalva maneuver, chewing, swallowing, yawning, drugs). Collected data was analyzed using SPSS 23 software. $p < 0.05$ was determined to be statistically significant. Spearmens correlation, Kruskal-Wallis, Mann-Whitney and Wilcoxon Signed Ranks tests were used.

Results. 5.7% respondents who had flown had never had any of these feelings during flights. 70.5% of respondents who travel by plane at least once a year have at least one of these feelings more than 50% of flights. 35.7% of respondents who had an acute respiratory disease during flight didn't feel any difference from other flights. Those who felt hearing loss more often had it longer time ($p < 0.05$, $r_s = 0.373$). 1.9% of respondents, who have had at least one of these feelings, had chosen not to travel by plane in future because of these feelings. No connection between respondents age and presence of complaints was found in age groups from 20 to 50 years ($p = 0.595$). No connection between flight duration and respondents complaints while landing was found ($p > 0.05$). No connection between airline (AirBaltic, Lufthansa, Ryanair) and complaints was found ($p > 0.05$). 3.3% of respondents, who have had these feelings during flights, have been to otorhinolaryngologist with them. Otorhinolaryngologist helped to decrease occurrence or severity of these feelings in upcoming flights in 50% of cases. From given methods to prevent or decrease severity of these feelings most known methods were chewing (86.5%) and swallowing (86.0%), most unknown was drugs (40.0%). None of methods tried was effective for 28.0%.

Conclusion. Pain, tinnitus, pressure sensation in ear and hearing loss are very common during flights. No connection between flight frequency, age, flight duration, airline and severity of these feelings was found. Those who can't decrease these feelings on their own should be examined more carefully, because they could have some chronic disorder that prevents normal equalization of pressure between middle ear and atmosphere.

X. Anaesthesiology / Reanimatology / Emergency Medicine, Traumatology / Orthopaedics, Radiology

16 March 2016

16 March 2016

COGNITIVE CHANGES AFTER SURGERY IN THE ELDERLY: DOES MINIMALLY INVASIVE SURGERY INFLUENCE THE INCIDENCE OF POSTOPERATIVE COGNITIVE CHANGES COMPARED TO OPEN SURGERY?

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Background. Postoperative delirium in the elderly is a growing concern. Data regarding significant differences in postoperative cognitive dysfunction (POCD) in elderly persons undergoing laparoscopic versus open colon resection are not well established.

Objectives. The goal of this study was to compare the incidence of POCD in laparoscopic versus open colon surgery in an elderly population.

Design and setting. A prospective nonrandomized pilot study was conducted at Andijan state medical institute

Participants. The study included patients aged 65 years and above, without documented dementia who underwent elective colon surgery.

Measurements. We collected demographic and clinical data, including age, sex, polypharmacy, and comorbidities. The subjects underwent pre- and postoperative Cambridge Neuropsychological Test MMSA. Worsening individual scores from the Paired Associated Learning (PAL) and Spatial Working Memory (SWM) portions of CANTAB determined the presence of POCD. Inflammatory cytokine (i. e., IL-6) levels were measured pre- and postoperatively.

Results. We enrolled 44 subjects (26 laparoscopic and 18 open surgery). The two groups did not differ significantly in age, sex, polypharmacy, and comorbidities. The average incidence of POCD was 47%. PAL scores worsened in 12/23 (52%) in the laparoscopic group and in 7/15 (47%) in the open group. These group differences lacked statistical significance ($p = 0.75$). SWM scores worsened in 14/25 (56%) in the laparoscopic group and in 6/18 (33%) in the open group, which was also not statistically significant ($p = 0.12$). No age difference occurred between the 'worsened scores' group and 'stable scores' group, and older age was not associated with POCD. IL-6 levels were higher in the open versus the laparoscopic group ($p < 0.0001$).

Conclusion. In this pilot study, the average incidence of POCD was not statistically different between elderly subjects undergoing open versus laparoscopic surgery. Age did not influence the occurrence of POCD. Although inflammatory markers were significantly higher in the open group, consistent with a higher degree of stress response, this group did not have higher rates of delirium. This association is worth to be investigated in a larger sample.

TITLE: EVALUATION OF SENSITIVITY AND SPECIFICITY OF DIFFERENT SCALES USING FOR DIAGNOSIS OF BURN SEPSIS

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Keywords. Sepsis, burns, SIRS.

Introduction. Difficulties in diagnosis of burn sepsis are associated with early and persistent SIRS (systemic inflammatory response syndrome) formation. Thus, different scales for diagnosis of sepsis in burn patient have been developed.

Aim. Assessment of sensitivity and specificity of scales and criteria using for diagnosis of burn sepsis.

Materials and methods. 30 patients who died in burn intensive care unit were recruited in this study. Criteria of including: clinical signs of sepsis, age 18–65, burns > 10% of total body surface area, death after 72 hours in ICU. Evaluation of the organ dysfunction by SOFA (Sequential Organ Failure Assessment) score, SIRS criteria, American Burn Association (ABA) sepsis criteria, French Burn Association (FBA) sepsis criteria and Chinese definitions (CD) of burn sepsis were performed. Patients were divided into two groups: with pathomorphological signs of sepsis (abscesses, microabscesses and / or bacterial emboli; group №1, n = 14) and without these (group №2, n = 16). We examined sensitivity and specificity with area under the Receiver Operating Characteristic Curve (ROC AUC).

Results. There were no significant differences between two groups for demographics, burn size. Fatal outcome came early in the group №2 (mean ICU length of stay 7.5 days vs 10 days, $p < 0.05$) Organ dysfunction at day 6 was significantly higher in the group №2 (mean SOFA 3.4 vs 2.0; $p < 0.05$). There were no significant differences in ABA, FBA and CD between two groups, and the highest AUC were for CD by the day 6 (AUC 0.687 95% CI 0.517–0.796 vs 0.567 95% CI 0.469–0.719 and 0.504 95% CI 0.315–0.702 for CD, ABA and FBA, respectively). SIRS criteria were significantly higher in the group №2; 3 and more SIRS criteria by the day 3 predicted early death with sensitivity 80.7% and specificity 40.9%.

Conclusion. Clinical scales for diagnostic of burn sepsis has not enough sensitivity and specificity for early prediction of sepsis outcome.

PROPOFOL VS DEXMEDETOMIDINE SEDATION IN PATIENTS UNDERGOING HAND SURGERY UNDER REGIONAL ANAESTHESIA

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Keywords. Dexmedetomidine, Propofol, sedation, regional anaesthesia.

Introduction. Sedation is widely used to reduce patients' stress during regional anaesthesia. Dexmedetomidine is the latest sedative, it causes a natural sleep like sedation and is as effective as well known Propofol.

Aim. To compare sedations with Dexmedetomidine vs Propofol in patients undergoing hand surgery under regional anaesthesia.

Materials and methods. In a randomized prospective study 2 groups of 25 patients ASA I-II were sedated with Dexmedetomidine (D) with a loading dose of 1µg/kg over 10min followed by infusion of 0.1–0.6µg/kg/h or Propofol (P) Target Controlled Infusion with Effect Site concentration of 1.8 ± 0.7µg/ml. Doses were adjusted to achieve target depth of *Narcotrend* EEG index 50–70 and *Richmond Agitation Sedation Scale* level -2 to -3. Standard monitoring was used. Recovery quality was evaluated by questionnaires.

Results. In (D) group mean age of patients was 46.6 ± 15yrs., mean BMI 25 ± 4.3, mean duration of surgery 81 ± 57.8 min, mean Narcotrend EEG index (NI) after loading dose 66.1 ± 25.9. In group (P) mean age of patients was 52 ± 15yrs., mean BMI 25.1 ± 4.6, mean duration of surgery 64 ± 33.4 min, mean NI after loading dose 61.2 ± 19.5.

After loading dose in group D HR decreased from 74.9 ± 10.0 to 62.8 ± 7.9 x/min ($p < 0.01$), vs no significant HR decrease in group P. Throughout sedation in group D HR was significantly lower than in group P 68.6 ± 11.6 vs 61.3 ± 11.6 x/min ($p < 0.01$). No patient in either group had bradycardia or hypotension.

Patients in both groups had spontaneous breathing, nobody required assisted ventilation. To maintain $SpO_2 > 95\%$ in group D 48% of patients required O_2, no patients required achievement of correct airway vs in group P 56% patients required O_2, 24% required achievement of correct airway.

At NI target range of 50–70 patients in group D were briefly waking up from noises vs patients in group P were resistant to similar noises. From questionnaires all patients were satisfied with sedation.

Conclusion. Patients in Propofol and Dexmedetomidine groups had target depth of sedation and were comparable.

All patients had spontaneous breathing, did not require assisted ventilation, patients sedated with Propofol required O2 and achieving correct airway more frequently than patients sedated with Dexmedetomidine.

Patients in Dexmedetomidine group had lower HR throughout sedation ($p < 0.05$), no patient in either group had bradycardia or hypotension.

Patients sedated with Dexmedetomidine were briefly waking up from noises vs patients sedated with Propofol were resistant to similar noises.

INITIAL 24H ICU GLUCOSE LEVELS ARE ASSOCIATED WITH THE DEVELOPMENT OF CEREBRAL VASOSPASM AFTER SUBARACHNOID HAEMORRHAGE

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Keywords. Glucose, cerebral vasospasm, subarachnoid haemorrhage, intensive care unit.

Introduction. Symptomatic cerebral vasospasm (SCV) is a well-known cause of morbidity and mortality amongst patients who have suffered from subarachnoid haemorrhage (SAH). Its presence is associated with reduced cerebral perfusion and potential further development of neurological deficit. The aetiology of SCV has been proven to be multifactorial and several risk factors have been associated with its development. Since SCV has been linked to signalling changes in vascular endothelium, serum glucose was chosen as a potential prognostic indicator and risk factor due its relation with endothelial dysfunction.

Aim. The objective of this study was to evaluate the association between serum glucose levels in ICU patients admitted with SAH and the development of SCV.

Materials and methods. The study is a retrospective observational study in which data was collected on patients admitted to the ICU of Pauls Stradiņš Clinical University Hospital with the primary diagnosis of SAH. We compared serum glucose levels on ICU admission and average glucose levels for the first 5 days in the ICU in patients with and without subsequent development of SCV. SPSS statistics software v.20 was used for statistical calculations.

Results. Twenty-four patients diagnosed with SAH were included in the study. SCV was confirmed in 25% ($n = 6$). There was no significant difference in age and gender distribution between groups. Patients with subsequent development of SCV had higher WFNS score values (4.80 and 3.56; $p = 0.008$).

We found lower mean glucose levels on admission for patients that developed SCV compared to those that did not develop SCV (7.32 and 9.28 mmol/L; $p = 0.05$). The average glucose levels on first 24h of ICU stay were also lower in patients who developed SCV (7.26 and 9.29 mmol/L; $p = 0.03$). There were no significant differences in average glucose levels between groups from day 2 to day 5 of ICU stay.

Overall mortality was not affected by ICU glucose levels and average glucose levels of first 24h were negatively correlated to the duration of ICU stay ($r_s = -0.408$, $p < 0.05$).

Conclusion. The study shows that admission and initial average 24h glucose levels may prove to be a prognostic indicator for the potential development of SCV after SAH. Glucose averages of the first day of ICU stay were significantly related to the development of SCV and may demonstrate importance after further investigation, possibly with a larger patient group.

ADDUCTOR CANAL BLOCK EFFECTIVENESS COMPARED WITH FEMORAL NERVE BLOCK AFTER PRIMARY KNEE ARTHROPLASTY

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Background. Modern medicine has multiple pain control strategies after total knee replacement which is associated with severe postoperative pain. There has been an increased interest in adductor canal block as a technique for controlling postoperative pain.

Aim. To compare which of the regional anesthesia methods: continuous adductor canal block or continuous *N. Femoralis* block can manage postoperative pain more efficiently and improve functional outcome in early postoperative period.

Materials and methods. Prospective randomized trial which includes patients aged 40–85, and BMI 20 – 40 hospitalized in the Hospital of Traumatology and Orthopedics for elective total knee replacement. All patients have been operated under spinal anesthesia. First group of patients received *Adductor canal* block (AB) with 48 hours continuous postoperative infusion with local anesthetics. Second group of patients received *N. Femoralis* block (NF) with 48 hours continuous postoperative infusion with local anesthetics. Postoperative pain relief was provided by multimodal analgesia with paracetamol, naproxen and morphine i/v as rescue analgesic if pain intensity VAS > 4 according to visual analog pain score (VAS) where 0 was identified as no pain and 10 as unbearable pain. Pain intensity at rest and movement, *M. Quadriceps femoris* strength by Oxford scale, flexion in the knee joint were measured, also additional morphine was check (mg). Patients were asked to evaluate their satisfaction with postoperative pain relief by scale from 1 to 4, where 4 is maximally satisfied. Data were analyzed with Microsoft Excel 2013 and IBM SPSS was used for statistical analysis. P value less than 0.05 was considered as statistically significant.

Results. Pain at rest, bending and walking did not differ between two groups before surgery. Pain at rest POD1 8:00 AB 3.8 ± 1.6 VAS scale, NF 4.6 ± 1.7. Pain at rest POD1 20:00 AB 3.7 ± 1.7, 4.5 ± 1.6 NF. Pain at rest POD2 AB 2.6 ± 2.0, 3.2 ± 2.4 NF. Pain at rest POD3 AB 1.3 ± 1.5, 1.6 ± 1.19 NF. Pain in the knee joint movement POD1 8:00 was significantly lower AB group, 3.0 ± 2.1, 6.1 ± 1.6 NF (p < 0.05). Pain in the knee joint movement POD1 20:00 AB 3.7 ± 1.8, 4.2 ± 2.1 NF. Pain in the knee joint movement POD2 AB 3.1 ± 1.5, 4.1 ± 1.9 NF. Pain in the knee joint movement POD3 AB 2.8 ± 1.3, 3.2 ± 1.4 NF. Morphine consumption day of operation AB 3.9 ± 1.8 mg, NF 6.0 ± 4.3 mg. Morphine consumption POD1 AB 2.6 ± 2.6 mg, NF 3.8 ± 3.6 mg. Total morphine consumption AB 7.2 ± 4.4 mg, NF 11.6 ± 9.7 mg. Satisfaction with pain relief after surgery POD1 8:00 AB 1.2 ± 0.4, 1.1 ± 0.3 NF. Satisfaction with pain relief after surgery POD1 20:00 AB 1.6 ± 0.7, 1.3 ± 0.5 NF. Satisfaction with pain relief POD2 AP 2.7 ± 0.7, 2.6 ± 0.5 NF. Satisfaction with pain relief after surgery POD3 AB 3.1 ± 0.6, 2.6 NF D ± 1.0. *M. Quadriceps femoris* strength POD1 8:00 AB 1.2 ± 0.4, 1.1 ± 0.3 NF. *M. Quadriceps femoral* strength POD1 20:00 AB 1.6 ± 0.7, 1.3 ± 0.5 NF.

Conclusions. Confidently manage to prove that any of the methods effectively eliminates pain and improves patients' activation in the postoperative period. However, there is a tendency that the adductor canal block group has less pain and reduced morphine consumption.

PROGNOSTIC VALUE OF RANSON SCORE AND EACH SINGLE MARKER USED IN RANSON SCORE FOR SEVERE ACUTE PANCREATITIS

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Keywords. Mortality, Ranson score, severe acute pancreatitis, single markers.

Introduction. Multi-factor severity scores now are commonly used to predict mortality rate in severe acute pancreatitis (SAP). Ranson score is one of them and is wildly used to define severity and mortality of SAP. We state, that at least one single value used in Ranson score has similar discriminative power to predict mortality in SAP as Ranson score itself.

Aim. To compare discriminative power in mortality prediction between Ranson score and each single value used in Ranson score (glucose (GLU), lactate dehydrogenase (LDH), aspartate transferase (AST), hematocrit drop (HCT), base excess (BE), partial oxygen pressure (pO2), fluid needs, calcium (Ca2+), blood urea nitrogen (BUN), leukocytosis (LEU), age and Ranson score in first 24 hours ($Ranson_{24h}$)).

Materials and methods. A retrospective cohort study was performed in 2014 – 2015. Thirty – eight patients with SAP diagnosis were included. Ranson score was calculated within 48 hours. ICU mortality was assessed and ROC curves was produced for all variables. AUC of ROC curves were compared to estimate discriminative power in mortality prediction.

Results. From 38 patients included 39.4% (n = 15) were females. Median age were 50 years. Observed ICU mortality was 28.9% (n = 11). Calculated ROC AUCs were: Ranson score 0.90 (95%CI 0.82 – 0.99, p < 0.001), LDH 0.83 (95%CI 0.72 – 0.94, p = 0.001), $Ranson_{24h}$ 0.80 (95%CI 0.68 – 0.92, p = 0.004), age 0.74 (95%CI 0.58 – 0.90, p = 0.021), GLU 0.71 (95%CI 0.57 – 0.85, p = 0.044), BUN 0.66 (95%CI 0.51 – 0.81, p = 0.122), HCT 0.55 (95%CI 0.37 – 0.74, p = 0.607), fluid needs 0.51 (95%CI 0.32 – 0.70, p = 0.936), AST 0.51 (95%CI 0.32 – 0.69, p = 0.936), Ca2+ 0.51 (95%CI 0.32 – 0.70, p = 0.910), LEU 0.46 (95%CI 0.28 – 0.65, p = 0.723), pO2 0.45 (95%CI 0.26 – 0.64, p = 0.936), BE 0.25 (95%CI 0.10 – 0.40, p = 0.017).

Conclusion. From markers compared $Ranson_{24h}$, age and LDH level have a highest discriminative power in mortality prediction. None of each single values used in Ranson score has similar discriminative power predicting mortality in SAP as Ranson score itself.

NOCIRECEPTOR REFLEX BLOCKING USING ETORICOXIB BEFORE TOTAL HIP REPLACMENT SURGERY IN CASE OF OSTEOARTHRITIS

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Introduction. Strong stimulation of nociceptors evokes the sense of pain. Sense of pain is conveyed by different neurotransmitters, including prostaglandins. Selective COX2 inhibitor (Etoricoxib) inhibits the COX2 which results in reduced formation of prostaglandins from arachidonic acid and consequently – decreased stimulation of nociceptors and reduced sense of pain. The COX2 inhibitors do not affect the aggregation of platelets and due to this they may be preferential to traditional non-selective NSAIDs in the treatment of postoperative pain. Optimal analgesia is essential for wellbeing of patients and early mobilization.

Aim. To compare the efficacy of analgesic drug Etoricoxib in the treatment of postoperative pain after total hip replacement (THR) depending on two different methods of timing of administration.

Material and methods. Prospective randomized study included adult patients aged 18–80 years undergoing primary THR surgery. Patients were divided in to two groups: group I (AP) received Etoricoxib 90 mg 2 hours before surgery, the group II (PA) received Etoricoxib 90 mg 1 hour after surgery. Pain relief was ensured with Paracetamol, Etoricoxib and Morphine. The intensity of pain was assessed at rest and on walking before the operation and at rest 4 hours and 8 hours after the completion of surgery and at 8:00am next morning after surgery (POD1). As other markers we assessed the quality of sleep and the patients satisfaction with pain relief.

Results. Preoperative pain at rest was: in group AP 2.7 ± 2.6 VAS and in group PA 3.0 ± 2.3. Preoperative on walking: AP 5.2 ± 2.4, PA 6.5 ± 1.0. Pain at rest at 4 hours after surgery: AP 1.7 ± 1.3, PA 3.4 ± 2.8. Pain at rest at 8 hours after surgery: AP 2.9 ± 1.1, PA 2.5 ± 1.8. Pain at rest at 8:00am on POD1: AP 2.0 ± 1.6, PA 2.6 ± 1.6. Morphine consumption on OP day: AP 8.5 mg ± 5.8 and PA 8.5 ± 5.4 mg. Morphine consumption on POD1: AP mg 5.5 mg ± 3.6, PA 6.7 ± 7.1. Morphine consumption in mg on POD2: AP 2.0 ± 3.0, PA 4.7 ± 4.7. Total received morphine in mg: AP 16.5 ± 10.1, PA 20.7 ± 14.2. Satisfaction with pain relief in time interval up to at 4 hours after surgery: AP 3.5 ± 0.7, PA 3.1 ± 0.8. Satisfaction with pain relief in time interval up to 8 hours after surgery AP 3.7 ± 0.4, PA 3.1 ± 0.8.

Conclusions. The results of study did not demonstrate convincing difference in the intensity of pain and the total consumption of morphine depending on the timing of administration of Etoricoxib.

INFLAMMATORY RESPONSE EFFECT ON TOPICAL ANESTHETICS EFFICACY DURING AWAKE FIBEROPTIC INTUBATION

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Keywords. Awake fiberoptic intubation, topical anesthetics, inflammatory response, pain level.

Introduction. Local anesthetics play an important role in awake fiberoptic intubation by helping to reduce patient's discomfort during procedure. The decrease of efficacy of these medications is being often linked to tissue's inflammation.

Aim. The goal of this study was to evaluate if patients with Ludwig's angina experience of awake fiberoptic intubation and pain level were related to their inflammatory response.

Materials and methods. A prospective study of patients treated with Ludwig's angina who had been intubated awake by using bronchoscope with standard sedation and topical anesthetics was carried out in Lithuanian University of Health Sciences from February 2014 to December 2015. 3 out of 43 patients were not included into our study due to their unstable medical condition and inability to answer the questionnaire. Patients were questioned anonymously about their sensations and soreness during procedure and records from their case histories of inflammatory response were extracted. The pain level was determined with numeric rating scale from 0 to 5 (0 – no pain or do not remember, 5 – the worst pain). Nonparametric tests were used for statistical analysis at $P \leq 0.05$.

Results. 40 patients were involved into the study. There were 13 women and 27 men. The average age was 43.95 ± 19.2, minimum 17, maximum 84 years. The pain level score during awake fiberoptic intubation: mean ± standard deviation 1.23 ± 1.64, mode 0, median 0, min 0, max 5 (n = 40). 9 patients (22.5%, n = 40) did not remember the pain during the procedure, so they were included into the 0 – no pain group. There was no statistically significant correlation found between pain scores and: C-reactive protein (ρ (38) = 0.142, P = 0.395), white blood cells count (ρ (36) = 0.077, P = 0.645), neutrophils count in blood (ρ (36) = 0.153, P = 0.359), temperature (ρ (36) = − 0.154, P = 0.355). During intubation patients (n = 40) also felt: shortness of breath (16, 40%), nausea (12, 30%) and dizziness (8, 20%). The majority of patients (24, 60%) described procedure as unpleasant, 5 (12.5%) as painful and 1 patient (2.5%) as extremely painful. Patient's unpleasant sensations during awake fiberoptic intubation and the description of the procedure were not related to their inflammatory response statistically significantly (P > 0.05).

Conclusion. Patients treated with Ludwig's angina experience of awake fiberoptic intubation and pain level during procedure are not related to their inflammatory response.

ASSOCIATION BETWEEN THE DURATION OF LUNG MECHANICAL VENTILATION AND SERUM ALBUMIN LEVEL IN ARDS PATIENTS

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Keywords. Acute respiratory distress, serum albumin, mechanical ventilation.

Introduction. Acute respiratory distress syndrome (ARDS) is caused by various factors such as pneumonia, sepsis, pancreatitis and characterized by pulmonary edema and hypoxemia. Pulmonary edema pathogenesis is based on increased vascular parmeability of the alveolar-capillary barrier, leading to protein rich fluid influx to the intersticium and air space. Human serum albumin maintain 80% of plasma osmotic pressure. Low serum albumin level cause decreased plasma oncotic preassure that promote pulmonary edema formation.

Aim. The main aim of this study is to evaluate assotiation of initial serum albumin level and the lengh of mechanical ventilation and association of the serum albumin level and ARDS severity.

Materials and methods. Retrospective study in Pauls Stradins Clinical University Hospital. We analised pacients history admitted in ICU from 2014 – 2015, the inclusion criteria was: > 18 years; patients with pneumonia, sepsis, pancreatitis diagnosis; serum albumin level was collected within 24 h from the admission time, met the Berlin diagnostic criteria; cardiogenic pulmonary edema was excluded.

All the ARDS pacients were divided into groups: based on mechanical ventilation duration (group 1 > 96h and group 2 ≤96h) and based on ARDS severity (mild PaO_2/FiO_2 300–200 mmHg, moderate PaO_2/FiO_2 200–100 mmHg, severe PaO_2/FiO_2 ≤100 mmHg). The age of pacients, sex, diagnosis, serum albumin level, mechanical ventilation duration, APACHE on admission time were registred during the research.

Results. The 33 pacients from 103 observed met the inclusion criteria, with the diagnosis pneumonia 52% (n = 17), sepsis 27% (= 9), pancreatitis 21% (n = 7). The mean age was 53.33 ± 17.36 years. The mean serum albumin level in group 1 was 23.83 ± 4.97 g/l, but in group 2 19 ± 5.61 g/l (p = 0.042). The mean APACHE in group 1 was 15 ± 5 points, but in group 2 25 ± 5 points. (p = 0.000453).

ARDS developed in moderate form 58% (n = 19), severe form 27% (n = 9) and mild form 15% (n = 5). The mean serums albumin level in mild form group was 27.6 ± 1.82 g/l, moderate 22.16 ± 6.04 g/l and severe 20.44 ± 4.06 g.l. (p = 0.022). The mean APACHE in mild form group was 12 ± 3 points, moderate 18 ± 7 points, severe 21 ± 6 points (p = 0.051).

Conclusion. Our study indicates the significant difference between serum albumin level in group 1 and group 2. It means that the initial serum albumin level may be useful as diagnostic marker to predict mechanical ventilation duration in ARDS pacietns.

There was also a significant difference between serum albumin level and ARDS severity, it means that initial serum albumin level also could be useful as diagnostic marker for prognose ARDS severity.

THE EVALUATION OF POSTOPERATIVE PAIN IN PATIENT WHO WERE GIVEN DIFFERENT COMBINATIONS OF NON-INFLAMMATORY DRUGS

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Keywords. Postoperative pain, non-inflammatory drugs.

Introduction. Inadequate pain treatment after surgery results reduced patients activity, anxiety, disrupted sleep, suppression of respiratory function, aggravated cough [1]. If acute postoperative pain is not treated, often develop chronic pain [3].

Aim. To evaluate postoperative pain in patient who were given different combinations of NSAIDs after thyroid gland removal surgery.

Objectives. To evaluate postoperative pain in patien who were given different combinations of NSAIDs after thyroid gland removal surgery. To determine the importance of difference NSAIDs combinations on pain manifestatons during early postoperative period.

Materials and methods. It is a prospective randomized study performed in Department of Anesthesiology at Lithuanian Health Sciences University Kauno Klinikos from June to October 2015. After approval from LSMU Bioethics Centre informed consent was obtained from all study participants. We randomly included 120 patients whom thyroid gland removal surgery was performed. The subjects were divided into four groups. Group I was 30 patient whom received Paracetamol and Diclofenac at the end of general anesthesia, II group with 31 whom received Paracetamol and Ketoprofen, III group with 29 whom received Paracetamol and Dexketoprofen, and IV group with 30 patient whom received Paracetamol and Lornoxicam. Patients were questioned using survey made by authors. Pain intensities were evaluated according to visual analogue scale (VAS) and words analogue scale 1, 6, 12, 24 and 48 hours after surgery. Pain intensively was divided according to this pattern: 0 point – no pain, 1–3 points – mild pain, 4–6 points – moderate pain, 7–8 points – severe pain and 9–10 points – unbearable pain [2]. Statistical data analysis was performed with statistical program SPSS 22.0 (Statistical Package for Social Sciences) and Microsoft Office Excel 2010. Categorical data were compared by using ANOVA (Analysis of variance). Results with values of $p < 0.05$ were considered statistically significant.

Results. Study included 120 participans: 22 males (17.2%) and 98 females (82.8%). First ASA class – 16, second ASA class – 70, third ASA class – 35. Patients mean age was 51.58 years (standart deviation 14.8). In diclofenac group pain evaluation with VAS after 1 hour – 37 ± 21, after 6 hours – 34 ± 25, 12 hours – 34 ± 24, 24 hours – 23 ± 18, after 48 hours – 15 ± 16. In dexketoprofen group pain evaluation after 1 hour – 44 ± 21, after 6 hours – 34 ± 19, 12 hours – 31 ± 23, 24 hours – 21 ± 19, after 48 hours – 12 ± 15. In ketoprofen group pain evaluation after 1 hour – 45 ± 18, after 6 hours – 36 ± 19, 12 hours – 27 ± 25, 24 hours – 20 ± 17, after 48 hours – 14 ± 12. In lornoxicam group pain evaluation with VAS after 1 hour – 38 ± 18, after 6 hours – 39 ± 20, 12 hours – 36 ± 19, 24 hours – 29 ± 18, after 48 hours – 17 ± 17. In words analogue scale pain evaluation: dexketoprofen group after 1 hour – moderate pain, after 6 hours – moderate, 12 hours – mild, 24 hours – mild, after 48 hours – mild pain. In diclofenac group: after 1 hour – moderate pain, after 6 hours – moderate, 12 hours – mild, 24 hours – mild, after 48 hours – mild pain. In ketoprofen group:after 1 hour – moderate pain, after

6 hours – moderate, 12 hours – mild, 24 hours – mild, after 48 hours – mild pain. Lornoxicam group: after 1 hour – moderate pain, after 6 hours – moderate, 12 hours – mild, 24 hours – mild, after 48 hours – mild pain. We found that, there is no significant difference between NSAIDs combinations on pain manifestation during early postoperative period (p – 0.652).

Conclusions. On the first days after surgery, postoperative pain evaluation is similar in all groups of NSAIDs. There is no significant difference between groups, which NSAIDs used to treat acute postoperative pain after thyroid gland removal surgery.

INTER-RATER RELIABILITY OF RICHMOND AGITATION – SEDATION SCALE (RASS) AND CONFUSION ASSESSMENT METHOD FOR THE ICU (CAM-ICU) TRANSLATED TO LITHUANIAN FOR PATIENTS IN INTENSIVE CARE

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Keywords. Intensive care unit; Richmond agitation – sedation scale; confusion assessment method for the ICU; inter-rater reliability.

Introduction. Administration of sedatives is common practice to patients in the ICU. A need to tailor specific doses of sedatives for patients arises when considering complications of under-sedation and over-sedation. RASS scale is used to assess the level of sedation and in diagnostics of delirium using CAM-ICU. For use in Lithuania it is important to evaluate the inter-rater reliability of translated methods.

Aim. 1) Evaluate inter-rater reliability of RASS scale and CAM-ICU Lithuanian translations between two observers with different background 2) Compare results with other countries.

Materials and methods. A prospective study of 36 ICU patients was carried out in Republic University Hospital of Vilnius from 11th till 25th of November. 25 patients were included into the final analysis. 7 (19%) patients who did not speak Lithuanian were not included and 4 (11%) data was missing. Of the included patients 8 (26%) were men, average age 70.5 ± 9.7. Medical sedation was administered to 9 (36%) patients: 6 (67%) received sedation in the form of intravenous boluses, 2 (22%) as constant infusion and 1 (11%) combined. Patients were evaluated for RASS score and CAM-ICU method by 5th grade medical student and 1st year intensive care resident. Each day evaluations took place at the same hour, firstly, by medical student and no more than 10 minutes later by the resident. Patients were evaluated for 4 days in a row. Statistical analysis was done using SPSS 19.0.

Results. Interrater reliability was evaluated by calculating Weighted Cohen's kappa. In total there were 43 RASS evaluations and calculated weighted kappa was equal to 0.772 (95% CI: 0.662–0.881), indicating substantial agreement. Assessors disagreed mostly on patients with RASS score 0 or -1. This can be explained by a methodological error: the first assessor had to wake up the patient for RASS score and later the second assessor found the patient already awaken, thus giving a higher score. Considering this error we corrected our results by changing evaluation of the second assessor from 0 to -1 where the first assessor rated the patient as

-1. The corrected weighted kappa was equal to 0.871 (CI 95%: 0.797–0.944), indicating almost perfect agreement. Interrater reliability of CAM-ICU method was very high (kappa = 0.856, CI 95%: 0.689–0.992). Our results did not differ significantly from other countries.

Conclusions. High interrater reliability of RASS scale and CAM-ICU indicates that both methods can be reliably applied to our patients.

MEASURING THE QUALITY OF ANAESTHESIA FROM PATIENT'S PERSPECTIVE: DEVELOPMENT AND VALIDATION OF QUESTIONNAIRE IN LATVIAN

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Keywords. Anaesthesia, quality of anaesthesia, questionnaire, psychometrics.

Introduction. Nowadays patient satisfaction has become very important indicator of quality of healthcare. Psychometric questionnaire is important instrument to evaluate quality of work of healthcare givers including anaesthetists and anaesthetic nurses. Concept of satisfaction is multidimensional and it is influenced by physical, cognitive, affective and psychosocial factors. Established psychometric questionnaires need to be short, understandable for patients and include various aspects. At present there is no validated questionnaire in Latvian for measurement of quality of anaesthesia from patient perspective.

Aim. The aim of this study was to develop and validate psychometric instrument to estimate patients satisfaction with perioperative anaesthetic care.

Materials and methods. The study included adult patients who could complete a questionnaire in Latvian and were having elective surgery under regional or general anaesthetic in the Hospital of Traumatology and Orthopaedics. In first part of the study attributes describing high quality anaesthesia were identified using interviews with patients attending Hospital of Traumatology and Orthopaedics for a preoperative visit. Content analysis was performed on interviews to generate most common attributes. The attributes generated then were printed onto a cards, which were used by a different set of patients to rank them in order of importance. 10 highest ranking attributes were used to generate the questionnaire. In the second part of the study the questionnaire was filled in by a new set of postoperative patients. Exploratory factor analysis and calculation of Cronbach's alpha was performed to establish the internal validity and reliability of the questionnaire.

Results. 30 patients in department of preoperative care generated 22 different attributes of 'high quality anaesthesia'. After ranking by 28 other patients 10 most important attributes were identified. 15 questions for use in a pilot questionnaire were generated. Another 17 patients 2 – 72 hours after surgery responded to the questionnaire twice with an interval of 2 hours. Exploratory factor analysis showed that the questionnaire comprised five factors: information, discomfort and needs, provider-patient relationship, fear and concern, anaesthesia related sequelae. These factors accounted for 76% of the variance in the questionnaire responses. One question was dropped because of lack of variability. Calculation of Cronbach's alpha showed that overall reliability of the questionnaire is 0.63. Another question was dropped which increased Cronbach's alpha to 0.7.

Conclusions. We developed valid and reliable patient-derived questionnaire in Latvian to measure patient's perception of anaesthesia quality. The final version of the pilot questionnaire contains 11 questions. Communication with the anaesthetist, postoperative nausea and vomiting and postoperative pain management are the most important features of the patient's perception of quality of anaesthesia.

THE CLINICAL RELEVANCE OF MONITORABLE PARAMETERS IN THE ICU

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Keywords. Thresholds, baseline, deviation, alarms, ICU.

Introduction. Rates of alarms in the ICU have increased as a consequence of the increase of 'monitorable' parameters. Monitoring with adequate thresholds improves patient outcomes by preventing physiological variables running out of range. On the other hand, the annoyance from false alarms leads to inappropriately wide threshold settings in order to limit alarms as much as possible.

Aim. To evaluate the adequacy of hemodynamic and ventilation-related thresholds in terms of physiological variables in the ICU.

Materials and methods. This was a single-centre prospective study. The following data of patients during an 18 day period were collected: thresholds, 20% deviation from baseline, minimum and maximum readings of heart rate, mean arterial pressure, oxygen saturation, respiratory rate, minute ventilation, peak inspiratory pressure, tidal volume as well as the sound level of alarms. One day in the ICU bed was treated as a separate case. Data were examined with SPSS_22.0 program.

Results. 31 patients were analysed what made 125 individual cases as most of them stayed in the ICU for more than 1 day. The average age was 57 ± 14 years, 52.5% men. 39% of patients was neurological or neurosurgical, 22% – haematological, 10% – surgical, 29% – unclassified. 37.5% of patients was on mechanical ventilation. The average APACHE II score was 19 ± 6. During 432 hours of monitoring, 982 hemodynamic deviations from baseline (2.3 deviation per hour on average) were recorded: 505 lower than baseline and 477 higher. Average heart rate related parameters (in bpm) were as follow: lower threshold 43, upper – 132, minimum reading 33, maximum – 189. Mean arterial pressure varied from 25 to 236 mmHg. Minimum oxygen saturation was 58%. Respiratory rate was within the range 2 to 117 breaths/min. Average minimum minute ventilation was 0.3, maximum – 29.5 l/min, tidal volume varied from 28 to 1188 ml, respiratory rate (on mechanical ventilation) was 5–49 breaths/min. Average peak inspiratory pressure was within the range 6 to 34 cmH$_2$O. The sound level of alarms was 50%.

Conclusions. There are no evidence-based recommendations regarding hemodynamic and ventilation-related thresholds in the ICU. We found out that alarm limits were not individualized. However, heart rate, blood pressure, respiratory rate and ventilatory settings as well differed significantly among patients.

EFFECTS OF EPIDURAL ANALGESIA ON A LABOR PROCESS AND A NEWBORN

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Keywords. Epidural analgesia, cesarean section, Apgar scale.

Introduction. Epidurals are widely used for pain relief in labor. The effects of neuraxial labour analgesia on the progress of labor and labor outcomes have generated considerable controversy. Observational data suggest that early initiation of epidural may be associated with an increased risk of caesarean section, lower Apgar scale index in newborn, but the same findings weren't seen in recent randomised controlled trials.

Aim. To find out the effects of early initiation versus late initiation of epidural analgesia in parturient women.

Materials and methods. We performed a prospective observational study. The study was conducted at Pauls Stradins Clinical University Hospital, Rīga, Latvia, between September 2015 and January 2016. Epidural analgesia was administered to 210 parturiens. Only term parturiens with singleton infants in vertex presentations were included. Patients were divided in four groups: primipars without induction (A), primipars with induction (B), multipars without induction (C), multipars with induction (D). Each of them was divided in subgroups by dilatation of cervix 1–4 cm and 5–8 cm. The obtained data was statistically processed by SPSS.

Results. Group A: the cesarean rate among women receiving epidural analgesia with dilation 1–4 cm was 34% compared to 20% among those who did receive it with dilation 5–8 cm (p = 0.13, Fisher's Exact Test). Group B: 39% and 0% respectively (p < 0.05, Fisher's Exact Test). Group C: 10.3% and 0% respectively (p = 0.125). In group D 18.2 and 0% respectively (p = 0.217). Group A: Apgar scale index less than 7 at the end of first minute was 12.8% in subgroup with dilation 1–4 cm and 4.7% in subgroup with dilation 5–8 cm (p = 0.16). There was no difference in this parameter in the other groups. Apgar scale index less than 7 at the end of fifth minute was 10.6% in subgroup with dilation 1–4 cm and 0% in 5–8 cm in a group A (p < 0.05).There was no incidence of Apgar scale index less than 7 at the end of fifth minute in groups B, C and D. The length of the second stage of labor was 27 minutes in subgroup with dilation 1–4 cm and 38 minutes in subgroup with dilation 5–8 cm in group A (p < 0.05, Mann-Whitney Test). 11 and 18 minutes respectively in group B (p < 0.05). There was no significant difference of the length of second stage of labor in multiparous women in groups C and D.

Conclusions. Early initiation of epidural analgesia in labor is related to increased risk of cesarean section, worse Apgar scale indexes at the end of first and fifth minute, but not with prolonged second stage of labor.

IMPACT OF INTRACRANIAL AND EXTRACRANIAL STENOSIS ON CEREBRAL OXYGENATION DURING ON PUMP CABG SURGERY

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Keywords. Intracranial stenosis, cerebral oximetry, desaturation.

Introduction. Cerebral oxygen desaturation during surgery is associated with adverse outcomes and prolonged hospital stay. It can be assessed by continuous cerebral oximetry – a non-invasive technology for brain monitoring. Avoiding of cerebral desaturation during cardiac surgery is associated with improved neurological outcomes.

Aim. To evaluate the impact of intracranial and extracranial stenosis on cerebral oxygenation in CABG patients.

Materials and methods. This was a single-centre prospective observational study. All patients have signed informed consent to participate in the study. Patients with left main stenosis and triple vessel disease were preoperatively evaluated for concomitant extracranial or intracranial stonosis. During on-pump CABG surgery regional cerebral oxygen saturation (rSO_2) was monitored bilaterally in all patients. Desaturation rate was compared between patients divided into two groups – high risk (with intracranial or extracranial stenosis) and control. Data were analysed with SPSS_22.0 program.

Results. Data of 44 patients were analysed. 7 patients had intracranial stenosis and 12 patients had extracranial stenosis. Group with intracranial stenosis had not lower baseline oxygenation (left 70.85 vs. 70.15, P > 0.5, right 69.57 vs. 69.42, P > 0.5) than control group patients. The difference between baseline oxygenation of group with extracranial stenosis and control group patients was statistically insignificant (left 69.42 vs. 70.15, P > 0.5, right 71.25 vs. 69.42, P > 0.2). Desaturation (absolute rSO_2 less than 50% or 25% lower from baseline) occured in 6 (85.71%) patients with intracranial stenosis, 9 (75%) patients with extracranial stenosis, and in 13 (50%) of controls.

Conclusions. Intracranial and extracranial stenosis were associated with a higher decline of oxygen saturation during on-pump CABG surgery. A large prospective randomized study in this field is needed.

IMPORTANCE OF FIBRINOLYTIC SYSTEM CHANGES DURING LIVER RESECTION SURGERY

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Keywords. Coagulopathy, fibrinolysis, liver resection, bleeding, chronic liver diseases, anaesthesia.

Introduction. Bleeding during liver resection surgery is multifactorial, due to both surgical trauma and to haemostatic defect. One of the haemostatic reasons can be hyperfibrinolysis, a known complication of liver surgery especially in chronic liver disease patients due to delayed hepatic clearance of circulation plasminogen activator – tissue plasminogen activator (t-PA) and activation of protein C, which promotes production of t-PA – responsible for the cleavage of plasminogen to plasmin's well. Therefore, balance between fibrinolysis activators (t-PA) and inhibitors – plasminogen activator inhibitor type 1 (PAI-1) can be destroyed in prolonged liver resection surgery. Active fibrinolysis may weaken blood clot firmness and manifest as generalized oozing in surgical area. It can play a significant role in blood loss and promote to massive blood transfusions.

Aim. To make a literature review about fibrinolytic system changes during liver resection surgery.

Materials and methods. Selection of articles using PubMed data basis with following keywords: coagulopathy, fibrinolysis, liver resection, bleeding, chronic liver diseases, anaesthesia – was performed. Totally 50 articles were found in the period from 2002 to 2014 years. For future analysis 12 articles reporting changes of fibrinolytic activity in liver surgery were detalaised analysed.

Results. Extensive blood loss is still a major concern in major surgical procedures involving the liver surgery. Liver resection may cause a variable degree of primary fibrinolysis, especially in patients with chronic liver disease. Moreover, degree of disease correlates with fibrinolytic system activation during surgery. Those patients suffer from complex haemostatic disturbances, resulting in reduction of circulating protein levels involved in coagulation and fibrinolysis. This, combined with intraoperative disturbances of coagulation, increases the risk of bleeding. Main intraoperative surgical risk factors for hyperfibrinolysis are reperfusion after end of vascular occlusion, intra-abdominal adhesions from previous surgery, vascular injury during liver transection, especially if major resection is performed, patients with significant portal hypertension. Additionally, activation of primary fibrinolysis can be influenced by usage of Pringle maneuver because t-PA is rapidly released by endothelial cells and smooth muscle cells in response to vascular damage or occlusion or arterial ischemia. Moreover, hepatic hypocirculation promote hepatocellular dysfunction and a primary fibrinolytic state due to impaired metabolism of t-PA. PAI-1 normally increases in parallel with t-PA, but activation of protein C inactivates PAI-1, consequently causing an elevation of plasmin into circulation. Anaesthetic factors that contribute to bleeding are high central

venous pressure, hemodilution secondary to replacement with crystalloid and colloid solutions, as well as acidosis, hypothermia, hypocalcaemia. Hypothermia correlates with PAI-1 levels, showing significant reduction of PAI-1 levels if the body temperature is < 33° Celsius. Parallely, hemodilution decreases endogenous antifibrinolytic proteins including α – antiplasmin and PAI-1, resulting in increased fibrinolytic tendency.

Conclusion. Liver surgery presents a significant risk of a primary fibrinolysis activated by t-PA release from the endothelium by vascular damage and hepatic hypocirculation. Parallely with decreased levels of PAI-1 promoting to bleeding and transfusions. Additionally, fibrinolytic activation can be influenced by patient dependent factors, surgical technique and anaesthetic management.

INCIDENCE, CAUSES AND CLINICAL SIGNIFICANCE OF THROMBOCYTOPENIA IN INTENSIVE CARE UNIT PATIENTS

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Keywords. Thrombocytopenia, intensive care unit, mortality.

Introduction. Thrombocytopenia (defined as platelet count ≤150 10^9/L) is very common (approximately 40%) in intensive care unit (ICU) patients and often has multifactorial causes. Thrombocytopenia increases the risk of fatal outcome, although it is not the only fatal risk marker. The APACHE II Scoring System is used to predict mortality in ICU and a score is calculated using the worst values of measurements determined during the first 24 hours after admission.

Aim. To study incidence, independent risk factors and the impact of thrombocytopenia on patient outcome.

Materials and methods. A prospective observational cohort study was performed. Patients who received treatment in Pauls Stradins Clinical University Hospital Intensive Care and Reanimation Unit during the period November to December 2015 were included. A statistical analysis was made using IBM SPSS Statistics 22.0.

Results. Data of 93 patients were analysed: 37 (39.8%) women and 56 (60.2%) men. The mean (± SD) age was 61 ± 18 years. Overall ICU mortality was 30.1% (n = 28). A total of 43 patients (46.2%) had at least one platelet count < 150 10^9L (24 on ICU admission and 19 acquired during their ICU stay). 24 (55.8%) patients had mild thrombocytopenia, 14 (32.6%) – moderate and only 5 (11.6%) – severe.

ICU mortality was 32.6% in thrombocytopenic patients vs 28.0% in non-thrombocytopenic patients (p = 0.63).

The median duration of ICU treatment was 7 (IQR = 3–12) days for patients with decreased platelet count vs 5 (IQR = 2–10) days for those with normal count (p = 0.036). Patients who died had a higher median APACHE II score than those who were transferred 17 (IQR = 12–21.75) vs 12 (IQR = 8–16.5), p = 0.001.

30 (70%) of patients recovered normal platelet count during ICU therapy, but 13 (30%) remained with a decreased platelet count until transferring (n = 6) or death (n = 7).

13 of 23 (56.5%) of patients with pneumonia and 8 of 12 (66.7%) with sepsis had also thrombocytopenia. 48.5% of patients with thrombocytopenia were surgical in comparison to 37.2% in the group without thrombocytopenia.

Only 4 patients received platelet transfusion therapy – 2 had severe thrombocytopenia and 2 – moderate, 2.3 units of thrombocyte mass were transfused.

Conclusions. In this study thrombocytopenia did not increase mortality statistically significant. ICU stay is longer for patients whose platelet count is lower than normal. Patients with sepsis or pneumonia and surgical patients are suffering from decreased platelet count more often. None of the patients had spontaneous bleeding due to decreased platelet count.

SIMILARITIES AND DIFFERENCES IN PATIENT REPORTED RESULTS BEFORE AND AFTER KNEE SURGERY IN TWO DIFFERENT CONTRIES, LITHUANIA AND SWEDEN

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Keywords. Arthroplasty, TKA, PROMs.

Introduction. Knee arthroplasty surgery is an effective and increasingly common intervention. A common outcome measure after surgery is revision because it's a definite event, its occurrence cannot be questioned not the time at which it occurred. Lithuania and Sweden are two countries with respective low and high socioeconomic level. The use of Patient Reported Outcome Measures (PROMs) as an outcome measure is gaining popularity for decision making. The understanding patients characteristics and PROMs before and after TKA surgery is very important for better treatment and prevention.

Aim. To compare patient demographics and PROMs between two cohorts of TKA patients from Lithuania and Sweden.

Materials and methods. Patients operated during 2013 for TKA patients operated for OA in Lithuania and Sweden were included. Before surgery the patient demographics; age, gender, body mass index and American Society of Anesthesiologists grade were recorded. The PROMs used were the knee specific questionnaire Knee injury and Osteoarthritis Outcome Score (KOOS) and the generic health questionnaire EQ-5D including EQ-VAS. They were filled in prior to surgery and one year postoperatively. The statistical analysis was performed using SPSS 19.0 and Microsoft Excel 2013.

Results. 159 patients in Lithuania and 527 in Sweden were included. The response rate at one-year follow-up for in Sweden was 78%, but 54% in Lithuania. The Lithuanian patients were more often females and they had a higher BMI (31.3 vs 29) and ASA grade (ASA I – Lithuanian – 17, Swedish – 102; ASA II – 63 vs 374; ASA III – 24 vs 34; ASA IV – 1 vs O). Comparison of preoperative data showed that age did not differ significantly between the countries and that in both about 30% of the patients was less than 65 years of age at the time of surgery. Preoperatively, the Swedish patients rated their general health significantly better than the Lithuanians, especially in self-care, usual activities and anxiety. However, the KOOS scores were similar. Postoperatively, the general health and KOOS scores were similar but

the Lithuanian patients had improved more in general health than the Swedish patients (37% vs 3% in self-care, 43% vs 19% in usual activities and 48% vs 17% reported fewer problems with anxiety). With respect to the questions on mobility and pain the proportions reporting problems preoperatively were similar. A higher proportion of the Lithuanian patients improved in mobility (57%) than the Swedish (47%) while a higher proportion of the Swedish patients improved in pain (50%) as compared to the Lithuanian (37%).

Conclusion. This study shows that patients undergoing TKA in Lithuania are associated with inferior general health but similar knee disabilities preoperatively as compared to patients having TKA in a Swedish setting. The distribution of BMI, age and ASA grades in two different countries were higher in Lithuanian patients group. The knee-related outcome as well as health status improved after the TKA and seem similar in both countries. The study indicates that one should be careful when comparing PROMs of different patient populations and that further research is needed.

LATE RESULTS OF POLYTRAUMA PATIENTS WITH LOWER EXTRIMITY TRAUMA

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Keywords. Polytrauma, lower extremity trauma, late functional results.

Introduction. In accordance with the Centre for Disease Prevention and Control data, in 2014, 742 people in Latvia had several areas of the body injured or 2.2% of all traumas.

The research on patients' satisfaction with the surgery results after two years of severe lower extremity trauma concluded that these patients are more susceptible to pain, functional disorders, tendency to depression. One of the major disadvantages that these patients admitted are functional disorders [O'Toole, 2008].

Lower Extremity Functional Scale (LEFS) depicts the functional result of lower extremities, and can be used to evaluate the results of treatment.

LEFS is suitable for use in clinical studies where it is important to evaluate lower extremities' function improvement [Pan, 2014].

Aim. To evaluate late functional results of ploytrauma patients with lower extremity trauma consequences.

Materials and methods. Retrospective material analysis of 140 patients, after polytrauma with musculoskeletal system trauma has been made, which in 2013 had have treatment in Riga East University Hospital, Clinic "Gaiļezers", Traumatology and Orthopedics Department. Lower extremity function has been analyzed for 27 patients 37–26 months after polytrauma (Injury Severity Scale (ISS) 11–41, the average value 20.37; New Injury Severity Scale (NISS) 17–41, average value 25.44). Questionnaires and lower extremities function evaluation using LEFS was carried out for these patients.

Patients were divided into groups according to the severity of polytrauma according to NISS based on the Abbreviated Injury Scale (AIS). Group 1 – 51.9% – with moderate injuries (17-26 NISS), Group 2 – 44.4% – with serious injuries (27-35 NISS), Group 3 – 3.7% – with severe injuries (36-49 NISS). There were no polytrauma patients with critical injuries (36-49 NISS). *IBM SPSS 20.0* and *Microsoft Office Excel 2007* programs were used for processing data.

Results. Research included 27 patients, 17 (63%) males and 10 (37%) females, average age 46.41 ± 09.19 years (p = 0.007).

Daily activities' LEFS points on average decreased from Group 1 2.79 to Group 3 1.00; putting on shoes or socks Group 1 3.29 to Group 3 2.00; lifting an object Group 1 3.21 to Group 3 2.00; light house works Group 1 3.29 to Group 3 3.00; heavy house works Group 1 2.07 to Group 3 0.00.

Connection between patient age and late functional results -0457 ± 0.16 – moderate negative.

Conclusions. From 20 activities, included in LEFS, in five activities LEFS points decreased when NISS severity group increased. Activities related to daily activities, putting on shoes and socks, lifting an object, light and heavy house works, showed that patients', with higher NISS, LEFS points were lower.

BRISTOW-LATARJET AND BANKART: A COMPARATIVE STUDY OF SHOULDER STABILIZATION IN HOSPITAL OF TRAUMATOLOGY AND ORTHOPAEDICS IN RIGA; 6 YEARS RESULTS

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Keywords. Bankart; Bristow-Latarjet; recurrent instability; anterior instability.

Introduction. Anterior shoulder dislocation is commonly complicated by recurrent instability, which occurs in up to 60% of all patients. Arthroscopic Bankart and open Bristow-Latarjet procedures are both viable surgical options for recurrent traumatic anterior instability of the shoulder joint. Both restores stability to the shoulder – the arthroscopic Bankart procedure repairs tear in the labrum with anchors and Bristow-Latarjet, provide shoulder stability, with coracoid transfer to glenoid.

Aim. To evaluate and compare the clinical and functional results of patients who underwent arthroscopic Bankart and open Bristow-Latarjet surgery for symptomatic instability in Hospital of Traumatology and Orthopedics, Riga, Latvia, in period 2009. – 2015. To analyze Western Ontario Shoulder index (WOSI) psychometric properties validity, reliability, and responsiveness.

Results. Twenty Bankart and forty-six Bristow-Latarjet patients treated for recurrent anterior glenohumeral instability were retrospectively identified from six surgeons' practices. 11 patients (61%) from Bankart group, whose average age was 28.55 years, and 30 patients (65%) from B-L, whose average age was 26.65 years, were evaluated. Primary outcome measures were the WOSI, Constant Scale, satisfied rate and redislocation or subluxation rate.

Average WOSI score was 77.32 for Bankart and 80.2 for Bristow-Latarjet shoulders. Average Constant score was 82.3 for Bankart and 90.1 for Bristow-Latarjet patients. Redislocation or subluxation after the first operation occurred in 3 of 11 of Bankart group and 1 of 30 B-L shoulders. Of the 30 Bristow-Latarjet patients, 29 were very satisfied or satisfied compared with 8 of 11 in the Bankart group.

Conclusions. Results were better after the Bristow-Latarjet repair than after Bankart repairs done with anchors with respect to postoperative stability and subjective evaluation.

THE ANALYSIS OF ASEPTIC LOOSENING AS A COMPLICATION AFTER TOTAL HIP ARTHROPLASTY

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Keywords. Aseptic loosening, total hip arthroplasty, complications.

Introduction. Aseptic loosening after primary total hip arthroplasty is one of the most common complications and one of the main reasons why patients undergo revision hip arthroplasty. But still there are some uncertainties about this problem and further analysis and research about this problem is needed.

Aim. To determine the how many revision hip arthroplasties due to aseptic loosening were performed in the years 2013 and 2014 in the Hostipal of Traumatology and Orthopaedics, the demographic and physical data of the patients, comorbidities time after the primary hip arthroplasty, prosthesis type, the component of the prosthesis had loosened, how long the symptoms of the aseptic loosening were present, the duration of the revision hip arthroplasty and the blood loss during the operation.

Materials and methods. This research is a retrospective data analysis from medical case reports from the archive of Hospital of Traumatology and Orthopaedics. Patients were selected if they underwent revision hip arthroplasty in years 2013 and 2014 due to aseptic loosening of the prosthesis. Several factors were analyzed-gender, age, height, mass, Body Mass Index, comorbidities, medications regularly used, the time after primary hip arthroplasty, prosthesis type, the component of the prosthesis that had loosened, how long the symptoms of the aseptic loosening were present, the duration of the revision surgery and the blood loss during the operation. The data were all analyzed with the SPSS and the significance level was determined with the Fischer`s Exact Test.

Results. The total number of aseptic revision hip arthroplasties during a 24 month period from January 2013 till December 2014 were 193, of which 112 were due to aseptic loosening of the prosthesis. 80.8% primary THA patients that were treated using cemented prostheses were women ($p = 0.008$, Fischer`s Exact Test). In cases when cemented prosthesis was used the acetabulum component loosened more frequently than femoral component (67.4% vs 25.6%, $p = 0.019$ Fischer`s Exact Test). Patients with cemented prosthesis spent 56 days in hospital vs 41 days spent by patients with uncemented prosthesis ($p = 0.011$, Mann-Whitney U Test). At the time of revision the mean age for cemented prosthesis patients was 65.28 and 30.95 for uncemented prosthesis patients ($p = 0.00$, Mann-Whitney U Test).

Conclusion. Aseptic loosening is one of the main long-term complication after total hip arthroplasty. Its main symptom is pain which affects the quality of life of the patient and can cause comorbidities. The revision hip arthroplasty is a very complicated surgery which vastly improves the quality of life of the patients.

HIP JOINT ANATOMICAL SHAPE VARIANTS AS A RISK FACTOR FOR DEVELOPING OSTEOARTHRITIS

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Keywords. Hip osteoarthritis, femoroacetabular impingement (FAI), acetabular dysplasia.

Introduction. Osteoarthritis (OA) is a degenerative disease which is characterized by erosion of cartilage, bone edge hypertrophy, subchondral sclerosis and damage of the joint capsule. According to etiology OA can be divided into two groups – primary or idiopathic and secondary, caused by such diseases as rheumatoid arthritis, Lyme disease, psoriasis, Reiter's syndrome, developmental abnormalities, trauma, etc. The underlying mechanism of the disease development still remains unclear. Since hip OA frequently occurs in the absence of arthritis in other large joints has led authors of different studies to assume that there are morphologic factors specific to the hip that lead to joint's destruction.

Aim. The aim of this study is to determine, are there anatomical alterations of the hip joint that are associated with increased risk of developing osteoarthritis.

Materials and methods. We retrospectively examined radiographs of 73 patient hips with *Tonnis* Grade I/II signs of OA contralateral to hips that had been treated with total hip arthroplasty (THA) by a single surgeon (Arthritic group) and radiographs of 73 patient hips aged at least 65 years with *Tonnis* Grade 0/I contralateral to hips that had been treated with unipolar hemiarthroplasty due to a dislocated femoral neck fracture (Control group) in Hospital of Traumatology and Orthopedics during the period from year 2013 to 2014. In both groups alpha angle, lateral center edge angle, neck shaft angle, acetabular index was measured and the presence / absence of *coxa profunda*, *protrusio acetabuli*, Cam type impingement and crossover sign (suggesting of Pincer type impingement) was determined.

Results. In the Arthritis group there were 24 (32.90%) male, 49 (67.10%) female patients and in Control group 13 (17.80%), 60 (82.20%). The mean age in both groups significantly differed 68.84 ± 11.60 (30–91) vs. 82.62 ± 8.10 (65–96) years (p < 0.001) due to inclusion criteria in Control group (age ≥65 years). Mean alpha angle in Arthritis group was significantly higher comparing to Control group 54.16 ± 6.63° (44.40–78.40°) vs. 49.09 ± 6.31° (36.50–65.90°) (p < 0.001) and mean neck shaft angle in Arthritis group was significantly lower 126.52 ± 6.28° (109.90–141.30°) compared to the Control group 129.07 ± 5.93° (112.80–141.10°) (p = 0.012). Mean lateral center edge angle (CEA) did not significantly differ in both groups but there were significantly more (p = 0.023) cases of acetabular dysplasia (CEA < 25°) in the Arthritis group (n = 5) than in Control group (n = 0). More hips (p < 0.001) in the Arthritis group (n = 32) had femurs with Cam type FAI comparing with the Control group (n = 12). All other quantitative and qualitative parameters did not differ between both groups.

Conclusions. This study demonstrates that morphological anomalies (high alpha angle, Cam type impingement sign) associated with FAI and acetabular dysplasia were more prevalent in OA patients than in the Control group. This suggests that Cam type FAI and mild acetabular dysplasia are associated with the development of subsequent OA.

SIGNIFICANCE OF THE NEW INJURY SEVERITY SCORE IN THE MANAGEMENT OF POLYTRAUMA PATIENTS WITH LOWER EXTREMITY INJURIES

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Keywords. Polytrauma, lower extremity, New Injury Severity Score.

Introduction. Trauma is one of the leading causes of mortality and major morbidity Worldwide. It is crucial to determine what kind of treatment and when should it be used in patients with multiple injuries. Therefore several trauma scoring systems have been designed for proper identification of high- risk patients. One of the most commonly used scales is the Injury Severity Score (ISS) which evaluates the patient by using the most severe injuries in three different anatomical areas and New Injury Severity Score (NISS) which uses three injuries regardless of the anatomic region. Lower extremity injuries are common and they cause about 17% of deaths in polytrauma patients.

Aim. The aim of this study is to determine, if NISS is more efficient for assessing polytrauma patients with lower extremity injuries rather than ISS.

Materials and methods. We retrospectively analyzed patient medical cards who were admitted to Riga Eastern Clinical University Hospital, Clinic "Gaiļezers", Trauma and orthopedic department during year 2013. Inclusion criteria was NISS higher than 16. Analysis of data was carried out by using *IBM SPSS Statistics 19* programme.

Results. From 101 polytrauma patient, 73 (72.3%) had lower extremity injuries. The most common causes of polytrauma were car accidents (34.0%), followed by falls from height (28.8%) and automobile-pedestrian encounters (20.5%). 46 (63.0%) of patients were male and 27 (37.0%) female. Mean age was 43.59 ± 16.48 (18–82) years. There were 54.8% polytrauma patients with moderate injuries (Group 1), 41.1% were with serious injuries (Group 2), 4.1% with severe injuries (Group 3) and 0.0% with critical injuries (Group 4). Of all severe injuries the most common was lower extremity trauma which accounted for 47.2%. Mean ISS was 17.92 ± 7.41 (9–41) and NISS 24.53 ± 6.04 (17–41). 52.1% (n = 38) of patients had ISS higher than 16. In patients with ISS lower than 17, Damage Control Orthopedics (DCO) was significantly less used than in patients with ISS higher than 16 (57.1% (n = 20) vs. 81.6% (n = 31) (p = 0.023)). DCO was used in 69.9% (n = 51) patients. In Group 1 DCO was used in 65.0% (n = 26) of patients, in Group 2 – 73.3% (n = 22) and Group 3 – 100.0% (n = 3) which did not significantly differ. Mean duration of hospitalization was 28.45 ± 25.32 (2–188) days which significantly differed between groups (p = 0.019). Complications developed in 6.8% (n = 5) of patients, one was in Group 1 and four in Group 2, none were in Group 3 (p = 0.184). 19.2% (n = 14) of patients had associated injuries nearby lower extremity bones which did not significantly differ between groups.

Conclusions. Despite the fact that all patients had polytrauma according to NISS, only 52.1% had ISS higher than 16. In patients with ISS lower than 17, DCO was significantly less used than in patients with ISS higher than 16 (p = 0.023). DCO was used in all patients with severe injuries and none of them had complications. This suggests that NISS is a more efficient for assessing polytrauma patients with lower extremity injuries than ISS. Further studies are recommended.

TOTAL HIP REPLACEMENT COMPLICATIONS IN CONNECTION WITH PREOPERATIVE AND OPERATIVE FACTORS FOR PATIENTS WITH PROLONGED HOSPITAL STAY

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Keywords. Total hip arthroplasty, complications, orthopaedics.

Introduction. Total hip arthroplasty is one of the most successful procedures to reduce patient's pain and to improve the functional status. Identifying risk factors of prolonged hospitalization time and early complication rate could help to detect patients with complications earlier, to improve the safety and the outcome during the hospital stay.

Aim. To evaluate postoperative complications after total hip replacement for patients with prolonged hospital stay and to determine possible connection with risk factors in preoperative and intraoperative time.

Materials and methods. The study included all individuals from the Hospital of Traumatology and Orthopaedics in Riga, Latvia who had a total hip arthroplasty performed in the year of 2014. Only patients with hospital time longer than 14 days were included. The data were obtained from medical histories and analysed as a retrospective study. Cases that had bone fractures without the cause of osteoarthritis were not selected. Calculations of data were performed by using IBM SPSS Statistics 22.0 programme.

Results. A total number of 82 medical histories were analysed. The mean age of all patients was 71.12 ± 10.80. The gender – 21.0% (N = 17) of them were male and 79% (N = 64) were female. Mean amount of days spent in hospital 16.64 ± 6.78. Mean affected joint flexion (in degrees) was 78 ± 16, extension – 1.7 ± 5 inner rotation – 12 ± 10, outer rotation – 18 ± 10. Affected extremity shortening (cm) – 1.51 ± 1.47. Mean complication rate – 67.1% (including minor complications). Mean body mass index was 29.43 ± 6.14. Average operation blood loss (ml) was 421.21 ± 279.02. Mean operation time (min) – 94.18 ± 23.15. Days spent in intensive care unit were 3.6 ± 1.73. Statistically significant connection was between days spent in hospital and complication rate ($p < 0.01$) and statistically significant correlation between affected extremity shortening (cm) and days spent in hospital. There was a correlation between the operation time and days spent in hospital ($p < 0.01$).

Conclusion. One of the most significant factors was radiologically detected shortening of affected extremity, which affects the length of patient's stay in hospital. There were no important differences between goniometric measurements and the complication rate or the length of hospital stay. Mean complication rate could be explained due to the intentional selection of the patients group. Cases with longer operation time have significant impact on the length of hospital stay.

THE CHANGES OF CARDIAC MAGNETIC RESONANCE IMAGING-DERIVED PULMONARY ARTERY DIAMETER IN PATIENTS WITH PULMONARY HYPERTENSION

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Keywords. Pulmonary hypertension, pulmonary artery diameter, cardiac magnetic resonance imaging.

Introduction. Pulmonary hypertension (PH) is a state characterized by abnormally elevated pulmonary artery pressure that can result from many different diseases. Dilated main pulmonary artery (MPA) is a secondary effect of elevated pressure in the right heart structures. Previous studies of cardiac magnetic resonance (CMR) imaging showed that diameter of the MPA and its relation to the diameter of the ascending aorta (AA) (the MPA/AA ratio) is useful for noninvasive detection of PH.

Aim. The aims of this study were: 1) to evaluate and compare diameters of major pulmonary arteries (PA's) between patients with PH and without PH; 2) to evaluate and compare diameters of PA's in patients with PH during baseline and follow-up assessment.

Materials and methods. Seventy-five patients who underwent CMR were included in this study: 38 patients with previously confirmed PH (50.7%) and 37 patients (49.3%) with normal pulmonary artery blood flow according to the echocardiography data who were considered as a control group. All 38 patients with PH had a baseline CMR assessment and 18 (47.4%) of those had a follow-up CMR assessment. We derived diameters of the MPA, right (RPA), left (LPA) PA's, AA and the MPA/AA ratio using the CMR axial white blood images.

Results. The diameters of the major PA's, and the MPA/AA ratio was significantly larger in patients with PH compared to patients without PH: MPA 35 ± 6.99 vs 24.73 ± 3.91 mm, RPA 24.24 ± 4.75 vs 17.73 ± 3.31 mm, LPA 24.18 ± 4.51 vs 17.68 ± 3.00 mm, MPA/AA 1.16 ± 0.33 vs 0.76 ± 0.13 ($p < 0.001$). There was no significant difference of the AA diameter between both groups. Mean follow-up time was 16.7 months. The significant dilatation was detected only in MPA during the follow-up: 33.07 ± 4.03 vs 33.63 ± 4.03 mm ($p = 0.026$) although there was no correlation between changes in the MPA diameter and follow-up time. Other branching PA's had a tendency to dilate during follow-up but these changes were not significantly relevant.

Conclusions. The obtained results support previously reported results that diameter of the MPA and the MPA/AA ratio is larger in patients with PH. We showed that not only MPA but also branching PA's dilate in patients with PH. All these changes can be measured in the CMR axial images. The MPA continues to dilate during follow-up and there were no significant changes in the other PA's. The correlation between changes in the MPA diameter and the follow-up time was not observed. Thus we consider that evaluation of PA's diameter would not be valuable for frequent follow-up assessments in the patients with PH.

ABDOMINAL ULTRASONOGRAPHY AS A DIAGNOSTIC METHOD FOR ACUTE APPENDICITIS IN PSCUH

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Introduction. Acute appendicitis is the most frequent emergency surgical abdominal disease. While the clinical diagnosis may be straightforward in patients who present with classic signs and symptoms, atypical presentations may result in diagnostic confusion and delay in treatment. Thus diagnostic imaging should be performed. Ultrasound is a widely used technique in the diagnosis of acute appendicitis; nevertheless, its utilization still remains controversial.

Aim. To evaluate the sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV), accuracy of ultrasonography (US), clinical and laboratory findings in the diagnosis of appendicitis.

Materials and methods. The study was conducted on medical records of 191 patients who presented to the PSCUH emergency department from 01/07/14 to 31/12/14 with suspected appendicitis. For patients with acute appendicitis, the diagnosis was confirmed with surgery and histologic evaluation. Records were reviewed retrospectively. Sensitivity, specificity, positive predictive value, and negative predictive value of US and laboratory findings in the diagnosis of appendicitis were calculated. The obtained data were processed by the statistical software SPSS 22.

Results. A total of 191 patients were enrolled in the study. 134 had acute appendicitis and 57 did not (prevalence 70.1%). 3 patients with appendicitis were excluded from the study due to lack of US examination. Among the 57 patients without acute appendicitis the most common differential diagnoses were gynaecological disease 13 (22.8%), nonspecific abdominal pain 9 (15.8%), pancreatitis 8 (14.0%). The appendix was identified at US assessment in 74 out of 131 patients with appendicitis (56.5%) and in 9 (16.1%) patients without appendicitis.

Sensitivity, specificity for ultrasonography were 58%, 89% respectively; positive predictive value and negative predictive value were 92% and 50%, respectively (95% CI). Test accuracy was 67.8%.

The most accurate ultrasound finding for appendicitis was a diameter of 6 mm or greater with sensitivity 47.9%, specificity 92.8%, PPV 91.8%, NPV 51.5%. A WBC level above 10^{10}/L had a sensitivity of 79.8% and a specificity of 50%, whereas a CRP level above 10 mg/L had a sensitivity of 60.4% and a specificity of 52.3%. Our study ultrasound exams were performed by junior sonography specialists in 82% of cases.

Conclusion. Ultrasound remains main imaging method in patients referred with clinically suspected acute appendicitis with high accuracy if performed by experienced specialist. The most significant finding for appendicitis was enlarged appendix diameter.

MULTIFOCAL / MULTICENTRIC BREAST CANCER DIAGNOSED BY MAGNETIC RESONANCE TOMOGRAPHY IN NATIONAL CANCER INSTITUTE 2015 YEAR

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Introduction. Multifocal / multicentric breast cancer (multiple BC) is detected in 6–77% of all breast cancer cases, as described in literature. Accurate and precise diagnosis is crucial for effective treatment. Magnetic resonance imaging (MRI) is the most sensitive and specific diagnostic method.

Aim. To evaluate patients with multiple BC diagnosed by MRI in National Cancer Institute 2015 year, to review diagnostic methods, histology of tumours, spread to lymph nodes.

Materials and methods. From 2015.01.01 to 2015.12.31 269 breast MRI have been performed at National Cancer Institute. A retrospective analysis of 21 woman with multiple BC diagnosed by MRI was made. Statistical analysis was performed using SPSS software version 23, for statistical reliability to check the use of χ^2 test and t-test for independent samples. Selected statistical significance level of $p < 0.05$.

Results. The final reseach group included 21 patients. The average age ± SD 50.3 ± 10.54 years. Multiple BC were seen in 14 (70%) of 20 ultrasound examination, in 7 (53.85%) of 13 mammography examination, in 1 (25%) of 4 tomosynthesis examination and 100% MRI. The treatment was: 2 (9.92%) cases – mastectomy, 5 (23.81%) – mastectomy + chemotherapy, 4 (19.05%) – mastectomy + chemotherapy + radiotherapy, 3 (14.29%) – only chemotherapy, 2 (9.52%) – sector resection and 5 (23.81%) cases have not information about treatment and follow-up. 17 (80.95%) cases have histological analyses of multiple BC: 4 (23.53%) invasive lobular carcinoma, 12 (70.59%) invasive ductal carcinoma, 1 (5.88%) invasive lobular and ductal carcinoma. 10 (58.82%) cases were poorly differentiated (G3), 7 (41.18%) – moderately differentiated (G2). Spread to lymph nodes was detected in 8 (47.06%) cases. Spread to lymph nodes was more frequently in patients with invasive ductal carcinoma ($p = 0.468$) and patients with poorly differentiated carcinoma ($p = 0.066$).

Conclusions. MRI is the most sensitive examination to detect multifocal / multicentric breast carcer. The main treatment was mastectomy and chemotherapy with or without radiotherapy. The most frequent pathology was invasive ductal carcinoma. Spread to lymph nodes was more frequent in patients with invasive ductal carcinoma and patients with poorly differentiated carcinoma, but without statistical significance.

IS BREAST ULTRASONOGRAPHY A USEFUL ADJUNCT TO MAMMOGRAPHY IN THE ASSESSMENT OF BREAST TUMOURS IN ALL PATIENTS?

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Keywords. Breast cancer, Mammography, Ultrasonography.

Introduction. In Europe for breast pathology prime selection of diagnostic method is mammography. This method is also used for screening. But mammography can also be false positive or false negative. To overcome its shortage sometimes ultrasonography is used.

Aims and objectives. To determine:

1. What are the most frequent localizations of breast tumors and in what stages is breast cancer diagnosed primarily.

2. Which histological cancer type occurs most often.

3. Is ultrasonography a useful adjunct to mammography in the assessment of breast tumours in all patients.

Materials and methods. Our study consisted of 79 women aged 40 – 92 with first-time diagnosed breast cancer proven by biopsy. Patients were categorized in two groups above and below 70 years of age. All women were examined by MG and USG, both methods classified by BI-RADS classification. Stage was determined by TNM classification and localization by ICD10 classification.

Results. Breast cancer in 61% (n = 48) was localized in the left breast. Based on ICD10 classification in 58% of cases (n = 46) in the upper outside quadrant. Most frequent stages were IA in 35% (n = 28) and IIA in 25% (n = 20). 80% (n = 63) of biopsy's showed ductal carcinoma, 10% (n = 8) lobular, other types of cancers below 3%.

USG upgrade in the age group below 70 was in 37% of cases (n = 17,p < 0.001), downgrade in 2% (n = 1). In the age group above 70 USG upgrade in 9% (n = 3), downgrade in 18% (n = 6).

Conclusions. Breast cancer in 2/3 of cases was localized in the left breast, more than half of cases in the breast's upper outside quadrant. From all cases, only ~50% of tumours were diagnosed in an early stage. The most common breast cancer type is Ductal. USG gave a higher positive contribution for patients aged below 70.

RESULTS OF ENDOVASCULAR MANAGEMENT OF FAILING INFRAINGUINAL ARTERIAL BYPASS IN PATIENTS WITH CRITICAL LIMB ISCAHEMIA

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Keywords. Critical limb ischemia. Failing peripheral arterial bypass. Endovascular management.

Introduction. Peripheral arterial disease (PAD) has a prevalence rate of up to 12% in the general population. Critical limb ischemia (CLI) is defined as chronic lower extremity PAD with either ischemic rest pain or the tissue loss (non-healing ulcers or gangrene). Treatment of CLI often requires hybrid approach, which involves a combination of open surgical and endovascular techniques. This approach allows to reduce amputation rate in complex CLI cases.

Aim. The aim of this study was to evaluate the early postoperative technical and clinical outcome of endovascular recanalization (PTA) in failing infrainguinal arterial bypass.

Materials and methods. The retrospective study was conducted and 14 patients, who met following criteria, were selected for the study: 1) CLI patient admitted in year 2015, 2) diagnostic digital subtraction angiography revealed stenotic or occlusive arterial changes in proximal anastomosis or out-flow of the infrainguinal bypass; 3) documented interdisciplinary agreement for endovascular treatment of failing bypass. The age, gender and clinical presentation of CLI patients according to Rutherford classification were analyzed from medical records.

Results. Mean age was 67.7 years (53–80 years). 10 patients (71%) were male and 4 (29%) were female. Clinically 4 (28.5%) patients had rest pain (Rutherford category4), 6 (43%) patients – minor tissue loss / non-healing foot ulcer (Rutherford category5), 4 (28.5%) patients – major tissue loss or pregangrene (Rutherford category6). 6 patients underwent (PTA) immediately after bypass surgery to avoid acute bypass thrombosis due to restricted out-flow. In 8 patient bypass associated PTA was performed 1month to 8 years after initial bypass surgery: 2 of them had stenosis in proximal anastomosis of bypass and 2 patients – in distal anastomosis. In addition all patient underwent trans-bypass PTA for out-flow improvement beyond distal bypass anastomosis: 28.5% (n = 4) PTA of popliteal and crural segment, 64% (n = 9)–crural arteries, 7.1% (n = 1)–popliteal artery. All endovascular manipulations were technically successful with no intraoperative complications. Early clinical improvement – reduction of ischemic rest / night pain – was achieved in 71% (n = 10), 3 patients with non-healing ulcer had no immediate improvement, in 1 patient pregangrene of foot progressed to gangrene.

Conclusion. Endovascular treatment of failing infrainguinal arterial bypass is safe and feasible procedure which allows to reduce clinical symptoms of CLI in complex PAD patients.

THE EVALUATION OF THE INTRACRANIAL RUPTURED ANEURYSMS BASED ON ANATOMICAL AND MORPHOLOGICAL FACTORS

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Keywords. Angiography, intracranial aneurysm, rupture.

Introduction. Ruptured intracranial aneurysm (IA) is the most common cause of SAH (up to 85%), and can cause significant morbidity and mortality. However, with the wider availability of noninvasive intracranial imaging techniques, increasing number of unruptured IAs is being incidentally detected. That is why the life threatening SAH may be prevented if the aneurysm can be treated before rupture. When an unruptured IA is detected, the risk of rupture has to be balanced with the risks of preventive treatment. Therefore for effective management of patients with unruptured IA, prognostic criteria for the risk of rupture are needed.

Aim. To analyze the location and morphological parameters of ruptured IAs and their association with rupture risk.

Materials and methods. 128 patients with 132 ruptured aneurysms underwent endovascular treatment at Riga East Clinical University Hospital "Gaiļezers", Interventional radiology department from January 2012 through December 2014. The characteristics of aneurysms were retrospectively reviewed in radiological findings – 3D angiographies, CT angiographies. Parameters such as location, maximum height, transverse diameter, aneurysm neck width, and aspect ratio (AR) were compared between patients with ruptured aneurysms. Statistical analysis was processed by the statistical software SPSS 22.

Results. 128 patients with 132 ruptured aneurysms were assessed, of them 46 were males (36.9%) with mean age 47.0 ± 12.93 and 82 females (64.0%) with mean age 60.0 years ± 13.30. In 4 patients 2 aneurysms were considered as ruptured. Males were presented with ruptured intracranial aneurysms at younger mean age than females (mean age difference-12.9 years; 95% CI, $p < 0.005$). The most common location of ruptured aneurysms was the anterior communicating artery (AComA) in 46 (34.8%) cases. The mean height was 6.1 ± 3.64 mm. The mean AR (height / neck width) was 1.8 ± 0.81. Aneurysms on AComA had significantly smaller mean height 4.9 ± 1.83 and mean AR 1.68 ± 0.70 (95% CI, $p < 0.05$). The mean AR of aneurysms in patients below 65 years of age was 1.91 ± 0.86 and above 65 years was 1.54 ± 0.61 mm. In the older age group, the AR was significantly smaller ($p < 0.05$).

Conclusion. The study showed female predominance in group of patients with ruptured IAs. The aneurysms most prone to rupture are located in the AComA. Registrated ruptured aneurisms had small mean AR, that might reasonably influence the decision to treat actively an unruptured aneurysm regardless of its size.

KNEE ULTRASOUND COMPARED TO MAGNETIC RESONANCE IMAGING AS A DIAGNOSTIC TEST FOR MENISCAL INJURIES: A SYSTEMIC REVIEW OF EXISTING EVIDENCE

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Keywords. Radiology, Ultrasound, Magnetic resonance imaging, Knee, Meniscus.

Introduction. Meniscal injuries of the knee joint are associated with long-term dysfunction and with degenerative knee joint changes. 50% of all patients with meniscal injuries develop osteoarthritis within 10 to 20 years from the time of the injury. Surgery constitutes 15% of all meniscal injuries and early diagnostics reduce disability and treatment costs. Ultrasound and magnetic resonance imaging are widely used diagnostic tests in diagnosing meniscal injuries.

Aim. Conduct a systematic review of the literature to compare ultrasound and magnetic resonance imaging in the diagnostics of meniscal injuries.

Materials and methods. A total of 49 publications met the eligibility criteria for this review. Publications were found on databases: PubMed, Sciensdirect, EBSCO, SAGE publications, Clinical key, Elsevier by using keywords.

Results. US is simple, multiplanar, dynamic, noninvasive, rapidly performed, relatively inexpensive and widely available diagnostic tool for meniscal injuries. New US systems are beeing developed and such techniques like Real time compound sonography (RTCS), Real-time 3-D ultrasound (3DUS) imaging or 4-D ultrasound (4DUS) in combination with conventional US may improve its diagnostic value. Sensitivity of detecting meniscal tears with ultrasound varies between 74–90%, specificity 81–90%, positive predictive value is 75–83% and negative predictive value is 85–89%. Disadvantages of US include lower specificity and sensitivity comparing to MRI, it is operator dependent, it can show artifacts mimicking real pathology, it is dependent on body habitus because of wave penetrance into tissues. MRI on the other hand is with higher specificy and sensitivity than US, images have different planes and many sequences that constantly improve allowing to acquire more scale slices per sequence, enables thin-section data acquisition without intersection gaps, allows to avoid flow artifacts, reduce scan time, decreases susceptibility therefore improving image quality. Using new methods it is possible to diagnose meniscal tears preclinically, allowing to start early prophylaxis and treatment. Currently in clinical practice 1.5 T and 3.0 T machines are used. Sensitivity of MRI in detection of meniscal tears varies between 87–97%, specificity varies between 87–98% and the negative and positive predictive value can be as high as 97% each. Disadvantages of MRI include possible contraindications like the presence of implanted devices and its expensiveness.

Conclusions. Current evidence demonstrates that MRI still remains a gold standard for imaging meniscal injuries of the knee joint and is highly accurate and noninvasive diagnostic tool. However, US could be used as it is a good, low-cost alternative when MRI is not available or when waiting period for MRI can cause unnecessary delay in management. Both MRI and US are pointed out as the best imaging methods in terms of postoperative knee assessment after meniscal tear repair.

TRANSARTERIAL LIVER NEOPLASM CHEMOEMBOLIZATION

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Keywords. Drug eluting beads-transarterial chemoembolization (DEB-TACE), hepatocellular carcinoma (HCC).

Introduction. Drug eluting beads-transarterial chemoembolization (DEB-TACE) is injection of DEB loaded with chemotherapeutics into the tumor-feeding artery during an angiographic procedure, with or without further embolization, using regular microspheres to induce only minimal injury to the surrounding non-tumorous liver and to prolong the contact time between cancer cell and the chemotherapeutic agents. DEB-TACE is widely used in palliative treatment of hepatocellular carcinoma (HCC), when neither resection nor ablation is possible. DEB-TACE is also used for other nonresectable liver primary neoplasms, e.g., cholangiocarcinoma, hepatic metastases, e.g., colorectal carcinoma. Optimal candidates for the treatment are Child-Pugh A and B stage patients with large or multifocal HCC who do not have vascular invasion or extrahepatic spread.

Aim. Assess DEB-TACE method complications, side effects and efficiency in single university center.

Methods. Medical histories of 37 patients with liver tumours who underwent doxorubicin or irinotecan DEB TACE were retrospectively evaluated.

Results. Mean age of patients was 62.89 years, 18 females and 19 males. 33 patients with HCC and one with cholangiocarcinoma were embolized using 40 – 100 μm microspheres deluted by doxorubicin and for 4 patients with colorectal liver metastases irinotecan was applied. In 11 cases (29.73%) 3 or more embolization sessions were done, in 11 cases (29.72%) 2 sessions and in 15 cases (40.54%) single session was performed following CT control after each phase. Procedure related complications were noted in 4 cases – one acute gangrenous cholecystitis, target artery dissection, femoral artery pseudoaneurysm and mild allergic reaction to contrast media. In 80% of cases transient postembolization syndrome – fever, nausea, vomiting, flanc pain, was registered, in one case (2.7%) alopecia. The overall response rate to treatment was 89.19%, in group of HCC, cholangiocarcinoma – 91.91% and in group of liver metastases – 75%. Based on CT results after last treatment session, in 12 (32.43%) cases tumor response was complete, in 21 (56.76%) – partial, in 4 (10.81%) – progression of the disease. Smaller tumor size, fewer nodus numbers and better liver function had better tumor response.

Conclusion. DEB TACE is a safe and an effective technique for the palliative treatment of primary and secundary liver neoplasms. With procedure related complication rate is low. Repeated treatment sessions depend on the response of the tumor and the observed side effects. Careful patient selection is crucial for better outcome in the treatment of HCC with DEB TACE.

ANALYSIS OF RADIOLOGICAL FINDINGS: SPINAL AXIS DEVIATIONS, SPINAL OSTEOARTHRITIS AND INTERVERTEBRAL DISC PATHOLOGIES IN ADOLESCENTS WITH BACK PAIN

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Keywords. Radiology, MRI, CT, RTG, back pain, adolescents, spinal axis deviations, osteoarthritis, disc pathologies.

Introduction. Spine alterations in adolescents with chronic back pain leading to disability is global social problem associated with high diagnostic, treatment costs, restriction of professional choice later in life. Most common causes of chronic back pain are spinal axis deviations, spinal osteoarthritis (SOA) and intervertebral disc pathologies.

Aim. To study typical pathologic radiological findings in adolescents with back pain and correlate them with patient's gender, age and medical history.

Material and methods. In retrospective study radiological findings of radiography, computed tomography, magnetic resonance imaging in cervical, thoracic and lumbar spine were studied in 100 adolescents (53 females, 47 males, aged from 18 to 25) suffering from back pain and having radiologic signs of spinal axis deviations, SOA, intervertebral disc pathology and correlated with patient's age, sex, medical history. Statistical analysis was done using descriptive statistics, Pearson's chi square test and Mann-Whitney U test.

Results. Spinal axis deviations were present in 62% of population: 55% in females, 45% in males; SOA in 55% of population: 54% in females, 46% in males; disc pathologies in 84% of population: 52% in males, and 48% in females. Most common axis deviations were straightened lordosis (41%), scoliosis (30%); hyperlordosis (18%); SOA: spondyloarthrosis (38%) spondylophytes (34%), subchondral sclerosis (18%), intervertebral joint hypertrophy (11%); disc pathologies: protrusion (54%), herniation (29%), Schmorl`s nodes (17%). Isolated axis deviations were seen in lumbar spine (24%), cervical spine (21%), thoracic spine: (10%); SOA: in cervical spine (20%), lumbar spine: (18%), thoracic spine (16%); disc changes in lumbar part (19%), cervical part: (8%), thoracic part: (6%). Pathologic radiologic signs were found most common in lumbosacral segment: axis deviations (32%), spinal osteoarthritis (42%), and disc changes (47%). Secondary negative impact from them was intervertebral height reduction (20%), narrowed foraminal spaces (18%), impact on nerve roots (15%) and dural sac (15%). Most common used radiologic examination in lumbar spine was CT (45%), in thoracic spine MRI (30%), in cervical spine RTG (27%). Pathologies were rising in direct proportion to age and certain medical history. Using Pearson's chi square test, no significant statistical correlations between spinal osteoarthritis and axis deviations ($p = 0.794$), osteoarthritis and disc changes ($p = 0.515$), disc changes and axis deviations ($p = 0.632$) were found.

Conclusions. Typical pathologic radiologic findings in adolescents suffering from back pain are spinal axis deviation, spinal osteoarthritis and intervertebral disc pathologies. There exist variations in correlation between radiologic findings, gender, age and length of history. Early evaluation of radiologic pathologic changes of spinal canal in adolescents is important background for starting early aimed preventive therapy. The future scientific aim of current research is to extend study to larger adolescent population and analyze follow up data after therapy.

TITLE: RADIOLOGICAL DIAGNOSIS OF ACUTE ISCHEMIC STROKE AND THE CORRELATIONS WITH CLINICAL MANIFESTATION AND TREATMENT EFFICIENCY

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Keywords. Ischemic stroke, radiology, CT, MRI

Introduction. Computed tomography (CT) and magnetic resonance imaging (MRI) are most informative methods for imaging acute ischemic stroke. They are use to differentiate an ischemic stroke from an acute hemorrhagic stroke, and to detect the location and size of the brain lesion.

The aim of study. To correlate CT and MRI imaging findings with clinical symptoms and treatment efficiency in cases of acute ischemic stroke.

Materials and methods. A retrospective study was conducted by analyzing data from patients with acute ischemic stroke at the Riga East University Hospital during 2015. For patients with clinical symptoms of stroke were performed noncontrast CT directly after the patient has been admitted to the hospital, and MRI or CT examination no later than 11 days as a follow up examination. In total 242 patients were observed with a mean age of 73.10 (± 10.88). Correlation between clinical symptoms, CT and MRI findings were analyzed, as well as the effectiveness of treatment.

Results. In our study was detected ischemic stroke in anterior brain blood circulation system in 66% (n = 160) of cases, posterior circulation in 29% (n = 71) of cases, and both anterior and posterior circulation in 5% (11) of cases. The first CT stroke symptoms were detected in 25% (n = 60) of cases, in 40% (n = 24) of cases CT symptoms were associated with no positive outcome. The 26% (n = 48) of cases without primary CT symptoms of stroke were associated with no positive outcome. Thrombolytic therapy received 19% (n = 46) of patients. After undergoing thrombolytic therapy 83% (n = 38) of cases were associated with a positive outcome, and 67% (n = 132) of cases without thrombolytic therapy were associated with a good outcome. In 97% (n = 234) of cases the clinical symptoms correlate with radiological imaging findings, and in cases showing a symptom of stroke 85% (n = 206) had weakness or paresis of limbs, 52% (n = 125) had speech disorder, 49% (n = 119) had corticonuclear deficit, 41% (n = 99) had sensory deficit, 23% (n = 55) had a vision disability, and 18% (n = 44) experienced a loss of coordination.

Conclusions. CT findings are more often associated with no positive outcome, than cases without primary CT findings; it indicates that the primary CT symptoms if diagnosed in CT scan predict a worse prognosis. Clinical symptoms are convincingly correlated with the CTand MRI findings.

RADIOLOGICAL EVALUATION OF OVARY CANCER DISTRIBUTION

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Keywords. Ovarian cancer, computed tomography (CT), FIGO staging.

Introduction. Ovarian cancer is the most common cause of death among gynecological tumors group. Malignant ovarian tumors occur in women of all ages. 300 new cases of ovarian cancer are detected every year in Latvia and as a result 200 women die.

Cytoreductive surgery is the standard treatment for ovarian cancer. Computer imaging is used to define the extent of disease, assess the likelihood for optimal primary cytoreduction, and select patients who may benefit from neoadjuvant chemotherapy. In preoperative staging of ovarian cancer the classification of International Federation of Gynecology and Obstetrics (FIGO) is used.

Aim. To determine radiological evaluation of ovarian cancer before surgery procedure and compare it with combination of surgical and histopathologic results, which were classified according to the modified FIGO staging classification.

Materials and methods. This retrospective study included the cases of 188 women with ovarian cancer treated at the Oncology Centre of Latvia. We used the results of CT imaging before surgery and surgical and histopathologic results based on FIGO staging classification. Clinico-pathologic characteristics were tabulated in Microsoft Excel and data were analysed using SPSS software.

Results. Based on FIGO staging system the distribution of the ovarian cancer after surgical and histopathologic the results were as following: stage I, 45 women (24%) (IA, 25 patients; IB, 4 patients; IC, 16 patients), stage II, 15 women (8%) (IIA, 3 patients; IIB, 7 patients; IIC, 5 patients), stage III, 99 women (52.6%) (IIIA, 15 patients; IIIB, 10 patients; IIIC, 74 patients) and stage IV, 29 women (15.4%). Mean age of women was 56.9. As a result, 88.8% of all the cases were staging accurately, 8.5% were overstaged and 2.7% were understaged.

Conclusion. In the most of cases (88.8%) radiological evaluation of ovarian cancer before surgical procedure was determine correctly and it corresponded with surgical and histopathologic results, classified according to the FIGO staging classification. It is important to assess the likelihood of optimal cytoreduction, and select patients who may benefit from neoadjuvant chemotherapy.

DIAGNOSIS OF GASTROINTESTINAL TRACT PERFORATION ON COMPUTED TOMOGRAPHY

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Keywords. Computed tomography; Perforation; Gastrointestinal tract.

Introduction. Gastrointestinal (GI) tract perforation is an emergent condition that requires prompt surgery. Diagnosis largely depends on imaging examinations, and correct diagnosis of the presence, level, and cause of perforation is essential for appropriate management and surgical planning. Plain radiography remains the first imaging study and may be followed by intraluminal contrast examination; however, the high clinical efficacy of computed tomographic (CT) examination in this field has been well recognized. Extraluminal air that is too small to be detected by conventional radiography can be demonstrated by CT. Indirect findings of bowel perforation such as phlegmon, abscess, peritoneal fluid, or an extraluminal foreign body can also be demonstrated. Gastrointestinal mural pathology and associated adjacent inflammation are precisely assessed with thin-section images and multiplanar reformations that aid in the assessment of the site and cause of perforation.

Aim. Evaluate the findings of gastrointestinal perforation on computed tomography.

Materials and methods. In the study were included 138 patients who were hospitalized in Riga East University Hospital Clinic of Emergency Medicine in period of 01.09.2014 – 05.11.2015 (64 men and 74 women, in age 23 to 94, average age – 62 years). In research were included patients who undergo CT because of suspected GI perforation and patients with GI perforation diagnosed by CT. CT findings were analyzed in all cases, US, X-ray or surgery findings were analyzed if they were done. Evaluating findings of perforation by CT, depending on the perforation localization, patients were divided into three groups-1) stomach and duodenum; 2) small intestine; 3) large intestine and appendix.

Among 138 cases, were detected 104 perforations, six microperforations of them and in 12 cases perforation diagnosis was questionable.

Results. Using CT in 110 (79.7%) cases has been detected extraluminal air, in 99 cases (71.7%) free liquid. Of 98 people whom perforation was confirmed free air with CT was found in 97 cases (98.9%), 80 people had free liquid (81.6%). Most common causes of perforation: ulcer perforation – 38 cases (32.48%), diverticular perforations – 27 cases (23.08%) and tumor-induced perforations – 17 cases (14.53%). Most affected GI tract part is the stomach – 28 cases (23.93%); second is S-shaped intestine – 25 cases (21.37%). After data processing, was concluded that gastrointestinal perforation findings depend on the perforation location. In case of gastric and duodenal perforation is high incidence extraluminal air and free fluid – 87% and 89% respectively. Small bowel perforation air and liquid were found less frequently – 64.7% air and 52.9% liquid. Colon perforation – air 80.3%, the liquid – 62.2%. The surgery was applied to 88 patients (63%), perforation was confirmed in 75 cases (85.2%). Basing on the surgery results calculated CT sensitivity is 94.9% and specificity – 70%.

Conclusion. CT of the abdomen can be a valuable investigative tool with high sensitivity and specificity in detecting and localizing a GI tract perforation site at any location. Preoperatively diagnosing the site and cause for the perforation is important for surgical planning.

16 March 2016

ROLE OF MAGNETIC RESONANCE IMAGING IN DIAGNOSTICS OF ROTATOR CUFF PATHOLOGIES

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Keywords. Rotator cuff, pathologies, magnetic resonance imaging.

Introduction. A shoulder pain is the third most common cause of musculosceletal disorders. Rotator cuff (RC) pathologies are the major cause of the shoulder pain. An exact RC pathology diagnostics is highly important to choose a correct therapy. A duly untreated RC damage can cause patient physical incapacity and work disability. The RC pathology diagnostics is based on anamnesis, patient clinical and radiological data. In most cases ultrasonoscopy is used, but in uncertain or complicated cases magnetic resonance imaging (MRI) is used.

Aim. The aim of this study is to analyse a 1 year period shoulder MRI examination results, find and differentiate rotator cuff pathologies. And to summarize RC muscle pathology statistics in ambulatory patients of Rīga East Clinical University Hospital Diagnostical radiology center.

Materials and methods. Retrospective study of Rīga East Clinical University Hospital Diagnostical radiology center 214 ambulatory patient shoulder MRI images and records from 1 year period from 01.12.2014. till 30.11.2015. Analysis of RC muscle pathology data in Microsoft Excel 2010.

Results. In study population men accounted for 44% (n = 94) of patients and women – for 56% (n = 120). The mean age of patients was 53.24 years (y.) (SD = 14.61), the youngest patient was 17 years old (y.o.) and the oldest was 91 y.o.

RC muscle pathology was found in 78% (n = 167) cases. Mean age was 56.27 y. (SD = 12.86), the youngest patient was 18 y.o., the most oldest was 84 y.o.

RC muscle tendinopathy was found in 65.42% (n = 140) cases. The mean age was 56.39 y. (SD = 12.74). In total, 213 tendinopathies were discovered, the most common in supraspintus tendod 55.86% (n = 119).

RC muscle peritendinitis was found in 5.61% (n = 12) cases, 75% in supraspinatus tendon (n = 9) and 25% in subscapularis tendon (n = 3). Mean age was 57.58 y. (SD = 6.69).

RC muscle tendod tear was found in 35.51% (n = 76) cases. Mean age 60.92 y. (SD = 11.07). RC muscle tendon partial thickness tear was found in 27.10% (n = 58) cases. Mean age was 58.81 y. (SD = 10.96). Full thickness tear with retraction was found in 6.54% (n = 14) cases. Mean age was 68.21 y. (SD = 10.20). Full thickness tear without retraction was found in 7.48% (n = 16) cases. Mean age was 64.06 y. (SD = 7.16).

Muscle atrophy and fatty infiltration was found in 13.08% (n = 28) cases. Mean age was 65.89 y. (SD = 10.66).

Conclusions. MRI is very sensitive imaging tool for diagnostics of RC tendons and muscles pathology. The most frequent RC pathology was the RC muscle tendinopathies, then follows tendon partial thickness tears, muscle atrophies and fatty infiltrations, tendon full thickness tears without retraction, tendon full thickness tears with retraction. The most vulnerable RC muscle was the supraspinatus muscle.

16 March 2016

NORMAL ANATOMY AND ANATOMICAL VARIATIONS OF DURAL VENOUS SINUSES AND DEEP CEREBRAL VEINS

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Keywords. Neurovascular imaging, dural venous sinuses, deep cerebral veins, anatomical variations.

Introduction. There are different variations of dural venous sinuses and cerebral veins. In evaluation of cerebral veins and dural sinuses the knowledge of normal anatomy, anatomical variations and drainage patterns are crucial for determining pathologies such as cerebral venous thrombosis, arteriovenous malformations (AVM), dural arteriovenous fistulas (DAVF), as well as for pathologies of the scull base. Several modalities such as digital subtraction angiography (DSA), magnetic resonance venography and computed tomography angiography have been used for diagnostic purposes. Despite of invasiveness and use of ionizing radiation, DSA remains the golden standard for intracranial vascular structure evaluation.

Aim. To evaluate normal anatomy and anatomical variations of dural venous sinuses and deep cerebral veins.

Materials and methods. Retrospective study enrolled 102 patients who underwent diagnostic DSA in single university hospital interventional radiology department in year 2015. Inclusion criteria was bilateral angiography with venous phase. Exclusion criteria were single side angiography or insufficient contrast enhancement of the veins. Patients were identified by searching the database of interventional radiology department followed by the analysis of two-dimensional DSA images. Venous structures were determined as present, hypoplastic or absent by three observers. Descriptive statistics were applied.

Results. Superior sagittal sinus (SSS) connected with right transversal sinus (TS) in 41.2%, left TS in 20.6%; symmetrically both TS in 38.2%. Left TS was aplastic in 2% and hypoplastic in 29.4%; right TS in 1% and 13.7% respectively. Inferior sagittal sinus was visible in 59.8%. Occipital sinus was visible in 4.9%. Straight sinus was absent in 1 case. Both superior petrosal sinuses were visible in 36.3% and both inferior petrosal sinuses in 52.9%. In 26 cases all petrosal sinuses on both sides were visible. In 10 cases none of petrosal sinuses were visible. 53 individuals had symmetrical deep cerebral venous drainage. In 94 cases both internal cerebral veins (ICV) were visible and in all cases at least one ICV was visible. In 56 cases both of Rosenthal veins were visible, in 17 cases – absent. Labbe vein was visible on both hemispheres in 59.8%, only in left hemisphere 23.5%, only in right – 12.7%. Both Labbe veins were absent in 3.9%. Right Labbe vein was hypoplastic in 12.7% and aplastic in 27.5%. Left Labbe vein was hypoplastic in 8.8% and aplastic in 15.7% cases respectively.

Conclusion. Study showed asymmetric cerebral venous drainage patterns in majority of the cases. Presence of occipital sinus and absence of straight sinus were rare anatomical variations found in the study. Symmetrical deep venous drainage on both hemispheres was present only in half of investigated patients (53 cases). Preoperative assessment of the cerebral veins is crucial before vascular and scull base operations to avoid venous complications.

THE EFFECT OF RADIOIODINE THERAPY IN PATIENT WITH NON-TOXIC GOITRE AFTER PRE-TREATMENT WITH A SINGLE DOSE OF RECOMBINANT HUMAN THYROID STIMULATING HORMONE (RHTSH)

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Keywords. Radioiodine therapy, non-toxic goiter, recombinant human thyroid stimulating hormone.

Introduction. Non-toxic goitre is an enlargement of thyroid gland without changes in the levels of thyroid hormone. Recombinant human thyroid stimulating hormone (rhTSH) can be effectively used for thyroid stimulation before diagnostic or therapeutic radioiodine administration.

Aim. Department of Nuclear Medicine, Medical University of Bialystok, Bialystok, Poland. The aim of our study was to assess the effectiveness of radioiodine therapy (RIT) on the reduction of thyroid volume after pre-treatment adjunct of rhTSH in patients with non-toxic goitre with low RAIU.

Material and methods. We treated 40 patients; (31 female, 9 male) aged 35–77 years. Initial 24 h RAIU was ranged between 5 and 17%, and thyroid volume ranged between 42 and 128 ml. Twelve patients had compressive symptoms. Malignant changes were excluded in all nodules by FNAB. All the patients received a single dose of 0.05 mg rhTSH given intramuscular. About 24 h later diagnostic dose of ^{131}I was administered and RAIU after 24, 48 and 72 h was estimated. Therapeutic dose of ^{131}I was given on the third day of rhTSH administration. Serum TSH, fT4 and fT3 were determined, 24 h, 72 h after rhTSH administration and on the 3rd day after RIT. The activity dose was calculated by Marinelli's formula and ranged between 400 and 800 MBq. The absorbed dose ranged between 160 and 300 Gy. Follow up control was done every 6 weeks. Thyroid ultrasound, and thyroid scan were done again after 12 months of RIT.

Results. A significant 4-fold increase in 24 h RAIU from 12.2 to 54% was observed. The significant increase in serum TSH from 1.4 ± 0.5 to a peak level 12.21 ± 4.62 was seen after 24h. After 12 months 91% of patient were in euthyroidism, 7.5% (3 patients) develop hypothyroidism. Thyroid volume reduced to about 45% average. In all of the patients the compressive symptoms relieved and exercise tolerance improved.

Conclusions. Pre-treatment with rhTSH allows the therapeutic dose of ^{131}I to be reduced by 50–58% without compromising the result of thyroid volume reduction. This mode of therapy can be recommended, especially when RAIU is low and the dose of radioiodine to be administered is high.

THE INFLUENCE OF RECOMBINANT HUMAN THYROID STIMULATING HORMONE (RHTSH) ON THE EFFICACY OF RADIOIODINE THERAPY IN PATIENTS WITH TOXIC NODULAR GOITRE WITH LOW RAIU

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Keywords. Recombinant human thyroid stimulating hormone, toxic nodular goitre, radioiodine therapy.

Introduction. A toxic nodular goitre is a thyroid gland in whitch autonomously functioning thyroid nodules are found. It results in elevation of thyroid hormone levels. Toxic nodular goitre is most common cause of hyperthyroidism.

Aim. Medical University of Bialystok, Bialystok, Poland. The aim of our study was to evaluate the influence of rhTSH on the efficiency of radioiodine therapy (RIT) in patients with toxic nodular goitre (TNG) with low RAIU.

Materials and methods. The study was performed on 36 patients with toxic nodular goitre (26 female and 10 male aged 45–78 years) referred for 131I therapy. All patients had low RAIU (16–18%) 24 hours after a diagnostic dose of I-131 (4 MBq). All the patients received a single intramuscular dose of 0.05 mg rhTSH (thyrogen). 24 h later diagnostic dose of 131I was administered and thyroid scan with RAIU after 24 and 48 h was estimated. Therapeutic dose of 131I was given on the third day of rhTSH administration. Serum levels of TSH, fT4 and fT3 were determined, 24 h, 72 h after rhTSH administration and on the 3rd day after RIT. The therapeutic activity of 131I was calculated by the use of Marinelli's formula and ranged between 280 and 600 MBq. The absorbed dose ranged between 160 and 300 Gy. Follow up control was done every 6 weeks. Thyroid ultrasound, and thyroid scan were done again after 12 months of RIT.

Results. A significant increase (2–8 fold) in 24 hr RAIU was observed after rhTSH administration. The distribution of radioiodine was more homogeneous 48 hours after rhTSH injection. After 12 months 93% of patient were in euthyroidism and 5.6% (2 patients) developed hypothyroidism. After six months the mean reduction in goitre volume was 20% and 45–50% after twelve months. The medium therapeutic activity of 131I was 280 Mob.

Conclusions. Pre-treatment with rhTSH reduce the therapeutic dose of 131I by 50–58% without compromising the result of thyroid volume reduction. rhTSH makes radioiodine therapy of toxic nodular goitre more effective in the patients with low RAIU.

XI. Physiology, Biochemistry, Pharmacology

16 March 2016

EVALUATION OF THE COMBINED TREATMENT OF SPINAL CORD INJURY IN THE RAT

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Keywords. Spinal cord injury, metilprednisalon, motor training.

Introduction. Spinal cord injury (SCI) is associated with serious neurological disorders and limited therapeutic options. Primary events related to mechanical damage to cell membranes and the blood vessels of the spinal cord, causing secondary events that lead to the expansion and increase in the affected area. Intensive training and physiotherapy are the key factors for the functional recovery of paralyzed lower limbs of patients after SCI.

Aim. Study was to evaluate the effects metilprednizalona and motor training at an experimental spinal cord injury in rats.

Materials and methods. To investigate the status of the peripheral neuromuscular apparatus was registered motor response (M & H) muscles. Reflex excitability of the spinal motor centers tested by H-reflex. Specifies the maximum amplitude and the threshold of occurrence of responses. For a more complete characterization of the reactive pool of motor neurons was determined: the ratio of the maximum amplitude of motor and reflex responses [Hmah/Mmah) * 100%)].

Results. In the early period after spinal cord injury was observed a decrease of the maximum amplitude of M-response. With that, the group of animals with the introduction metilprednizalona amplitude M-response higher than without drug therapy. It is obvious that in acute degenerative changes occur muscular system, however, as shown by our data metilprednizalona administration had a positive effect. The amplitude of H-response group metilprednizalonom already reduced to 7 days, indicating a decrease in excitability of the motor centers of the spinal cord. Also, reduce the excitability of the centers confirm to 7 days shows a decrease ratio of the maximum amplitudes of the M- and H-Answer.

Conclusion. Based on these results, we came to the following conclusions: 1) metilprednizalonom treatment is effective in the acute period, but can lead to negative consequences in the chronic period after the injury; 2) combination therapy metilprednizalonom and motor training have a positive impact on the recovery of motor function in chronic period after spinal cord contusion injury in rats.

RISING ECOLOGICAL SAFETY OF PACKING FILMS BY CREATION THE TIMER-BASED SELF-DESTRUCTIVE COMPOSITION

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Keywords. Self-destructive, film, polyethylene, stearate, cobalt, timer, timer-based, composition.

Introduction. The disposal of trash is a problem confronting our society. The available landfills are becoming exhausted. Polymeric waste is becoming bigger ecological problem. Special attention should be paid to packing waste – films and pockets. As far as different plastic litter can be gathered, it is extremely difficult task to gather and recycle films. This paper dedicated to create new eco-friendly self-destructive timer-based composition for packing films to rip out of need in gathering and recycling.

Aim. The main purpose of research is to provide a timer-based polymer composition of high pressure polyethylene and cobalt stearate, which starts self-destruction through a certain period of time and can be used in the production of mini-packets for packing food products in supermarkets and further reduce environmental pollution.

Materials and methods. To determine the technological parameters processing of the compositions were performed thermomechanical and differential thermal analysis of cobalt stearate. To assess the destabilizing impact of cobalt stearate in the mixture held in the timer determination shrinkage conditional strength and elongation, getting dry residue by dissolving in xylene and water absorption. Infrared spectroscopy was used to assess the destabilizing effect on the molecular level.

Results and discussion. In determining the properties of cobalt stearate the thermomechanical curve confirmed by the plateau crossing from the pseudo-crystalline to the amorphous state. Analysis was conducted with next parameters: starting temperature measuring 16.8° C, weighed material – 24.1 mg, the sensitivity of apparatus – 20mg, rising of temperature 10 °/min, weight loss after full cooling oven 85.5%, the decomposition start temperature – 200°.

The optimal concentration is area of 3% in which the shrinkage of film sample was 46%, the value of the conventional longitudinal strength decreases after 3 months of exposure, corresponding to the climate zone of central Ukraine. After dissolving samples in xylene percentage of lost mass was 99.74%, which is a comparative characteristic for assess the depth of degradation chains. In determining of water absorption, the maximum exposure available for next investigation is 8 hours, at which water absorption is 21.4%. Infrared spectroscopy with increasing irradiation time gives the highest rate of ketone groups formation (in the range 1710–1725 см$^{-1}$), alcoholic groups (1150 см$^{-1}$) and a significant increase in the amount of water adsorption (3360 см$^{-1}$) at a concentration of cobalt stearate within 3%, which also demonstrates depth of chains degradation on molecular level.

Conclusion. The timer-based polymer composition based on high-pressure polyethylene and cobalt stearate is designed with maximum efficiency in the area of 3%, proved its effectiveness and efficiency.

16 March 2016

DEATHS FROM CARDIOTOXICITY OF ACETALDEHYDE

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Keywords. Ethanol, alcohol, acetaldehyde, sobering up phase, ischemic heart disease.

Introduction. 15–30% of idiopathic atrial fibrillations are related to alcohol abuse. The pathological pathways might be oxidative stress, disorder of calcium metabolism, cardiac conduction interference as well as acetaldehyde which increase systemic and intra-myocardial catecholamines. Acetaldehyde acts mostly in sobering up phase.

Aim. To evaluate a risk to die in sobering up phase when ethanol concentration is higher in urine than in blood in patients with ischemic heart disease.

Materials and methods. This was a single-centre retrospective study. Data of 276 cases of deaths from ischemic heart disease during a two year period were reviewed. Cases negative for ethanol in postmortem body fluids (blood and / or urine) and cases when ethanol concentration was not measured (N = 182) were excluded. Cases which conformed to criteria: ischemic heart disease as the cause of death, postmortem body fluids positive for ethanol, concentration higher in urine than in blood, were analysed further with SPSS_22.0 program.

Results. Data of 53 cases in sobering up phase were analysed which made the majority (56%) of cases positive for ethanol in postmortem body fluids. Ethanol concentration in blood ranged from 0 to 3.44‰ with a median of 0.71. The average age of those who died in sobering up phase was 64 ± 12 years, men being younger (61 ± 11 years) than women (75 ± 11). There were more men (81%) than women in the study (95% ΔCI [61.7; 62.3]). The average mass of a heart was 499.7 ± 107.3g. Deaths generally occurred when stenosis of a right coronary artery was less than 50% (95% ΔCI [59.7; 60.3]), whereas stenosis of a left coronary artery was mostly moderate – lower than 75% (95% ΔCI [17.7; 18.3]). Stenosis of a left coronary artery was clinically important (> 50%) statistically significantly more often (95% ΔCI = 60.7; 61.3).

Conclusions. A risk to die is higher in sobering up phase in patients with even mild to moderate coronary artery stenosis. A larger study is needed to determine populational risk.

THE APPLICATION OF A NEW HPLC-FL METHOD IN DETERMINATION OF ALDH1 ACTIVITY IN PLASMA AND SERUM

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Keywords. ALDH1, HPLC-FM.

Introduction. ALDH1 is ubiquitously distributed in the adult epithelium of testis, brain, eye lens, kidney, lungs. It is also found in the liver, pancreas and stomach mucosa. In blood is located mainly in erythrocytes. According to various researches aldehyde dehydrogenase class 1 (ALDH1) is an enzyme with no detectable activity in plasma / serum of healthy people using fluorimetric method due to low sensitivity. Thus we have previously created and optimized the HPLC-FL method for determination of thise enzyme activity in plasma.

Aim. To measure the activity of ALDH1 was using the new HPLC method in plasma and serum of healthy and liver disease group

Materials and methods. In this paper this HPLC-FL method (using 6-methoxy-2-naphthaldehyde as a substrate and NAD+ as a coenzyme) was applied to determination of ALDH activity in serum and plasma of healthy people (n = 25) and people with elevated liver enzymes (n = 15). The influence of hemolysis on the results was evaluated as well (n = 5).

Results. Our results showed relatively low level of ALDH1 activity in healthy people with median ± IQR of 0.32 ± 0.58 mU in plasma and 0.65 ± 0.90 mU in serum. As predicted the level of the enzyme was significantly higher in group with elevated liver enzymes ($p < 0.00001$) with median ± IQR of 4.8 ± 4.6 mU in serum and 4.8 ± 5.8 mU in plasma, respectively. The hemolysis also affected the ALDH1 level ($p < 0.00001$).

Conclusion. The activity of ALDH1 was measurable using the new HPLC method in plasma and serum of both healthy and liver disease group. Since the ALDH level is significantly higher in group with higher liver enzymes, further research is needed to indicate the possible diagnostic or prognostic value of this marker. The rejection of hemolyzed samples is recommended.

THE EFFECT OF LONG-CHAIN ACYLCARNITINE ADMINISTRATION ON ISCHEMIA / REPERFUSION INDUCED ARRHYTHMIA

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Keywords. Acylcarnitine, carnitine, myocardial infarction, arrhythmia.

Introduction. Cardiomyocytes as the main source of energy use fatty acids which are oxidized in the mitochondria. As the long-chain fatty acids in its intracellular form can not cross the mitochondrial membrane, they are converted to corresponding acylcarnitines which are transported into the mitochondria. In pathological conditions such as myocardial ischemia and infarction long-chain acylcarnitines are not fully metabolized and begun to accumulate in the heart tissues promoting ion imbalance which leads to cardiac arrhythmias. It is known, that treatment with long-chain acylcarnitines does not cause arrhythmias, however the effects of long-chain acylcarnitine administration on the ischemia / reperfusion induced arrhythmias are still not known.

Aim. The aim of the study was to assess the effects of administration of palmitoylcarnitine (PC) on the ischemia / reperfusion induced arrhythmias.

Methods. Twenty male Wistar rats were randomly divided into two groups. The rats from the first group (Control group) 1 h prior to occlusion received saline while the rats form the second group (PalCar group) intraperitoneally received PC at the dose of 100 mg/kg. After 30 min experimental animals were anesthetized, the chest was opened and a surgical thread was placed around the left anterior descending coronary artery ~2 mm from its beginning. Afterwards rats were subjected to 10 minutes of left anterior descending coronary artery occlusion and 10 minutes of reperfusion. ECG was recorded from the II standard lead and during the experiment following parameters were monitored: mortality, time to onset of arrhythmias, time to normal sinus rhythm, incidence and durations of ventricular tachycardia and fibrillation.

Results. The occlusion of the coronary artery with subsequent reperfusion caused heart rhythm disturbances in both experimental groups. PC administration did not change the mortality. In control group due to arrhythmias died 3/8 experimental animals while in PalCar group survived all rats. Administration of PC significantly reduced the average duration of tachycardia in occlusion ($p < 0.05$). The cumulative durations of tachycardias during occlusion in Control and PalCar groups were 60 ± 8 and 24 ± 5 seconds, respectively. Moreover, treatment with PC showed tendency to reduce the average duration of tachycardia and fibrillation in reperfusion In addition, the time to onset of first ventricular arrhythmia was increased in PalCar group, but the time to normal sinus rhythm was decreased in PalCar group compared to control group. There were no differences between the incidences of development of arrhythmias.

Conclusion. Administration of long-chain acylcarnitines do not facilitate ischemia / reperfusion induced arrhythmias. In contrary, treatment with palmitoylcarnitine showed anti-arrhythmic effects.

16 March 2016

THE EFFECTS OF TRIMETHYLAMINE N-OXIDE ON MITOCHONDRIAL ENERGY METABOLISM IN THE HEART

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Keywords. Trimethylamine N-oxide, energy metabolism, mitochondria, heart diseases.

Introduction. Trimethylamine N-oxide (TMAO) is a metabolite of phosphatidylcholine and L-carnitine, both abundant in red meat. Recently the link between increased TMAO levels and major adverse cardiovascular events has been demonstrated. However, the mechanisms underlying the involvement of TMAO in the development and progression of heart diseases are unclear. Since heart diseases are characterized by impaired energy metabolism, we hypothesized that TMAO could affect the energy metabolism of the heart.

The aim of the study was to investigate the effects of TMAO on heart mitochondrial energy metabolism.

Materials and methods. Permeabilized fibers were prepared from mice cardiac tissues and mitochondrial respiration measurements were performed in the absence (control) or presence of 20μM and 100 μM TMAO using Clark-type oxygen sensor. Pyruvate and maleate were used to determine glucose metabolism-dependent mitochondrial respiration. PalmitoylCoA, malate and carnitine were used to determine fatty acid metabolism-dependent mitochondrial respiration. Different substrates and inhibitors were used to determine substrate dependent (LEAK state) and oxidative phosphorylation- dependent (OXPHOS state) respiration and to characterize effects on mitochondrial electron transfer chain. Data were analysed using one-way ANOVA in GraphPad Prism 5.03 software.

Results. 20μM and 100μM TMAO significantly decreased LEAK state respiration with pyruvate and malate by 50% and 60%, respectively, while OXPHOS state respiration was decreased by 43% and 38%. LEAK state respiration with palmitoylCoA was decreased by 36% and 30% in the presence of 20μM and 100μM TMAO, respectively, while OXPHOS state respiration was not affected. In addition, electron transfer chain complexes OXPHOS-dependent respiration was not significantly affected by 20μM and 100μM TMAO.

Conclusions. TMAO inhibits both pyruvate and fatty acid metabolism. Thus, TMAO accumulation in the heart can promote energy starvation which can lead to the development of heart failure and increase severity of other cardiovascular events.

THE INFLUENCE OF NOVEL 4-THIAZOLIDINONE DERIVATIVE ON THE NO-SYNTHASE SYSTEM IN MUCOUS MEMBRANE OF SMALL INTESTINE UNDER THE STRESS

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Keywords. Hydrogen sulfide, 4-thiazolidinone, small intestine, water-immobilization stress.

Introduction. The main factors leading to the development of enteropathy include stress and the use of nonsteroidal anti-inflammatory drugs (NSAIDs). Development of destructive lesions in the stomach and small intestine accompanied by reduced production of hydrogen sulfide (H_2S), which is actively involved in the mechanisms of cytoprotection.

Aim. To investigate the influence of novel 4-thiazolidinone derivatives on changes of NO-synthase system parameters, processes of lipoperoxidation and H_2S generation in small intestine under the water-immobilization stress (WIS).

Materials and methods. The studies were conducted on 40 white rats weighing 180–250 g according to the ethical requirements concerning the work with the laboratory animals. The modeling of stress was performed using the model of WIS during 5 hours in fasting condition (K. Y. Takagi et al, 1964). Indomethacin and 4-thiazolidinone derivative (compound Les-5054) were administered intragastrically at a single dose 10 mgkg^{-1} 30 minutes before modeling WIS. In mucous membrane of small intestine measured activity of NO-synthase, arginase, content of TBA-active products, nitrite anion (NO^2). Concentration of H_2S and L-arginine were measured in blood serum.

Results. Stress caused a threefold increase of iNOS activity ($P < 0.01$), the activity of arginase decreased 4-fold ($P < 0.01$) and the concentration of L-arginine in plasma decreased by 33% (in comparison with control group). Enhanced activity of lipoperoxidation processes manifested by a steep rise of MDA concentration – by 56% ($P < 0.01$). The use of indomethacin on the background of WIS reduces the H_2S generation at 43% ($P < 0.01$). cNOS activity tended to increase, while, activity of iNOS decreased by 20% ($P < 0.05$). Administration of compound Les-5054 showed inhibition of iNOS by 35% ($P < 0.01$) and NO concentration in 1.5 times, increasing the content of L-arginine to control values, normalization of eNOS and increased activity of arginase 3 times ($P < 0.01$) as compared with indexes of stress. Intensity of lipoperoxidation processes were determined much lower than under the effect of indomethacine, MDA concentration declined by 32%.

Conclusions. The modeling of WIS manifested by intensification of the nitric oxide synthase and suppression arginase pathway of L-arginine metabolism. Administration of indomethacin under the stress led to significant reduce of H_2S generation. Novel 4-thiazolidinone derivative on the background of stress reduce the activity of iNOS, intensity of lipid peroxidation and increase generation of H_2S, that may be linked with the structure of this compound.

PLASMA ACYLCARNITINES AS A POTENTIAL BIOMARKER OF METABOLIC FLEXIBILITY

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Keywords. Acylcarnitines, biomarker, metabolism.

Introduction. Acylcarnitines (AC) are intermediates of fatty acid energy metabolism. It has been suggested that plasma AC profile is linked to diet and metabolic condition, and can indicate about altered fatty acid oxidation flux. In addition, it has been proposed that plasma AC levels may help to determine the onset of such metabolic disorder like diabetes. However, little is known how AC levels in plasma reflect AC profile in tissues under different metabolic states.

The aim of the study was to investigate how plasma AC reflect AC levels in different tissues.

Materials and methods. Sixteen male Wistar rats were divided into two experimental groups: fed and fasted. The rats from fasted group were submitted to fasting for 18h, but fed animals had unlimited access to food. The concentrations of short-, medium- and long-chain (SC-, MC- and LC-) AC were measured using a UPLC/MS/MS method in plasma and tissue homogenates from heart, muscles, kidney, liver, adipose tissues. Correlations between plasma and tissue AC levels were analyzed using Pearson correlation coefficient and independent two-tailed T test.

Results. Fasting increased LC-AC content 4.1-fold and decreased SC-, MC-AC concentrations by about 40% in the liver. In the kidney and adipose tissue, fasting induced 40% and 35% decrease in SC-AC concentration. In the fasted state plasma SC-, MC- and LC-AC concentrations increased 2.1, 3.2, 2.6-fold compared to the fed state. In the heart fasting increased LC-AC content 4.1-fold. In the fasted state muscle MC- and LC-AC contents were increased 3.4 and 2.7-fold, respectively.

Correlations between plasma and tissue AC levels were studied by comparing fed and fasted states. Significant negative correlation in plasma, muscle and kidney was observed in SC-AC levels ($r = -0.57$, $r = 0.51$, $p < 0.05$). Plasma and muscle MC-AC concentrations showed positive correlation ($r = 0.84$, $p < 0.001$). Heart, liver and kidney LC-AC concentrations were significantly positively associated with plasma LC-AC concentrations ($r = 0.66$, $r = 0.87$, $r = 0.76$ respectively).

Conclusions. Acylcarnitine levels in different tissues change under fed and fasted states. Plasma SC-AC reflect muscle and kidney SC-AC levels, while MC-AC are valid for interpretation of muscle MC-AC levels, but LC-AC reveal heart, liver and kidney LC-AC levels. Since muscles, liver and heart are some of the most affected organs in the development of metabolic disorders, SC- and LC-AC can be used as biomarkers of respective organ AC profile.

EFFECT OF COLD PRESSOR STRESS ON THE ACOUSTIC STARTLE RESPONSE IN HEALTHY AND YOUNG SUBJECTS

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Keywords. Acoustic startle response; cold pressor test; muscle electrical activity; heart rate.

Introduction. The startle reflex is one of the innate, defensive reflexes that occur in response to unconditioned eliciting stimuli such as a sudden loud auditory stimulus. Somatic muscle contractions (eye blink, etc.) and activation of autonomic nervous system (increase of the heart rate, arterial blood pressure, etc.) represent the two major components of the response. The impact of stress on the human startle response remains unclear.

Aim. To evaluate the effect of cold pressor stress on the acoustic startle response (ASR) in healthy subjects.

Materials and methods. Twelve (8/4, F/M) healthy subjects participated in the study (age of 20.1 ± 1y.; BMI 24.7 ± 1.5kg/m^2). The study consisted of three phases: 3min pre-stress (baseline), 1min during stress (intervention), 2 min post-stress (recovery period). We used the cold pressor test as an established physiological stressor. Participants were instructed to insert their left hand in cold water (+4°C) for 1min stress intervention. Startle stimuli were binaural acoustic signals presented via audiometric headphones. Three to four startle stimuli were presented with variable intervals between stimuli at pre-stress, during stress and post-stress periods. The eye blink component of the ASR was quantified by using electromyographic measurements of the orbicularis oculi facial muscle. Heart rate (HR) (detection of the R-R intervals), muscle electrical activity and contraction time (*Power lab, ECG and EMG; AD Instruments*) were measured. Statistical analyses were performed using IBM SPSS 20.0. Wilcoxon signed rank test was used to compare groups. Data are presented as median and 25th to 75th interquartile range.

Results. The HR during cold stress intervention significantly ($p < 0.01$) increased compared to pre-stress and post-stress intervention (75.84 (73.75 to 80.67) vs. 67.63 (61.31 to 76.81) and 75.84 (73.75 to 80.67) vs. 67.67 (61.67 to 75.95) beats per min, respectively) what indicates the activation of fight-or-flight response. There were no statistically significant ($p > 0.05$) effects regarding pre-post stress intervention differences. The orbicularis oculi facial muscle electrical activity was significantly ($p < 0.05$) reduced comparing pre-post (0.011 (0.005 to 0.019) vs. 0.006 (0.001 to 0.014) mV*s) and during-post stress intervention (0.007 (0.001 to 0.019) vs. 0.006 (0.001 to 0.014) mV*s). Contraction time was significantly ($p < 0.05$) reduced comparing pre-post (0.20 (0.14 to 0.64) vs. 0.17 (0.03 to 0.45) s) and increased comparing during-post (0.12 (0.03 to 0.38) vs. 0.17 (0.03 to 0.45 s) intervention. The results suggest that additional stress factor (e.g. cold) facilitate ASR autonomic reactivity (increase HR) but at the same time suppress somatic eye blink responsiveness.

Conclusions. The cold pressor stress suppressed somatic and facilitated autonomic part of the ASR in healthy subjects.

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16 March 2016

ACTIVITY OF AUTONOMOUS NERVOUS SYSTEM DURING ORTHOSTATIC PROBE AND INTERMITTENT COLD PRESSOR TEST

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Keywords. Heart rate variability; orthostatic test; autonomic nervous system.

Introduction. Baroreflex is one of the most vital autonomic reflexes in our body, which modulate in short-term blood pressure via autonomic output to cardiovascular system. However, the different types of stressors, example, cold stress, can influence body's ability to adapt to them and in the same time compensate vital reflexes like baroreflex. Noninvasively heart rate variability (HRV) is a method, which can evaluate autonomic activity to heart by assessing activation of the sympathetic and the parasympathetic nervous systems via the pattern of beat-to-beat length. It is suggested that cardiac vagal activity is the predominant contributor of HF component. The LF rhythm mainly reflects baroreflex function of the heart and the LF/HF ratio mirrors the sympatho – vagal balance.

Aim of the study was to evaluate the activity of autonomous nervous system on heart during orthostatic probe and intermittent cold pressor test.

Materials and methods. In study participated 20 young and healthy female respondents (age = 22.8 ± 1.9 years, BMI 21.6 ± 2.7 kg/m^2). The subjects were familiarized with the experimental procedures and provided written informed consent according to the Declaration of Helsinki. The study protocol was approved by Riga Stradiņš University Ethic Committee. Beat-to-beat length was measured with Finameter MIDI non-invasive cardiovascular monitoring system (*FinameterMIDI*, FMS, Amsterdam, Netherland). Participants after 20 minutes of acclimatization lied down for 5 minutes, then stood up for 3 minutes (orthostatic probe). Afterwards dominant palm was exposed 3 times to cold water (4°–12°C) for 1 minute with 5 minute interval (intermittent cold pressure test) and after it the orthostatic probe was repeated second time. During the experiment cardiovascular parameters were detected and offline pulse intervals were analyzed with Kubios HRV software (*KubiosHRV V2*.1, Kuopio, Finland). Collected statistical data analyzed where made with SPSS *V22*.0 software and data are represented as mean ± standard deviation in parametric data and mean (25; 75 percentile) in nonparametric data. Significance was accepted at P < 0.05.

Results. The results are indicating that the intermittent cold pressor test is decreasing parasympathetic nervous system activity to heart in experimental (E) group comparing to control (C) group (RMSSD, E = 186.1 ± 247.3 vs. C = 38.9 ± 9.3 ms; P = 0.043). However, in other parameters there were no difference between experimental and control group. In both groups orthostatic probe caused the same pattern of autonomic nervous system activation. Elevation of body caused significant decrease in RR interval in first (RR interval, E = 899.0 ± 52.1 vs. 749.3 ± 66.4 ms; P < 0.001) and (RR interval, C = 842.4 ± 132.7 vs. 708.4 ± 73.6 ms; P < 0.001) and in second attempt (RR interval, E = 926.1 ± 55.4 vs. 787.1 ± 78.1 ms; P < 0.001) and (RR interval, C = 869.4 ± 126.1 vs. 713.5 ± 67.3 ms; P < 0.001). However, typical change appeared in control group of parasympathetic nervous system tonus – decreased high frequency (HF) spectrum (HF, lying C = 4856 and standing C = 978.1; P = 0.022).

Conclusion. Intermittent cold pressor test decreases parasympathetic nervous system tonus to heart comparing to control group.

EFFECT OF ACYLCARNITINE ADMINISTRATION
ON THE DEVELOPMENT OF ATHEROSCLEROSIS
AND SKIN MICROCIRCULATION

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Keywords. Atherosclerosis, acylcarnitine, apolipoprotein E knockout mice, palmitoylcarnitine.

Introduction. Acylcarnitines are esters made of L-carnitine and fatty acid residues. In cells long-chain acylcarnitines are synthetized to shuttle long-chain fatty acids into mitochondria, where they are involved in beta-oxidation and metabolized. However, in case of hypoxia or metabolic disturbances the intracellular amount of acylcarnitine rises. The accumulation of long-chain acylcarnitines are involved in the development of insulin resistance, type 2 diabetes mellitus and arrhythmias during heart infarction. Recently it has been shown that reduction of long-chain acylcarnitine pools can attenuate the development of atherosclerosis but it is not known whether administration of long-chain acylcarnitine promote the development of atherosclerosis and endothelial dysfunction.

Aim. This study was performed to assess the effects of administration of long-chain acylcarnitine, palmitoylcarnitine on the development of atherosclerosis and skin microcirculation in apolipoprotein E knockout (apoE-/-) mice.

Materials and methods. At the age of eight weeks 20 female apoE-/- mice were randomly divided in two groups (n = 10). Experimental animals from both groups were switched to a Western diet that contained 21% fat and 0.15% cholesterol. Mice from the second group started to receive palmitoylcarnitine at the dose of 3 mg/kg (i.p) twice a day for 2 months. Control group animals for two months received injections of vehicle. After two additional months mice were anesthetized with isoflurane and skin microcirculation was assessed. Afterwards experimental animals were sacrificed and the amount of atherosclerotic lesions was analyzed in the whole aorta and aortic sinus.

Results. Two experimental animals from the palmitoylcarnitine receiving group died during the study (on the eight and sixteenth week of the experiment). Blood flow in the skin of control group animals was 50 ± 3 BPU (blood perfusion units) and in animals, which received palmioylcarnitine for two month, the average blood flow in the skin of on the hind limb was 47 ± 3 BPU. The analysis of amount of atherosclerotic lesions in whole aortas revealed that treatment with palmitoylcarnitine did not change the amount of atherosclerotic plaques. The amount of atherosclerotic lesions in control and palmitoylcarnitine receiving groups were 21.1 ± 1.4% and 22.3 ± 1.4%, respectively. In addition, administration of palmitoylcarnitine had no effect on the atherosclerotic plaque size in the aortic roots.

Conclusions. The obtained results show, that treatment with palmitoylcarnitine had no effect on the development of atherosclerosis and did not influence skin microcirculation.

INTERMITTENT COLD PRESSOR TEST INFLUENCE ON BAROREFLEX DURING ORTHOSTATIC CHALLENGE

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Keywords. Baroreflex, cold pressor test, orthostatic challenge.

Introduction. The baroreflex is a key mechanism for hemodynamic stability and for cardioprotection during orthostasis. To achieve this, baroreflex is constantly modulating autonomic activity. Even without other stress factors, the change from a horizontal to an upright posture places significant stress on the cardiovascular system cousing baroreflex – mediated sympathetic activation. However, the human body every day is affected by different environmental stressors including temperature changes. As are known, they alter heart rate and blood pressure thereby confounding baroreflex activation.

Aim. To evaluate intermittent cold pressor test influence on baroreflex during orthostatic challenge.

Materials and methods. Twenty young and healthy female respondents (mean age 22.8 ± 1.9 years, BMI 21.6 ± 2.7 kg/m^2, ten in experimental and ten in the control group) participated in the study. The subjects were familiarized with the experimental procedure and provided written informed consent according to the Declaration of Helsinki. The study protocol was approved by the Riga Stradiņš University Ethic Committee. During the experiment cardiovascular parameters were detected with Finometer MIDI (Finapres Medical Systems B.V, Amsterdam, The Netherlands) – non-invasive hemodynamic monitoring system. Participants after 20 minutes of acclimatization lied down for 5 minutes, then stood up for 3 minutes (orthostatic probe). Afterwards dominant palm was exposed to cold water (4–12 °C) 3 times for 1 minute with 5 minute interval (intermittent cold pressor test) and after it the orthostatic probe was repeated second time. For the control group water temperature was 20–24 °C. Collected statistical data where analyzed by SPSS *V20.0* software and data are represented as mean ± standard deviation in parametric data and mean (25; 75 percentile) in nonparametric data. A significance level of $P < 0.05$ was applied.

Results. Our results indicate, that changes in orthostatic challenge after intermittent cold pressor test in experimental group (E) comparing to control group (C) is caused by decrease in mean arterial pressure (MAP) and total peripheral resistance (TPR), (MAP in 10'', E = 69.1 ± 19.0 vs. C = 89.8 ± 19.7, mmHg; P = 0.028; TPR in 5'', E = 0.49 (0.42; 0.55) vs. C = 0.62 (0.58; 0.82); p = 0.011 and TPR in 10'', E = 0.48 (0.41; 0.65) vs. C = 0.69 (0.61; 1.08), mmHg.min/l; p = 0.011) and later by increase in stroke volume (SV in 45'', E = 71.4 ± 20.6 vs. C = 55.1 ± 1.08; p = 0.045 and SV in 60'', E = 71.9 ± 21.4 vs. C = 53.5 ± 15.8, ml; p = 0.044).

Conclusion. Intermittent cold pressor test decreases total peripheral resistance and mean arterial pressure comparing to control which is later compensate by increasing stroke volume. Intermittent cold pressor test influences cardiovascular parameter change in orthostatic probe.

THE EFFECT OF MINERAL WATER ON ORTHOSTATIC STRESS TOLERANCE IN HEALTHY SUBJECTS

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Keywords. Vasodilation, orthostatic tolerance, diastolic blood pressure, total peripheral resistance, water.

Introduction. Orthostatic intolerance is a common symptom among a variety of disorders, and physical states, such as stress and dehydration. Risk factors include aging, pregnancy, prolonged bed rest and use of various medications. In patients with severe autonomic dysfunction, water drinking induces acute pressor response and improves orthostatic tolerance.

Aim. Aim of the study was to analyze the effect on orthostatic stress tolerance of both drinking water and mineral water "X" in healthy subjects.

Materials and methods. Seven healthy subjects participated in the drinking water (4F/3M) and nine healthy subjects (6F/3M) in the mineral water "X" group (age of 20.0 ± 1.1y; BMI < 23 kg/m^2; no smokers). The lying-to-standing-orthostatic stress test was used to evaluate orthostatic tolerance. Subjects were not to drink 8 hours prior to measurements. Design was: the person standing for 2 min (baseline), laying down for 5 min, and again standing for 3 min. Then the measurements were stopped and subject drank either 500ml of drinking water or mineral water "X" in a 5 min interval. After 25 min, the initial procedure was repeated. Subjects drank room temperature drinking water or mineral water "X". Mineral water "X" contained Cl^-, HCO_3^-, Na^+, Mg^{2+} (3437; 315; 1600; 254 mg/l, respectively) etc. Measurements with mineral water "X" and drinking water were performed on separate days. Systolic (SBP) and diastolic blood pressure (DBP), mean arterial pressure (MAP); heart rate (HR), stroke volume (SV), cardiac output (CO) and total peripheral resistance (TPR) were constantly monitored with the Finapres-Finometer MIDI. Statistical analyses were performed using IBM SPSS 22.0. Wilcoxon signed rank or Mann Whitney U test was used to compare groups.

Results. Initial orthostatic stress induced hypotension (significantly decreased ($p < 0.001$) SBP, DBP and MAP) was observed from 5th to 15th s after standing up compared to the baseline point. Ingestion of mineral water "X" significantly ($p < 0.05$) lowered DBP and TPR but at the same time a significant increase ($p < 0.01$) in CO and SV were observed 5s after standing up compared with the measurements obtained before mineral water drinking. Significant ($p < 0.05$) decrease in HR which was compensated with an increase in SV was observed 25 min after mineral water "X" ingestion at the baseline. Ingestion of drinking water did not show significant changes in the measured parameters. We hypothesized that relatively high content of the Mg^{2+} in mineral water "X" could produce decreased TPR.

Conclusion. Drinking 500ml of mineral water "X" led to a significantly decreased TPR and a consequent decrease in DBP during the orthostatic stress test. Mineral water "X" would not be recommended for persons with low arterial blood pressure, due to probability of syncope upon standing up.

COMPLIANCE TO DRUG THERAPY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASES

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Keywords. Crohn's disease, ulcerative colitis, compliance, drug therapy.

Introduction. Inflammatory bowel diseases (IBD) are a group of idiopathic chronic inflammatory conditions of gastrointestinal tract. According to European Federation of Crohn's and Ulcerative Colitis Associations 8% of IBD patients are unemployed due to intestinal disease. That's the reason why IBD patients require often lifelong medications and compliance to drug therapy is quite important for successful treatment. Nevertheless studies and tests revealed lower compliance in approximately 50% of patients with Crohn's disease and 63% of patients with ulcerative colitis. [Dewulf et al, 2007].

Aim. To assess compliance to drug therapy in patients with inflammatory bowel disease, to identify possible demographic, clinical and other factors, which might be connected and evaluate correlation between compliance to drug therapy and these factors.

Materials and methods. Data from 202 IBD patients, who admitted to Pauls Stradiņš Clinical University Hospital from 2012 to 2015, medical case histories were obtained and analyzed in retrospective cross-sectional study and processed, using *MS Excel 2013* and *IBM SPSS Statistics 20.0.*

Results. A total of 202 IBD patients were analyzed and 39% (n = 78) of all IBD patients (95%CI = 32%-45%) revealed low compliance to drug therapy – 54% male, 46% female; 60% (95%CI = 49%-71%) of patients were younger than 40 at time of diagnosis; 59% patients (95%CI = 48%-70%) with ulcerative colitis (UC), 41% patients (95%CI = 30%-52%) with Crohn's disease (CD). In CD patients main location site was ileal (59%), in UC patients it was pancolitis (50%). 72% (n = 56) of these patients (95%CI = 62%-82%) had extraintestinal manifestations – most common hematologic (38%), constitutional (37%), musculoskeletal (11%), hepatobiliary (6%). 52% of patients (95%CI = 41%-63%) had complications of IBD – 47% were nonsurgical (most common hypoproteinemia and malabsorption syndrome) and 53% were surgical (most common fistulas, stenoses, abscesses). 72% of patients (95%CI = 62%-82%) previously had surgical intervention due to IBD. 29% (n = 23) of patients (95%CI = 19%-39%) previously had some side-effects on medications used in the treatment of IBD (mostly to aminosalicylates and thiopurines).

A tendency between low compliance to drug therapy and previously side-effects on medications used in the treatment of IBD was found (r_s = 0.271, p < 0.01). Correlation between low compliance to drug therapy and extraintestinal manifestations or previously surgical intervention was not proved (p > 0.01).

Conclusions

1. Low compliance to drug therapy is common in IBD patients.
2. A tendency between low compliance to drug therapy and previously side-effects on medications used in the treatment of IBD was found.

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3. Further investigations are needed and could lead to higher therapeutic success in IBD patients.

IBD patients need to be more educated about importance of treatment in IBD.

SOCIETY OPINION AND THE MEDIA INFORMATION ON GENERIC DRUGS

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Keywords. Generic drugs, bioequivalence, opinion, patients, physicians, pharmacists, media.

Introduction. A generic medicine is a medicine that is developed to be the same as a medicine that has already been authorized, called the 'reference medicine'. A generic medicine contains the same active substances as the reference medicine, and it is used at the same doses to treat the same diseases. However, a generic medicine's inactive ingredients, name, appearance and packaging can be different from the reference medicine's.[1] The use of generic drugs is one of the ways how to reduce physicians' and patients' costs. Despite the fact that there are a lot of generics available in Latvia, people underuse them and still overpay for the brand-name drugs.[2]

Aim. To analyse people's awareness and experience with generic drugs and opinions about generics in media.

Materials and methods. The internet questionnaire was filled in by Latvian population (aged 18–74) sample. The survey was conducted from 3rd till 6th March 2015 within the monthly Web-Omnibus survey by SKDS. In addition, articles in Latvian and Russian, published in the media and on the internet within January 2009 till December 2014, were analysed. The articles met the following criteria: articles include the opinion on generic drugs expressed by journalists, physicians, pharmacists, lay persons and representatives of state institutions. The content analysis was chosen as a research method.

Results. 72.3% respondents from the sample of 1005 were informed about generic drugs; mostly they were adults with higher education, over 55 years. 73.5% of the informed respondents had taken generic drugs, and 33.8% of the informed ones rated their experience as positive. Positive opinion about generic drugs was expressed in 91 from the 119 reviewed articles, both opinions – positive and negative were expressed in 11 articles. Mostly the ability of generic drugs to reduce patients' and state's costs as also the necessity to promote the use of generics were discussed in media.

Conclusion. The research results show that Latvian population is insufficiently informed about generic drugs and this is a reason why people refuse to take generics and overpay for more expensive brand-name drugs. Informed patients who have tried the generic drugs continue to use them. Physicians, pharmacists and relatives are those who influence patients' opinion. Physicians mostly express negative opinion on generic drugs in media, pointing to the poor quality of these drugs, but pharmacists and state authorities express more positive opinion.

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[1] European Medicines Agency (EMA) Generic medicine.

[2] http://www.vmnvd.gov.lv/lv/neparmaksajotlv.

THE PERSONAL PROTECTIVE EQUIPMENT EFFECTIVENESS ASSESSMENT DURING PHARMACEUTICAL PREPARATIONS PRODUCTION PROCESS

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Introduction. It is compulsory to use personal protective equipment during pharmaceutical preparations manufacturing process, in order to protect the employee safety and health against dangerous or harmful effect of work environment risk factors. The respirator or the dust mask is a single-use respiratory system protective equipment that covers human nose and mouth, thus protecting them against dust and solid particles. Inhalation of chemical particles may be hazardous for the health.

The **Aim.** To check the different types of respirators / dust masks protection efficiency during tablet mass production process.

Materials and methods. The research started in October 2015 in Latvia, and is still going on. Venue A/S Olainfarm solid dosage form manufacturing section. Three types of respirators are tested – P3, P2 and simple blue face mask, control test also are made. Round filters were cut out from respirators. On the upper part of a plastic cylindrical cassette was placed filter from respirator, on the lower part was placed standard filter. The air was pumped during tablet mass production process by air pumps. First of all, air passes through the mask filter and then faced with the standard filter, which also later be analyzed. Air flow rate 2 l per minute, analysis time 120 minutes. Method of analysis – gravimetric method. The efficacy of respirators is verified by comparing the standard filter weight before and after the process. All the data was collected and analyzed using Microsoft Excel program.

Results
The fenibut 250 mg tablet mass production process:
Δ m (with P3 respirator) = 0.02 mg
Δ m (with P2 respirator) = 0.03 mg
Δ m (with a blue face mask) = 0.03 mg
Δ m (control) = 0.18 mg
The remantadin 50 mg tablet mass production process:
Δ m (with P3 respirator) = 0.02 mg
Δ m (with P2 respirator) = 0.04 mg
Δ m (with a blue face mask) = 0.06 mg
Δ m (control) = 1.29 mg
Analyzing standard filters weight changes after Fenibut 250 mg and Remantadin 50 mg tablet mass production process, it was found that the standard filters weight changes were insignificant in all three respirator using cases. In control cases, where respirator was not used, the standard filters weight before and after the process were considerably different.

Conclusion. P3, P2 type respirators and simple blue face mask effectively protect workers from chemical particles entering the body through the nose and mouth. A/S Olainfarm manufacturing structures have very good ventilation system, which also protects from chemical particle harmful effect.

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THE USE OF DIFFERENT CHEMICAL PROFILE OF STATINS FROM THE ASPECT OF PHARMACIST

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Keywords. Lipophilic and hydrophilic statins, diabetes mellitus, dosage.

Introduction. The latest researches state that the use of HMG-CoA reductase inhibitors (statins), even at standard doses increase the risk of diabetes mellitus (DM), respectively, the dose of atorvastatin 10 mg per day statistically significant rises the level of glycated hemoglobin. Other sources hypothesize that the risk of hyperglycemia depends on the dose – it is more common among patients with daily dosage of 80 mg of atorvastatin and 20 mg of rosuvastatin. Chemical structure impacts diabetogenic nature – lipophilic statins can provoke this effect more often than hydrophilic.

Aim. To study out if there is an impact of scientific information about diabetes mellitus risk among statin users on physicians' choice of statin therapy.

Materials and methods. In the period from October to December,2015 a quantitative retrospective study was carried out, including patients with diagnosed hypercholesterolemia or dyslipidemia. Participants who visited four pharmacies in Riga, anonymously filled the questionnaire. The following data were recorded: sex, age, the type of statin and dose, physician (general practicioner (GP) or endocrinologist). Statistics was calculated using SPSS programme.

Results. Obtained data of 82 patients (mean age 72.6 ± 7.1 years), 46 (56.1%) were women. The most prescribed statin was hydrophilic atorvastatin (62, 75.6%). Dominant dose among all statins was 20 mg per day (N = 33, 40.2%), less often were used doses of 10 mg (N = 18, 22.0%) and 40 mg (N = 19, 23.2%) per day. Endocrinologists more often prescribed higher doses of statins rather than GPs, respectively, 33.0 ± 25.5 mg versus 29.5 ± 20.2 mg (t = 0.699; p = 0.487). The mean dose of atorvastatin was 29.4 ± 22.0 mg but for rosuvastatin it was higher – 38.4 ± 24.8 mg. The mean prescribed dose of atorvastatin did not differ statistically significantly, respectively for GPs' it was 28.2 ± 19.7 mg, for endocrinologists' – 30.7 ± 24.9 mg (p = 0.677). Also there were no differences in choice of rosuvastatin mean dose, respectively GPs' prescribed 38.5 ± 21.9mg, endocrinologists' – 38.3 ± 27.2 mg (p = 0.984). Doses did not differ greatly among.

Conclusion. Dose of Atorvastatin 20 mg per day was the common choice among both specialties of physicians. The reason of such trend could be associated with hydrophilic chemical structure of atorvastatin, ensuring the goals of therapy without developing diabetogenic effects. Endocrinologists more often prescribed statins in high doses. Despite information about possible risk of hyperglycemia among physicians prescribed doses of lipophilic statin rosuvastatin were higher than doses of atorvastatin.

IMPACT OF SIGMA-1 RECEPTOR LIGANDS ON FREE CALCIUM LEVEL DURING MITOCHONDRIAL RESPIRATION

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Keywords. Sigma-1 receptor (Sig1R), mitochondrial oxidative phosphorylation (OXPHOS), free calcium level.

Introduction. Sig1R is an endoplasmic reticulum resident chaperone protein implicated in many physiological and pathological processes in the CNS. Activated Sig1R dissociates from binding immunoglobulin protein and regulates the stability of inositol 1,4,5-trisphosphate receptors to ensure proper calcium signalling between the endoplasmic reticulum and mitochondria.

Aim. The aim of the present study was to test the effect of selective ligand mediated Sig1R activation on free calcium level during oxidative phosphorylation in mitochondria.

Materials and methods. Respiratory oxygen flux was measured in male Wistar rat brain tissue homogenates in high resolution, concurrent with fluorometric signal for calcium green 5N, using the Oxygraph-2k combined with O2k-Fluo LED2-Module (O2k, OROBOROS Instruments, Innsbruck, Austria). Samples were assessed in 2 ml of respiration buffer consisting of 150 mM KCl, 10 mM Tris-HCl, 5 mM KH_2PO_4, 2.25 mM $MgCl_2$ (pH = 7.2). All experiments were conducted at 37 °C. Pyruvate (5 mM), malate (0.5 mM) and glutamate (10 mM) were used to determine Complex I-linked LEAK respiration. ADP (2.5 mM) was added to obtain OXPHOS-capacity of Complex I-linked activity. Subsequent addition of succinate (10 mM) provided OXPHOS-capacity of electron transfer chain activity. Complex I inhibitor rotenone (0.5 µM) was added to obtain OXPHOS-capacity of Complex II-linked activity. To control for other oxygen-consuming processes, Complex III was inhibited by antimycin A. Selective Sig1R agonist PRE-084, selective antagonist NE-100 and positive allosteric modulator E1R were used to study the Sig1R-mediated effects.

Results. Addition of mitochondrial Complex I and Complex II specific substrates induced a decrease of free calcium level during OXPHOS. PRE-084 at doses 0.1, 1 and 10 µM had no effect on free calcium level during OXPHOS at normoxic conditions compared to control. Similarly, E1R and NE-100 alone showed no difference from control group. Preincubation of PRE-084 at a dose of 10 µM together with positive allosteric modulator E1R induced a significant decrease of free calcium level by 30% compared to control.

Conclusions. The positive allosteric modulation of Sig1R can reduce free calcium level during mitochondrial respiration and Sig1R ligands have potential to treat impaired calcium signalling in CNS diseases.

ASSESSMENT OF MEDICATION KNOWLEDGE AMONG ELDERLY PATIENTS WITH CHRONIC CONDITIONS

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Keywords. Medication knowledge, elderly patients, chronic conditions.

Introduction. Patients, especially the elderly, who need to take several medications usually have insufficient knowledge regarding medication.

Aim. The aim of this study was to assess the basic medication knowledge of elderly patients with chronic conditions.

Materials and methods. A cross sectional survey was conducted at the Internal Diseases Centre of Vilnius University Hospital Santariskiu Klinikos since November 2014 till March 2015 and included 100 interviewed patients who were < 60 years old. Patients eligible for the study had been taking at least 1 medication for at least 6 months prior the survey. The study questionnaire design was based on the Adult Medication program developed by American Society on Aging and American Society of Consultant Pharmacists Foundation. The patients were asked to name all medications they were taking, purpose of taking them, what meals, drinks or other medicines should be avoided while taking the medication prescribed, side effects and conditions of storage. Each answer was categorized as "Correct", "Incorrect" or "Don't know". The data were analysed using *SPSS 21.0*.

Results. The study population included 38% of male and 62% of female patients. The names of the medications were recalled by 84% of the participants and 51% of them named the purpose of every medication. Patients younger than 70 years, employed, having higher economic status and educational level recalled indications better (69.9%, $p = 0.003$; 85.7%, $p = 0.009$; 76.0%, $p = 0.011$ and 66.7%, $p = 0.040$, respectively). The failure to recall any side effects or precautions of the medications prescribed was present in 67% of total study population. Those who had higher than minimum wage income (56.0%, $p = 0.007$), higher educational level (53.8%, $p = 0.001$), better knowledge of indications (43.4%, $p = 0.021$) were likely to possess higher knowledge of side effects. Patients with higher educational level (48.7%, $p = 0.009$), employed (57.1%, $p = 0.063$), as well as patients of better economic status (64.0%, $p < 0.001$) and better knowledge of medication side effects (48.5%, $p = 0.025$) had better knowledge of what should be avoided while taking certain medications. The knowledge concerning interaction of prescribed medication with food, drinks and other medications was absent in 51% of the participants; 70% of the patients knew how the medicine should be stored and 6% had no knowledge regarding storage of medication.

Conclusion. Elderly patients generally lack knowledge about indications, what food, drinks and other medicines should be avoided while taking the medication, side effects and storage conditions of their medication.

INFLUENCE OF PACKAGING ON STABILITY
OF FURAGIN TABLETS

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Keywords. Furagin tablets, stability studies, blister package.

Introduction. Furagin (nitrofuran derivative) is an antibacterial medicine with bacteriostatic action which is used for treatment of acute and chronic urinary tract infections. Furagin is sensitive to light and moisture. JSC Olainfarm carries out stability studies of furagin 50 mg tablets due to changes in the granulation and a new place of production. Stability studies provide evidence that the chosen packaging retains the quality of the product during storage at different temperatures, humidity and exposure to light.

Aim. To determine which blister packages are appropriate to preserve stability of furagin 50 mg tablets after 6 months of storage in different climatic zones.

Materials and methods. Stability studies were conducted according to the European Medicines Agency guidelines. For II climatic zone blister packs consisting of a translucent or white polyvinyl chloride film and aluminum foil (PVC/Al) were used. For IVA and IVB climatic zone polyvinyl chloride film with polyvinylidene chloride coating and aluminum foil (PVC/PVdC/Al) or "Aclar" (polychlorotrifluoroethylene (PCTFE)) and aluminum foil blister packs were used. Pharmaceutical quality control intended at the beginning of the stability study, after 3 and 6 months of accelerated, intermediate and long-term storage. Analyzed parameters: weight of the tablets, height, diameter, appearance, disintegration, loss on drying, impurities, dissolution, content of active substance, hardness, friability.

Results. Data acquired from the JSC Olainfarm 39 stability study protocols and 5 quality specifications of furagin 50 mg tablets after 3 months of storage. It was stated, that both initially and after 3 months of storage, furagin 50 mg tablets was in accordance to the requirements of specifications. After 3 months of accelerated storage, increased hardness of furagin tablets and decreased dissolution test results were reported. Photostability study results correspond to the quality requirements of the specification, but the upper layer of tablets in transparent PVC/Al pack was darker than in blister pack, consisted of aluminum and white PVC, "Aclar" or PVC/ PVdC.

Conclusions. Furagin 50 mg tablets retained the chemical and physical stability after 3 months of storage; stability studies continue. The present data indicate that for furagin tablets primary packaging it would be better to use blister packs containing white PVC film for II climatic zone, and the blister packs containing PVC/PVdC or "Aclar" film for IVA and IVB climatic zone, which will provide better protection against light and environmental conditions.

MYOCARDIAL PROOXIDANT-ANTIOXIDANT HOMEOSTASIS IN CHRONIC INTOXICATION WITH DOXORUBICIN AND ADMINISTRATION OF GERMANIUM WITH NICOTINIC ACID

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Keywords. Germanium, nicotinic acid, oxidative stress.

Introduction. Oxidative stress is a process activated in the organs in pathological conditions leading to cellular and subcellular metabolic disorders. This includes the activation of lipid peroxidation (LPO) in various pathologies. That is why the research and development of new highly effective means of pharmacological protection in these conditions is one of the research priorities. The original complex compounds of germanium with organic bioligands having a wide range of pharmacological activity and low toxicity are of great interest.

Aim. To determine the effects of the combination of germanium with nicotinic acid (MIGU-1) on the LPO parameters (diene conjugates (DC), TBA-active compounds and Shiff bases (ShB)) and superoxide dismutase (SOD) and catalase (CAT) activity in rat cardiomyocytes in chronic intoxication with doxorubicin (CID).

Materials and methods. Experiments were conducted on mature male rats weighing 180–220 g according to the European Union Directive 2019/10/63 EU on the protection of vertebrate animals used for experimental and other scientific purposes. Experimental CID was induced with weekly intramuscular injections of doxorubicin (DOX) at a dose of 5 mg/kg. Intraperitoneal MIGU-1 was administered daily simultaneously with DOX for 5 weeks. DC content, TBA-active compounds, SOD and CAT activity were determined using spectrophotometry and ShB was determined using flyuorometry in cardiomyocytes.

Results. A significant increase in DC content, TBA-active compounds and ShB and a decrease in SOD and CAT in rat cardiomyocytes were observed in CID. Animals receiving DOX in combination with MIGU-1 demonstrated the LPO process regression and the restoration of pro-antioxidant homeostasis in cardiomyocytes.

Conclusions. The obtained results indicate an increased free radical oxidation in CID. MIGU-1 administration reduced the levels of LPO products and restored the activity of SOD and CAT in the studied pathology, which is the basis for more detailed studies of the mechanism of the MIGU-1 effects on the oxidative stress development in CID and approaches to its correction using original complex compounds of germanium and organic bioligands.

ADHERENCE MARKER IN PHARMACEUTICAL CARE – IS IT OBJECTIVE INDICATOR?

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Keywords. Adherence marker, arterial hypertension, count of tablets.

Introduction. Cardiovascular diseases are one of the most common causes of mortality in the world and Latvia. Medication adherence usually refers to whether patients take their medications as prescribed, as well as whether they continue to take the prescribed medication. Every day about 10% of the patients forget to take the prescribed medication. Approximately 50% of patients do not take their medications as prescribed.

The aim of the study was to analyze the percentage rates of adherence among cardiovascular patients depending on the number of prescribed and dispensed drugs.

Materials and methods. In retrospective study conducted between July and December 2015, patients with diagnosed arterial hypertension during the visit of pharmacy in Riga, Latvia. The data was divided in the two periods over three months – A (from July to September) and B (from October to December). Patient adherence marker in the study was calculated by dividing the dispensing and prescribing number of tablets, expressed as a percentage.

Results. 91 patient was included in our study, and 63 (69.2%) of them were females. Average age was 72.7 ± 10.2 years. It differed statistically significantly according to gender, respectively age of female 74.3 ± 9.8 and male 69.3 ± 10.4 years (p = 0.029). In period A the highest rates of adherence were observed in the following pharmacological groups: calcium channel blockers (98.6%), fixed dose combination medicine (95.8%) and angiotensin-converting enzyme inhibitors (ACEI; 94.4%). Lower rates in period A were observed in the use of HMG-CoA reductase inhibitors (statins) (55.2%), where stastically significant difference according to gender was detected, respectively male 36.1 ± 30.0% vs female 69.4 ± 27.4% (t = 2.650; p = 0.016). During period B adherence rates increased significantly among patients treeted with statins (+20.8%p), and it was also statically significant in gender groups, respectively male 58.3 ± 27.4% and female 86.7 ± 21.9% (t = 2.283; p = 0.039). Lower changes of adherence rate comparing the periods were observed in patients with diuretics (+3.7%p) and fixed dose combination therapy (+1.7%p). Adherence rates in period B were decreased among patients using beta blockers group (-6.7%p) compared to period A.

Conclusion. The most rapid increase in adherences rate between the two periods was observed in therapy with statins. Adherence negative trend during long term observation was found only in users of beta blockers. Women showed a higher sense of responsibility to the prescribed therapy than men. Marker of adherence rate indicates the need of pharmacists supervision and recommendation regarding therapy.

THE INFLUENCE OF AMIODARONE ADMINISTERED IN INTENSIVE CARE UNIT (ICU) ON INTERNATIONAL NORMALIZED RATIO (INR) VALUES FOR PATIENTS WHO RECEIVED WARFARIN AFTER AORTIC VALVE SURGERY

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Keywords. Amiodarone drug interaction, warfarin.

Introduction. Elimination half-life of amiodarone is long, averaging about 58 days and warfarin drug interaction with warfarin is well known for increasing the anticoagulant effect, but it is not very clear how it effects INR results when it is administrated for a short period before warfarin is given.

Aim. To evaluate the influence of amiodarone administered in ICU on first measured INR values later for patients who received warfarin after aortic valve surgery.

Materials and methods. In this retrospective study we reviewed clinical data of 158 patients who underwent aortic valve surgery and received warfarin after surgery in Vilnius University Hospital Santariskiu Klinikos (VUHSK) between 2012 and 2015. All data was obtained from VULHK database. Patient`s were divided into two groups based on if they were administrated amiodarone in intensive care unit. INR test results were recorded and compared in both groups. INR higher than 5 was considered to be clinically dangerous for bleeding events. The significance level was set as $p < 0.05$. Statistical analysis was performed using standard statistical software (SPSS version 22.0).

Results. Amiodarone was administrated for 61 out of 158 analyzed patients in ICU. The mean warfarin dose among patients that received amiodarone was 15.26 mg (SD ± 2.99), and 16.26 mg (SD ± 2.94) that did not receive it. First INR result for patients who got amiodarone was 2.8 (SD ± 1.9) and 2.18 (1.33) who did not receive it. INR was measured for the first time 2.6 (SD ± 0.925) days after they were administrated with warfarin for both groups. Out of 158 analyzed patients 15 (9.5%) had INR > 5 after first test result and 10 (66.7%) of them received amiodarone in ICU. Patients that received Amiodarone in ICU had higher first INR result ($p = 0.012$) and had more clinically dangerous tests results when INR > 5 ($p = 0.019$) compared to patients that did not receive amiodarone.

Conclusion. Amiodarone usage in intensive care unit statistically significantly increased first measured INR values for patients who received warfarin after aortic valve surgery. Patients who received amiodarone in ICU maybe should receive lower initial warfarin doses to safely achieve therapeutic INR values.

ECONOMIC IMPACT OF FIXED DOSE COMBINATION DRUGS IN ARTERIAL HYPERTENSION TREATMENT

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Keywords. Fixed-dose combination, costs, arterial hypertension.

Introduction. Arterial hypertension is one of the most common chronic diseases in the world. The main objective of the hypertension treatment can be achieved by taking correctly antihypertensive medications. Information about its costs is very sensitive when being discussed at the time of drug acquisition in the pharmacy.

Aim. To compare costs of fixed dose combination drug therapies alone and together with monotherapy from the perspective of the government's budget and the patient.

Materials and methods. During December, 2015, and January, 2016, a prospective quantitative study in various pharmacies was conducted. The information was received from the patients by means of the interview.

Results. We have gathered data from 99 people who spent an average of 0.33 ± 0.24 euros per day of their antihypertensive therapy. The same costs for the government were estimated as 0.15 ± 0.06 euros. If the fixed dose combination consisted of 2 chemical substances, the average patient's daily expenses were 0.29 ± 0.17 euros. However, if it contained 3 chemical substances, the patient payment increased statistically significantly, respectively on average of 0.47 ± 0.37 euros per day ($t = 3.211$; $p = 0.002$). Looking from the government's point of view, the average daily expenses for a fixed dose combination containing 2 substances were lower than for drugs with combination of 3 substances, respectively 0.14 ± 0.05 euros vs 0.18 ± 0.05 euros per day ($t = 3.457$; $p = 0.001$). If the therapy required adding more chemical substances to the fixed dose combination, the patient's expenses averagely increased for 0.18 ± 0.2 euros; the government's – for 0.04 ± 0.01 euros. In the case when a fixed dose combination with 2 substances and a monodrug were used in the therapy, the average daily costs for the patient were 0.30 ± 0.22 euros, for the government – 0.14 ± 0.05 euros. The antihypertensive therapy often included drugs that were less common represented in the fixed dose combinations, for example, beta-blockers or only available separately like digoxin. The average daily patient's expenses for beta-blockers were 0.09 ± 0.05 euros, government's – 0.04 ± 0.02 euros; patient's expenses for digoxin were 0.03 ± 0.02 euros, government's – 0.04 ± 0.03 euros.

Conclusion. In case of changing the therapy from a two-substance fixed dose combination to a three-substance fixed dose combination, the patient's expenses per day increased about 4 times more compared to the government's expenses. Moreover, adding of monodrugs to the therapy did not significantly increase its costs per day. The government's expenses were higher only in case of the digoxin therapy.

DEVELOPMENT OF DOSAGE FORM –
POWDER FOR ORAL SOLUTION

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Keywords. Acetylcysteine (ACC), sucrose, ascorbic acid, aspartame, cranberry flavour, powder for oral solution.

Introduction. The consumption of medicines is growing fast every year, as well as the range and the variety of dosage forms. That gives bigger choice options for patients. Out of all solid dosage forms powders for oral solution are becoming more popular. This dosage form is easy to use for adults as well as for children of all ages. The powder for oral solution has to provide the active substance efficiency and needs to be with an acceptable taste for patients.

Aim. The aim of this work is to develop generic product– acetylcysteine (ACC) containing powder for oral solution, improving powder containing excipients as well as the taste.

Materials and methods. Materials used: active substance – ACC, excipients– sucrose, ascorbic acid, cranberry flavour, aspartame. Methods carried out: determination of bulk and tapped density powder (Ph.Eur 8.-2.9.34.), powder flow (Ph.Eur 8.-2.9.36.), optical microscopy (Ph.Eur 8.-2.9.37), particle size distribution estimation (Ph.Eur 8.-2.9.38.) and stability testing (guideline ICH-Q1A (R2)).

Results. Testing qualitative indicators – bulk and tapped density for active substance, excipients and the whole powder blend showed good results: ACC bulk density (B)–0.71, tapped density (T)–0.83, sucrose B–0.45, T–0.56, ascorbic acid B–0.67, T–1.00, cranberry flavour B–0.34, T–0.53, aspartame B–0.25, T–0.56 and powder blend B–0.50, T–0.59. We also tested previously mentioned substances flow properties. The results showed that ACC (15.0 g/s) is more flowing than excipients, as they don't have as good flow properties as ACC. By testing substances with optical microscopy we determined their crystal form for information purposes. With particle size distribution estimation by analytical sieving we determined homogeneity of each substance and the whole powder blend. All substances showed similar results, which were approximately ≥ 0.2 mm particle size distribution. Series of powder blend were made without aspartame because of its formation of the potentially toxic metabolites – methanol, aspartic acid and phenylalanine. For stability testing the series of powder blend were exposed to 40 °C ± 2 °C/75%RM ± 5%RM for 6 months. The results showed that the blend is stable without any changes. The series of powder blend are still undergoing stability testing exposed to 25 °C ± 2 °C/60%RM ± 5%RM.

Conclusions. The results from the above mentioned tests showed that active substance and all excipients, except aspartame, are compatible thereby suitable for including in our medicine production. Cranberry flavour was added for better taste, and decreased quantity of sucrose let this medicine be accessible for people with different illnesses.

BROMHEXINE 8 MG TABLET DISSOLUTION METHOD DEVELOPMENT AND VALIDATION

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Keywords. Bromhexine, dissolution test, UV spectrophotometry.

Introduction. The absorption of an active substance from oral dosage form is related to two processes – active substance release from drug product and dissolution in biological media. Whereas dissolution is related to chemical and physical properties of an active substance and characteristics of the gastrointestinal tract. Impact of various factors on drug absorption can be assessed by bioavailability tests *In vitro* and *In vivo*. The JSC "Grindeks" has already registered Bromhexine – Grindeks 8 mg tablets in Latvia. For the purpose of market expansion the company is developing a new Bromhexine tablet production technology suitable for Australian market. To assure required drug quality we need to develop a new analytical method.

Aim. Customize dissolution test method for Bromhexine 8 mg tablets, which conform to standards of the Australian market.

Materials and methods. The materials are: company's experimental and production Bromhexine 8 mg tablet series; reference product Bisolvon Chesty forte 8 mg tablets; Bromhexine hydrochloride reference standard; 0.1 M hydrochloric acid (HCl) solution pH 1.2, acetate buffer pH 4.5, phosphate buffer pH 6.8. Methods used: dissolution test and UV spectrophotometry.

Results. The solubility of Bromhexine hydrochloride in 0.1 M HCl is 0.22 mg/ml, in pH 4.5 solution 0.17 mg/ml, pH 6.8 solution 0.003 mg/ml. The suitable volume of dissolution media is 900 ml. During dissolution test, active substance dissolved from Bromhexine 8 mg tablets 99.7% in 0.1 M HCl, from reference product Bisolvon Chesty forte 8 mg tablets – 99.4% at 15 minute. In acetate buffer Bromhexine dissolves 83.3% and 83.5% at 15 minute respectively. In phosphate buffer Bromhexine dissolves less than 20%. Tablet dissolution uniformity relative standard deviation is less than 20% in 10 minutes. During dissolution analysis with "paddle" type apparatus tablets were fully sunken, no bouncing or floating of tablets was observed. At the speed of 50 rpm tablets disintegrated completely. Determining the dissolved substance quantitative content, UV light absorption maximum at 311 nm is observed.

Conclusion. Bromhexine hydrochloride is very slightly soluble in 0.1 M HCl and buffer solution pH 4.5, practically insoluble in buffer solution pH 6.8. Suitable dissolution medium is 0.1 M HCl and buffer solution pH 4.5 in the volume of 900 ml. Dissolution analysis with paddle rotation speed of 50 rpm is found to be acceptable. Developed method shows sufficient discriminatory factor and appropriate release of active substance from Bromhexine 8 mg tablets. Analytical method validation proves the selectivity, linearity, range, instrument accuracy and repeatability of analytical method.

ALTERATIONS IN MICROGLIA ACTIVITY IN THE BRAIN BY LOW DOSES OF MUSCIMOL IN A ALZHEIMER'S DISEASE RAT MODEL

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Introduction. Inflammation in the brain has been increasingly associated with the development of a number of neurological diseases, including Alzheimer's disease (AD). The hallmark of neuroinflammation is the activation of microglia, the resident brain immune cells (Kim et al., 2000). The GABAergic / glutamatergic imbalance has been shown to play a role in neurodegeneration (Sun et al., 2009) and therefore the modulation of risk factors with the GABA-A agonist muscimol in low doses could lead to future therapeutic or preventive strategies. In our study we used a streptozotocin (STZ)-induced AD rat model.

Objectives. To determine microglia Iba-1 in the hippocampus and cingulate cortex with $GABA_A$ agonist muscimol (administered intraperitoneally) in a intracerebroventricularly administered STZ-induced AD rat model.

Materials and methods. Experiments were carried out using *Wistar* male rats. Muscimol (0.01 or 0.05 mg/kg) or saline solution were administered intraperitoneally for three days. On the fourth day artificial cerebrospinal fluid (aCSF) or intracerebroventricular STZ (100 µg/ml) was injected. On the 22nd day the brains were removed immediately after perfusion, and immersion fixed in 4% buffered paraformaldehyde for 24 hr, cryoprotected in 30% sucrose in 0.1M phosphate buffer and stored in antifreeze solution at -20°C until the time of sectioning were performed. Microglial Iba-1 expression was analysed in the hippocampus and the cingulate cortex immunohistochemically.

Results and Discussion. Immunohistochemical assessment of the dorsal hippocampus and anterior cingulate cortex demonstrated an increase of microglia activity only in the cingulate cortex of STZ groups compared to the control group. Muscimol in both doses decreased the microglial activity in STZ group. No changes in microglial activity were observed in the hippocampus. Muscimol itself did not alter the activity of microglia in the hippocampus or in the cingulate cortex.

Conclusion. Muscimol in both low doses reduced the overactivated microglial response to STZ in the cingulate cortex, indicating the ability of GABA-A receptor agonist to diminish neuroinflammatory processes. We observed a brain structure regional difference in microglia activity between the cingulate cortex and the hippocampus. Further biomarker studies are needed to explain the action of muscimol in this STZ-AD model.

XII. Case Reports, Small Case Series

16 March 2016

16 March 2016

DIAGNOSTICS OF HAEMOCHROMATOSIS AND
POST-MORTEM AUTOPSY IMPORTANCE

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Keywords. Haemochromatosis, iron storage disease, sudden death, autopsy.

Introduction. Hemochromatosis (H) is a disorder in which abnormal accumulation of iron leads to organ toxicity. Patients may present with a diverse array of symptoms and signs, such as cardiac failure, arthritis, skin hyperpigmentation, diabetes and infertility. Hereditary H is the most common genetic disorder in Caucasians. Secondary H is caused by multiple blood transfusions, chronic liver disease or hematologic diseases. Clinical symptomes of H develops over a long period of time, which leads to accidental or late diagnosis, usually after complications have developed.

Case report description. A 53-year-old man was brought to the emergency unit complaining of intense abdominal pain lasting for 3 days and vomiting of black blood. Patient was unstable: blood pressure 70/40 mmHg, heart rate 172 t/min. Abdomen was tender (8/10 points) and rigid. Labaratory tests showed: leukocytosis, mild anemia, acute kidney and liver failure, DIC, metabolic (lactatic) acidosis. Preliminary diagnosis was effects of unknown toxic agent and multiple organ failure. Subsequent progression of the condition was rapid. Sadation, anesthesia and ventilation was started, a nasogastric tube was placed and clear fluid with traces of hematin was obtained. Later the patient became bradycardic, CPR was performed, resuscitation was succesful. Laboratory tests showed progressing kidney failure and DIC. Despite all efforts the patient died soon after.

Because of sudden death of an unknown cause, autopsy was performed. Pancreas was of greyish black color, without surrounding tissue reaction. Heart weighted 495g, with both ventricles enlarged. Dilated hypertrophic cardiomyopathy was determined. Microscopical acumulation of hemosiderin was present in most tissues, thus diagnosis was determined: H of unknown origin.

Conclusion. H is difficult to diagnose because of its late and varying symptoms. H is rarely included in differential diagnosis, thus it is commonly determined by autopsy results. It is recommended that every patient with abnormal iron studies, even in absence of symptoms, should be considered to have H. In a case of H determined by autopsy results, first line relatives should recieve genetic consultation. These measures could lead to early H diagnosis and treatment.

Summary. A 53-year-old man was brought to the emergency unit in hypovolemic shock of undisclosed cause, which lead to multiple organ failure, severe metabolic acidosis and death in less than 12 hours. The final diagnosis of H was determined by autopsy results. H should be suspected when abnormal iron studies are found.

TUMOR-LIKE MULTIPLE SCLEROSIS –
A REAL DIAGNOSTIC CHALLENGE

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Keywords. Demyelinating diseases, Tumor-like multiple sclerosis.

Introduction. Multiple sclerosis (MS) is a demyelinating disease of the nervous system and tumor-like MS is a rare variant. Patients present with atypical symptoms. A solitary lesion greater than 2 cm with perilesional edema and contrast enhancement on MRI are typical. That brings difficulties to distinguish this type of lesion from tumor or abscess, thus unnecessary biopsies are often performed, which can lead to complications.

Case report description. A 34-year-old woman presented with left hemiparesis, left arm and left sided facial numbness and dysarthric speech during the last 24h. Neurologic exam revealed tongue deviation to the left and positive left Babinski sign. This was her third hospital visit in the last 2 months: first was due to left foot weakness and parasthesias in the left arm, the second was due to pain in the waist and left foot weakness, diagnosis of L5-S1 chronic radiculopathy was established then. After treatment the symptoms subsided. In 2009 and 2013 the patient had two surgeries due to ovarian tumors of marginal malignancy. But no progression was suspected by the oncologist a week before these neurological symptoms. Laboratory tests revealed neutrophilic leucocytosis. Head MRI revealed a 8/18/14mm hypointensive lesion with open ring enhancement in the right parietal region with local periphocal edema and one hypointensive 7mm lesion on the opposite side without enhancement on gadolinium enhanced T1-weghted images. A lumbar puncture revealed oligoclonal bands, which lead to a clinical diagnosis: unspecified demyelinating disease of central nervous system, most likely tumor-like MS. The patient was treated with manitol, pulse corticosteroid therapy, plasmapheresis and rehabilitation. After the treatment all symptoms improved.

Conclusions. Rare variants of MS raise a big diagnostic challenge, because tumor or abscess are hard to exclude. Symptoms atypical for MS such as focal neurodeficits, seizures or aphasia should be considered for rare variants of demyelinating diseases. Tumefactive brain lesions with gadolinium enhancement combined with oligoclonal bands and abnormal evoked potentials could lead to a diagnosis of MS. Only biopsy can give a clear answer, however it is not recommended, because imaging studies like SPECT or PET/MRI can be as helpful.

Summary. We present a patient with sudden neurodeficits, previous history of oncologic disease, and a tumefactive lesion on MRI. Demyelinating disease was determined without an unnecessary biopsy. Imaging studies combined with oligoclonal bands and abnormal evoked potentials are sufficient for a diagnosis of a demyelinating disease.

GIANT PANCREATIC PSEUDOCYST

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Keywords. Pancreas, pseudocysts.

Introduction. Pancreatic pseudocyst is an enclosed fluid collection in pancreas. Pseudocysts can be single, as well as multiple. Fluid is rich in pancreatic enzymes. The wall of the pseudocyst consists of inflammatory fibrotic tissues with absence of an epithelial lining, which distinguishes pseudocyst from true cyst. Pseudocyst develop in about 2% cases in patients with acute or chronic pancreatitis. Clinical presentation can include abdominal pain, vomiting, enlarged abdomen. Pseudocyst can become infected, as well as perforate, which causes peritonitis and sepsis.

Case report. A 50 year old man was admitted in Pauls Stradiņš Clinical University Hospitals Emergency department (ED). Patient was complaining about diffuse abdominal pain without radiation and enlarged abdomen. Patient was asthenic, admitted chronic usage of alcohol. Abdomen was enlarged 3 centimeters above chest cavity. Patient couldn't tell if abdomen enlarged recently or was enlarged for a long time. No signs of peritonitis or ascites were found. Blood analysis showed leukocytosis $28.5 \times 10^9/l$ [$4.0–10.0 \times 10^9/l$], CRP 217.8 mg/l [$0–5.0$ mg/l], serum alpha-amylise 120 IU/l [$30–118$ IU/l] and urine alpha-amylise 1295 U/l [≤ 460 U/l]. In abdominal X-ray an air collection under diaphragm was suspected. The first computer tomography (CT) with oral contrast revealed huge (20×10 cm) fluid collection, which was confused with gastric stasis. The second CT next day confirmed cystic formation between stomach and pancreas. Puncture and drainage of the formation was performed. About 3 liters of cloudy yellow liquid with white sediment. In the following days patients health status improved positively. He was discharged after 10 days in the hospital.

Conclusion. Pancreatic pseudocyst can occur in patients with acute or chronic pancreatic diseases. As the clinical symptoms are not specific, accurate radiological testing must be performed. Surgical treatment is not compulsory for this disease. Nevertheless pseudocyst can perforate, which requires immediate surgical intervention.

Summary. Huge pancreatic pseudocyst. Pancreatic pseudocyst in an enclosed fluid collection in pancreas. Walls of pseudocyst consist of inflammatory fibrotic tissues without any epithelial lining, which is main difference from true cyst. In this case report a 50 years old male was admitted to Emergency department. He complained about abdominal pain and enlargement. Objectively abdomen was enlarged – 3 centimeters above thoracic level. No signs of peritonitis or ascites. Blood analysis revealed leukocytosis, elevated CRP and blood, urine alpha-amylase. Diagnose was confirmed with two consecutive CT scans. Pseudocyst was punctured and drained. By analyzing this case report, it can be concluded that patients with pancreatic pseudocysts usually have non-specific symptoms. Thus a proper radiological investigation should be performed.

EDENTULOUS UPPER JAW REHABILITATION WITH IMPLANT SUPPORTED FIXED HYBRID PROSTHESIS

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Keywords. Hybrid prosthesis, maxilla hybrid prosthesis, implant fixed prosthesis.

Introduction. An implant-supported hybrid prosthesis is an acrylic resin complete fixed dental prosthesis supported by implants that might be a solution in difficult cases that need the restoration for esthetics, function, lip support, and speech. Clinical case is presented, where patient was dissatisfied with her classic removable upper jaw denture and hybrid prosthesis was made to restore function and esthetics.

Case report description. This clinical report aim is to present the esthetic and functional prosthetic rehabilitation of edentulous upper jaw. Patient is 60 years old woman and she have had classic removable upper denture for three years. She showed no systemic pathology and was not a smoker. Upper jaw was edentulous and in lower jaw there were 35 – 43 her own teeth and 44 – 46 teeth with metal ceramic prostheses. 46 tooth cantilever cut off. After careful evaluation it was decided to make upper jaw acrylic hybrid full-arch screw-retained prosthesis with cast metal framework supported by 6 implants. Direct sinus lift procedure was done and 6 Straumann Bone Level 4 x 4.1x10 (in 16, 14, 24, 26 teeth area) and 2 x 3.3 x 10 (in 11, 21 teeth area) were placed. Alveolar ridge augmentation was done. After three weeks temporary removable dentures were made and relined with soft acrylic resin. After one month two implants were placed in lower jaw: Straumann Bone Level 4.1 x 10 in 36 tooth area and Straumann Bone Level 3.3 x 10 in 46 tooth area. After six months double layer silicone impressions were made of both jaws, central occlusion was fixed. The metal framework tried in the mouth to verify the fit. After week hybrid prosthesis and 36, 46 zirconium crowns were made to rehabilitate the mouth.

Conclusion. Correct diagnosis and accurate implant planning are key for success in implant rehabilitation. Patient was absolutely satisfied with hybrid prosthesis function, esthetics and especially retention. So implant-supported fixed hybrid restoration is a well-established treatment method for edentulous patients, when the gum line is not high.

PATIENT WITH COLD AGGLUTININ DISEASE UNDERGOING CARDIAC SURGERY REQUIRING CARDIOPULMONARY BYPASS

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Keywords. Bypass, Cardiac Surgery, Cold Agglutinins.

Introduction. Cold agglutinin disease (CAD) is a rear type of autoimmune haemolytic anaemia, caused by cold reactive autoantibodies – cold agglutinins (CA). They react with the red blood cells (RBCs) when the blood temperature drops below normal body temperature. The incidence of CAD has been estimated to be $1/10^6$ per year. [*Berentsen S, et al.*, 2006] Hypothermic during cardiopulmonary bypass (CPB) and cold cardioplegia (CP) can lead to massive hemagglutination (HA), haemolysis, micro vascular occlusion and organ failure.

Case report. A 71-year-old man was seen with moderated bioprosthetic aortic valve (*Hanckook 23*) stenosis and 2nd/3rd grade paravalvular aortic regurgitation. The patient had symptoms related to CAs – anaemia, fatigue and shortness of breath, icterus, hyperbilirubinemia, bilirubinuria, urobilinogenuria, although it is hard to interpret symptom associated with CAD because of chronic hepatitis C and chronic heart failure. 10.06. – IgM was 6.4 g/l. Although polyspecific warm and cold anti RBC antibodies was detected, due IgM dropped from 4+ (27.05.) to 2+ (08.07.) we didn't administered plasma exchange or odder immunologic therapy preoperatively. Because we didn't have information of CAs titter and the exact temperature below which HA due to CA activation occurs, cardiac surgery maintained at 36.2°C at the lowest nasopharyngeal temperature. Total 17ml of warm blood CP was given. The CPB time – 125 min, aortic occlusion time – 78 min, reperfusion – 21 min. The highest serum potassium level during CPB time was 6.4 mmol/l. Heartbeat restored spontaneous and heart rhythm support with ECS was required. Blood products were used in surgery. The patient was weaned successfully from CPB and did require support with inotropes. He received 0.15 µg/kg/min norepinephrine support and was cancelled 90 minutes after surgery. The patient received 2 RBC concentrates in first day after surgery and total 4 RBC concentrates till 12th day after surgery. Troponin I and creatine kinase concentration elevation was insignificantly. Haemolysis was observed 4 hours after CPB in urine microscopy. First hours after surgery indirect bilirubin concentration were 34µmol/l, the highest – 57µmol/l in 3rd day after surgery. In urine urobilinogen – 135µmol/l and bilirubin – 7µmol/l was detected in 8th, 12th day after surgery. No signs of CA-related complications. The patient was discharged at 14 days after surgery.

Conclusion. Thermal amplitude should be quantified preoperatively. Patients with high titter and high thermal amplitude CAs, need personal planning before cardiac surgery. Core temperature monitoring should be used intraoperativly. Cardiac surgery can be made successfully using normothermic CPB and continuous warm blood CP.

Summary. CAs is cold reactive autoantibodies. Due CA activation in systemic hypoterermia lethal complications of haemolysis can occur. To avoid of that in cardiac surgery normothermic CPB and warm blood CP should used.

TREATMENT OF SEROPOSITIVE RHEUMATOID ARTHRITIS FOR A PATIENT WITH CHRONIC BRONCHITIS – A CASE REPORT

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Keywords. Seropositive rheumatoid arthritis, tocilizumab, chronic bronchitis.

Introduction. Rheumatoid arthritis (RA) is an autoimmune disease in which the immune system targets the synovial linings of joints. It affects approximately 1% of the worldwide population. Patients experience synovitis, joint damage, bone damage and pain that leads to disability and negative emotional effects. Seropositive RA means that there is rheumatoid factor (RF) or anti cyclic citrullinated peptides (anti-CCP) antibodies found in the patients blood (Arnett FC 1987). Many patients experience drug side effects, including ones affecting the respiratory system.

Case report description. A 57 year old patient with seropositive RA since 2010 has been receiving methotrexate 20 mg, eterocoxib 90 mg and methilprednisolone 6 mg once a day until June of 2015. A co-occurring disease of chronic bronchitis with exacerbations 3–4 times per year exists. On 3.06.2015 his DAS 28 (Disease Activity Score) was 6.2 and on 12.07.2015 – 6.4. The patient has unfavourable prognosis factors (evidence level D): rheumatoid factor, anti-CCP, high disease activity (DAS28 > 5.1) and has not been responsive to treatment (DAS 28 > 3.2) with synthetic disease-modifying antirheumatic drugs (sDMARDs). Treatment with sulfasalazine and leflunomide has not had therapeutic effect. That is sufficient to start therapy with 1. line biological disease-modifying antirheumatic drugs (DMARDs) (D. Andersone 2011). The decision to treat the patient with interleukin 6 (IL-6) inhibitor tocilizumab (TCZ) is made because of co-occurring disease chronic bronchitis. A study on complications shows that TCZ has had less lung complications when compared with other DMARDs (Curtis JR 2015). Drug side effects concerning the respiratory tract are 4% in TCZ, while Infliximab has up to 10%, Adalimumab – 17%/8%, Etanercept 28–39%, Abatacept – 5.8% of studied cases (Product Information). A study ''Role of IL-6 in asthma and other inflammatory pulmonary diseases'' (M. Rincon 2012) shows that Il-6 is connected with the pathogenesis of pulmonary diseases and TCZ is a perspective treatment method. This means that for a patient with chronic bronchitis TCZ is the drug of choice.

Conclusions. In patients with RA and chronic bronchitis who are not responsive to sDMARDs the biological DMARD of choice is TCZ because it has less possibility of causing further complications concerning the respiratory system.

Summary. For a patient with seropositive RA with chronic bronchitis and non effective treatment with sDMARD there is need to move on to treatment with biological DMARDs. TCZ was chosen because of co-occurring disease chronic bronchitis.

THROMBOTIC MICROANGIOPATHY –
THE CAUSE OF ACUTE KIDNEY INJURY

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Keywords. Thrombotic microangiopathy, thrombocytopenia, acute kidney injury.

Introduction. The thrombotic microangiopathy (TMA) syndromes are extraordinaly diverse, however they are united by common, defining clinical and pathological features. TMA is systemic small blood vessel endothelial damage. The clinical features include microangiopathic hemolytic anemia, thrombocytopenia, and organ injury [*George*, 2014].

Case report description. A 78-year-old female was admitted due to severe weakness, bloody diarrhea, nausea, vomiting, pallor and icterus. Following changes were found: erythrocyte count $3x10^{12}$/l, hemoglobin 93 g/l, reticulocytes 4%, platlet count $145x10^9$/l which in two days decreased to $79x10^9$/l, LDH 5122 U/L, creatinine 294 μmol/l, urea 36.4 mmol/l, unconjugated bilirubin 48 μmol/l, conjugated bilirubin 12 μmol/l, C-reactive protein (CRP) 201.6 mg/l, antothrombin III level 62.3%, fibrinogen 1.3 g/l, APTL 25.3 seconds, C3 0.51 g/l, C4 0.08 g/l. Urine sediment was erythrocyte positive, proteinuria was 2.11 g/l. Diagnosis of TMA, hemolytic anemia, thrombocytopenia, acute kidney injury (AKI) with oliguria (< 500 ml/24h) on chronic kidney disease, was made. Prednisolone 35 mg 1 time per day orally was given, 2 L plasma exchange 5 times, erythrocyte transfusions, hemodiafiltration (HDF) were performed. After treatment platelet count was $237x10^9$/l, hemolytic anemia – still present, LDH improved to 317 U/l, unconjugated bilirubin 5 μmol/l, conjugated bilirubin 4 μmol/l, CRP 4.1 mg/l, coagulation parametrs were in reference limits. Creatinine 245 μmol/l and urea level 14.7 mmol/l were elevated. Diuresis reached 3 liters, no more HDF needed. Patient was discharged without complaints, at satisfactory condition. Patient needs to control arterial hypertension and receive glucocorticoids 25 mg once per day. Kidney function tests and blood tests accomplished in 3 months remained within normal range.

Since 2013, 4 episodes with similar clinical presentation, AKI and indications for dialysis were present. Also the diagnosis of autoimmune hemolytic anemia is present since 2013 so the patient receives daily glucocorticoids.

Conclusions. The presentation of TMA episode is abrupt and severe. The etiology of TMA and underlying disorder in this case are not found. Plasma exchange together with supportive and symptomatic treatment provided very good short-term result.

Summary. A 78-year-old woman was admitted for severe weakness, bloody diarrhea, nausea, vomiting, pallor and icterus. She presented with anemia, thrombocytopenia, AKI. The primary cause of AKI was TMA. Because of sustained oliguria, HDF was initiated. Symptomatic treatment was performed. The remission of TMA was induced.

IBRUTINIB – INDUCED PYODERMA GANGRENOSUM

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Keywords. Pyoderma gangrenosum, ibrutinib, chronic lymphocytic leukemia.

Introduction. Pyoderma gangrenosum (PG) is a rare non-infectious neutrophilic skin disease. The lesions start as pustules, rapidly evolving to painful ulcers with undermined violaceous borders. More than 50% of patients with PG have an associated systemic disease, particularly: inflammatory bowel disease, arthropathies and myeloid leukemias. Some rare cases of drug-induced PG associated with tyrosine kinase inhibitors (TKI), such as sunitinib and imatinib, in the course of leukemia treatment, have been reported. However, a Bruton TKI – ibrutinib, used in treatment of chronic lymphocytic leukemia (CLL) – has not yet been described in connection with PG. The known side effects of ibrutinib are: fatigue, neutropenia, nausea and vomiting.

Case report description. A 64-year-old male with anamnesis of CLL, corticosteroid-induced diabetes mellitus and atrial fibrillation. The patient presents with multiple painful ulcers on the skin of abdomen, buttocks, upper and lower extremities; which appeared two months ago and were resistant to topical treatment with protopic, argosulfan, octenicept, bactigras. The ulcers were necrotic, covered with fibrinopurulent tissue, of diameter 3–4 cm. A biopsy of a lesion revealed lymphocyte and neutrophil infiltration and PG was clinically diagnosed. After exclusion of other possible causes of PG, we reviewed patient's medications. The fact that the patient has been treated with ibrutinib for CLL for the past four months and that the lesions appeared shortly after initiation of the therapy, raised our suspicion of ibrutinib-induced PG. A haematology consultant confirmed the possible relation between ibrutinib and PG and the drug was withdrawn. Treatment with prednisone and cyclosporine was started, resulting in significant wound healing.

Conclusion. Impaired phagocytosis by neutrophils is associated with ibrutinib and is involved in pathogenesis of PG. Therefore, we suggest that PG is a possible side effect of the drug.

Summary. A 64-year-old patient with CLL treated with ibrutinib presented with multiple necrotic skin lesions. Clinical diagnosis of PG was based on the biopsy of a lesion and exclusion of other possible causes. Reviewing the patient's medications, a suspicion of ibrutinib-induced PG was raised. This later was supported by a haematologist, who recommended cessation of the drug. Treatment with prednisone and cyclosporine was introduced, showing improvement in wound healing. Ibrutinib is used in treatment of CLL. Action of ibrutinib and pathogenesis of PG are associated with inhibition of neutrophil function. Ibrutinib-induced PG has not been previously reported in the literature.

PROSPECTIVE STUDY OF VOICE THERAPY EFFECTIVENESS IN PATIENTS WITH DYSPHONIA: CASE SERIES

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Keywords. Dysphonia, voice therapy, speech therapist.

Introduction. *Dysphonia* term is used for voice disorder characterized by altered vocal quality, pitch, loudness, or vocal effort that impairs communication or reduces voice-related quality of life (QOL). Depending on primary diagnosis patients have recommendations for further therapy: operation, passive physiotherapy or voice therapy (guided by speech therapist).

Description. The aim of this study was to evaluate the effectiveness of voice therapy in patients, who used only this method in P. Stradins Clinical University Hospital in year 2015.

5 patients with different diagnosis were observed. Objective and subjective evaluations of patients ware made before and after therapy. Patients' voice was analysed by *Inventis* program *Daisy*: jitter (Jt), shimmer (Sh), fundamental frequency (F0), harmonics to noise ratio (HNR), spectrography, phonetogram. Maximum phonation time (MPT) was measured and patients were asked to fill voice handicap index (VHI) questionnaire. Afterwards dysphonia severity index (DSI) was calculated. Additionally, voice was evaluated with GRBAS (grade, roughness, breathiness, asthenia, strain) score by patient and researcher.

In all patients Jt, Sh and F0, HNR parameters has improved after therapy. In 2 patients HNR has reached normal findings (> 7.4 dB). 2 patients had normal MPT before therapy, however, one of them managed to improve it (15.17 sec to 15.52 sec). One patient has improved it significantly; from abnormal level (9.04 sec) to normal (21.59 sec). DSI value for normal voice equals +5, for severe dysphonia -5, but it can be more negative in serious cases. 4 of 5 patients had improvement of DSI after the therapy. The best result was from -10.79 to -4.0 in patient with hypofunctional dysphonia. In 4 cases VHI score was raised by self-assessment, major point difference was 37 (VHI score can variate 0 to 116). Value of GRBAS score was mostly different in view of patient and researcher.

Conclusions. This case study confirms that voice therapy could be effective also as a single therapeutic method in patients with dysphonia. Despite small number of patients objective and subjective values demonstrate improvement in voice disorders. It is reasonable to include voice therapy in the therapeutic strategy. As patients are actively involved in the process of treatment, collaboration and motivation is essential.

Summary. Dysphonia is voice disorder that can reduce QOL. Patients can choose voice therapy as one of the treatment method but they have to be aware that active collaboration is essential. This case study confirms that voice therapy can improve patients' objective and subjective values also as a single therapeutic method.

CLINICAL CASE PRESENTATION PRIMARY SJÖGREN'S SYNDROME PRESENTING AS CHRONIC POLYARTHRITIS

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Keywords. Sjögren's syndrome, chronic polyarthritis, joints deformation.

Introduction. Sjögren's syndrome (SS) is chronic systemic autoimmune disorder characterized by diminished exocrine gland function with resultant dryness of eyes and mouth. It may be primary condition (primary SS), or associated with other rheumatic diseases (secondary SS). Females are affected more frequently than males. SS can affect multiple organs and organ system (musculoskeletal, pulmonary, nerve system). Musculoskeletal systems symptoms can include polyarthralgias, morning stiffness, inflammatory synovitis and chronic polyarthritis.

Case report description. A 55 years old Caucasian female complaining of persistent pain in proximal interphalangeal (PIP) and distal interphalangeal (DIP) joints of her both hands which appeared three years before. Patient several times attended rheumatologists and osteoarthritis was treated with NSAIDs. Because of progressive PIP and DIP joints inflammation and deformations diagnosis was changed to psoriatic arthritis. Treatment was changed to Sulfasalazine. Oral and ocular symptoms was absent.

Her medical history included primary arterial hypertension and hypercholesterolemia, trigeminal neuralgia.

On the physical examination were seen both hands PIP and DIP joints deformations and swelling. The mucous membranes of oropharynx and eyes were not dry.

Her laboratory evaluation included a mild thrombocytopenia ($133x10^9$/L), leucopenia and neutropenia; comprehensive metabolic profile; urine culture *Klebsiella pneumoniae* (10^4 CFU/mL) and *Escherichia coli* (10^4 CFU/mL). Serological tests were positive for antinuclear (ANA) IgG antibodies (10.4), Anti-SS A/Ro antibodies, Anti-SS B/La antibodies and RF.

Palmar X-ray shown erosion in DIP joints of booth hands. The joints ultrasonography (USG) shown synovitis in metacarpophalangeal and DIP joints of both hands. USG of parotid gland revealed bilateral hyperechogenic, non-homorganic structure with cystic changes. DEXA -2.8 (osteoporosis).

Medical treatment include Ciprofloxacin 500 mg BID, Medrol 2 mg QD, Methotrexate 7.5 mg QW with Folic acid 5 mg supplementation, Plaquenil 200 mg QD and Vigantol D_3. After three months of treatment joints inflammation significant reduced.

Conclusion. Sjögren's syndrome should be considered among the cause of chronic polyarthritis and not always erosions of DIP joints is caused by osteoarthritis.

Summary. Middle age female who present with persistent pain in PIP and DIP joints as a first clinical symptoms of SS. Trigeminal neuralgia often was diagnosed in SS. The serological results shown positive RF, ANA, Anti-SS A/Ro and Anti-SS b/La antibodies. USG changes in parotid gland is typical for SS. After starting of the treatment, pain in joints reduced.

16 March 2016

SEVERE POLYTRAUMA DUE TO CHILD PHYSICAL ABUSE

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Keywords. Physical child abuse, bone fractures, intracranial injury.

Introduction. Physical child abuse is one of the main reasons of child mortality globally (UNICEF 2014). In US, children younger than 1 year accounted for 46.5% of abuse fatalities (NCANDS 2013) due to their dependency, small body size, and inability to defend themselves. Children below age of 3 with intracranial injury and at least 3 of "red-flag" signs (head and / or neck bruising, rib, skull or long bone fractures, seizures, apnea and retinal haemorrhage) yielded to abuse head trauma probability from 85 to 100%. (Maguire et al, 2015).

Case report. A 3 month-old boy was brought to family doctor due to regular follow-up. Doctor noticed multiple bruisings, limited range of motion in limbs and forwarded mother to regional hospital, but she didn't arrive. Next day child was delivered to regional hospital by police. Both forearm fractures and left leg fractures were diagnosed and the child was transferred to University Children's Hospital. Patient's general condition was satisfactory. Child was calm, fontanelles and head sutures were wide, slightly bulging. Both elbows, knees and lower legs were swollen with reduced range of motion. Temperature was normal. No breathing or hemodynamic disturbances were seen. Old subcutaneous hematomas were spotted in left frontal and right parietal region, along with multiple skin abrasions and hematomas on neck, which point to probable suffocation. No changes in fundus oculi were detected. Radiographic examination showed multiple bone fractures in right forearm, both upper arms, 2 ribs, both upper and lower legs, with different time of occurence, up to approx 3 weeks. MRI demonstrated wide subdural hygroma covering both hemispheres, and subacute intracerebral hemorrhage (7–18 days old) in left temporal lobe. Urgent external drainage of subarachnoid space was performed, rust-like liquor excreted. Intracerebral hemorrhage was treated conservatively. Postoperative period was adequate. Control MRI showed significant improvement after decompression. Three weeks later external drainage was replaced by ventriculoperitoneal shunt. Surgical treatment for bone fractures was not indicated due to small age and remodelling capacities. Ambulatory follow-up and rehabilitation was performed.

Conclusions. Physical child abuse is hard to identify and treat, despite multidisciplinary approach and international health care experience. Such injuries cause short and long-term consequences, requiring prolonged treatment of patient along with necessity for rehabilitation and ambulatory follow-up.

Summary. Clinical case reflects complicated polytrauma due to physical infant abuse. Patient presented with multiple signs of violent maltreatment- skin lesions, multiple fractures of ribs, both arm and leg bones, subarachnoid and intracerebral hemorrhages. After successful combined surgical and conservative treatment, patient was discharged, to continue recovery on an ambulatory basis.

CHILD WITH STAPHYLOCOCCAL TOXIC SHOCK SYNDROME

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Keywords. Toxic shock syndrome, children, *Staphylococcus aureus*.

Introduction. Staphylococcal toxic shock syndrome (TSS) was first described in children in 1978. It is a rare life-threatening illness due to infection or colonization with toxin-producing strains of *Staphylococcus aureus*, often resulting in multi-organ failure. In late 1980's tampon use was associated with the development of TSS. However, non-menstrual TSS can arise after disruption of skin or mucosa. Clinical manifestations include fever, rash, headache, vomiting and diarrhoea, severe myalgia, lethargy and confusion. The case definition of TSS involves the isolation of *Staphylococcus aureus*, hypotension, multisystem involvement and the presence of clinical and laboratory criteria. Treatment includes active fluid resuscitation, early use of vasopressors and an appropriate antimicrobial therapy. Clindamycin has been demonstrated to reduce the toxin synthesis.

Case report description. A patient, an 11-year-old boy with history of corrected congenital heart disease was transported to the ICU of Children's university hospital of Riga from a regional hospital on the 1st day of illness in June 2015. He had have acute onset of antipyretics resistant fever, vomiting, diarrhoea, maculopapular rash all over his body and severe myalgia. 4 days before the onset of illness he had been bitten by a not vaccinated dog and signs of wound secondary infection occurred. On examination the child had exanthema and enanthema, strawberry tongue, conjunctival hyperaemia and disorientation. He had a respiratory rate of 38 breaths/min, heart rate of 136 bpm, blood pressure 100/53 mmHg, and capillary refill time 2s. His leukocyte count was $16.9x\ 10^3/\mu L$, thrombocyte count was $7x\ 10^3/\mu L$. Analyses of biochemistry showed elevated levels of liver enzymes (ALAT 125.02 U/L, ASAT 155.28 U/L), hyperbilirubinemia 47.80 mkmol/L and azotaemia (urea 11.16 mmol/L). His C-reactive protein was 239.46 mg/L, creatine kinase level was 1855 U/L. Blood culture was *methicillin-sensitive Staphylococcus aureus* positive. The patient was treated with intravenous ceftriaxone, oxacillin, clindamycin, as well as with intravenous transfusion of platelets and plasma.

Conclusions. This clinical case represents non-menstrual TSS after wound infection and demonstrates a rapid progression of disease to multi-organ failure. Early diagnosis and administration of appropriative treatment are important to prevent mortality due to staphylococcal TSS.

Summary. We have described the patient, representing a classic clinical course of non-menstrual staphylococcal TSS. It is important for clinicians to have a high suspicion for staphylococcal TSS when a paediatric patient with wound infection develops fever with rush, gastrointestinal or neurological symptoms and concern for sepsis.

LITHUANIAN PARALYMPIC GOALBALL TEAM'S
PHYSICAL FITNESS ASSESSMENT

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Keywords. Goalball, goalball players, physical fitness assessment.

Introduction. Blind hockey was created in 1946 by H. Lorenzen and S. Reindle. It is a team game designed for athletes with visual impairments. Blind people participation in sport or recreational activities has a great influence on physical features development. Blind hockey is an educational capacity in the physical, cognitive, emotional, social, ethical and environmental dimensions. First of all, this sport has been analyzed in the psychological blind hockey players preparation, rather than physical characteristics.

Aim. To evaluate the Lithuanian Paralympic goalball team's physical fitness.

Materials and methods. Nine male goalball players aged from 23 to 45 years participated in this research. Most of them has a visual disability. All subjects have performed abdominal muscle, spinal muscular, lateral trunk muscle endurances tests once. All results were compared using these methods: average, minimum and maximum values, relations between abdominal and back, lateral trunk and back, left side abdominal and right side abdominal muscles endurances. Rufje test was performed for cardiovascular and respiratory systems endurances. The results were calculated using Rufje index (Petkus, Raslanas, 2007). For the explosive strenght evaluation was performed long jump test.

Results. Straight abdominal muscle endurance average is 84 seconds. The ranges are from 24 seconds to 1 minute and 50 seconds. Spinal muscular endurance average is 1 minute and 40 seconds. The ranges are from 54 seconds to 2 minutes and 30 seconds. The left side abdominal muscle endurance average is 90 seconds. The ranges are from 39 seconds to 1 minute and 26 seconds. The right side abdominal muscle endurance average is 86 seconds. The ranges are from 37 seconds to 1 minute 30 seconds. Straight abdominal and back muscles endurances proportion is 0.6 (the ratio should be > 1.0). The left side abdominal and back muscles endurances proportion is 0.65, the right side and back – 0.62 (the ratio should be < 0.75). The right side and the left side abdominal muscles endurances proportion is 1.5 (the ratio should be 1.0). Rufje test results showed that two players got into the range "very bad", three persons –"poorly", four players –"satisfactory". The average of long jump test is 2 meters and 27 centimeters. All participants in this test reached normal range.

Conclusions. Goalball players have imbalance between abdominal and back muscles endurances. Statistically, no significant difference between left and right sides abdominal muscles endurances wasn't observed. It is higher than it should be (1.5 > 1.0). Rufje index showed that players don't reached normal rates in cardiovascular and respiratory systems endurance. Either, the explosive strength is corresponding normal rates.

ANAPLASTIC GANGLIOGLIOMA
OF THE FRONTAL LOBE: CASE REPORT

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Keywords. Anaplastic ganglioglioma, surgical treatment, mixed glioneuronal tumour

Introduction. Gangliogliomas are a rare mixed glial cells and ganglion cells neoplasms, which are representing 0.4%-0.9% of all CNS tumours. Most common localisation is the temporal lobe (more than 80%). Gangliogliomas are classified as WHO grade I or grade II, but approximately 5% may present with a malignant glial component and are classified as WHO Grade III (Anaplastic ganglioglioma). These neoplasms are more common in children and young adults between the age of 10 to 30 years and anaplastic tumours are usually representing after radiotherapy for a ganglioglioma WHO Grade I or II.

Case report description. 51 years old men was admitted to Ventspils hospital after sudden episode of loss of consciousness with no other active complaints. MRI head scan revealed an intraaxial space occupying lesion with surrounding oedema in the right frontal lobe – cerebritis or immature brain abscess. Patient was transferred to Neurosurgery clinic in Pauls Stradins Clinical University Hospital for additional workup and treatment.

On presentation to Neurosurgery clinic the patient was without any focal neurological deficit. Lumbar puncture was negative for infection. The patient had an updated MRI head scan which suggested a high probability of a low grade glial tumour.

The patient underwent an operation – gross total resection of the tumour.

The conclusion of histopathological analysis was anaplastic ganglioglioma (WHO grade III).

After surgery the patient remained neurologically intact and he was discharged home 7 days after surgery. Neurooncology multi-disciplinary meeting advised to continue treatment with adjuvant radiotherapy for tumour location.

Conclusions. Non-specific symptoms may be initial symptoms of a serious disease. Comprehensive assessment of patient is essential for successful diagnosis and treatment. This case represents a very rare tumour which presented in atypical patient.

Summary. Anaplastic gangliogliomas are rare CNS tumours, which usually present in children and young adults after radiotherapy for benign gagliogliomas. 51 year old, previously fit and well men presented with sudden episode of loss of consciousness. Further workup suggested intrinsic brain tumour. Gross total resection of tumour was performed in order to reduce tumour size and to establish diagnosis. The conclusion of histopathological analysis was anaplastic ganglioglioma (WHO Grade III). This case represents a very rare tumour which presented in atypical patient.

CATARACT SURGERY WITH TECNIS® MULTIFOCAL INTRAOCULAR LENS IMPLANTATION: EXPERIENCE IN PSCUH

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Keywords. Multifocal intraocular lens, near vision, contrast sensitivity, spectacle independence

Introduction. Multifocal IOLs were developed to provide improvement on visual function for near and distance vision and to free patients from spectacles. Many studies showed that the patients with multifocal IOLs achieved a better near vision and less spectacle dependency than those with monofocal IOLs. Spectacle-independence rates of multifocal IOLs vary from 48% to 90%. Complications after this surgery are uncommon, nevertheless loss of contrast and dysphotopsias have been recognised.

Case report description. Both patients had a history of bilateral senile cataract and had undergone cataract surgery in PSCUH Ophthalmology clinic. Preoperatively, no significant underlying eye disorders were found. On a follow-up evaluation we assessed uncorrected distance visual acuity (UDVA), best-corrected distance v.a. (BCDVA), uncorrected near v.a. (UNVA), best-corrected near v.a. (BCNVA), contrast sensitivity (CS), spectacle independence, intraocular pressure (IOP) and side effects. Eye condition was evaluated by slit-lamp microscopy and OCT examination.

Case 1. An 84 y.o. male, examined 2.5 and 4 months after surgery for the right eye and the left eye, respectively. Visual acuity examination: UDVA 0.5 for both eyes, BCDVA OD 0.9 and OS 0.9/1.0; UNVA OD 0.6 and OS 0.3, BCNVA OD 0.8 and OS 0.5. CS, measured with the Pelli-Robson chart, was OD 2.25 and OS 1.65 log units. IOP was OD 9.7 and OS 10.3 mmHg. Patient reported to be spectacle-independent. Dysphotopsias were present. There were no surgery complications.

Case 2. A 78 y.o. female, examined 2 and 4 months after surgery for the right eye and the left eye, respectively. UDVA was 0.7 for both eyes, BCDVA was OD 0.9 and OS 1.0; UNVA was 0.4 for both eyes, and BCNVA was 0.9 for both eyes. CS was 1.65 log units for both eyes. IOP was OD 12 and OS 13 mmHg. Dysphotopsias were also present, and the patient needed spectacles to perform near tasks. No surgery complications were detected.

Conclusions. Both patients achieved excellent corrected visual performance, and normal CS for their age group. Spectacle independency was achieved in 1 case out of 2. There were no surgery complications so far.

Summary. To obtain the main purpose, patients with no underlying eye disease must be selected. According to studies, spectacle independence is reached in average in 75% of cases, but near visual performance is better when compared to monofocal IOLs. Due to the lens physical properties, dysphotopsias are inevitable. Implantation of this kind of IOLs must be considered individually in each case after expected effects are discussed with the patient.

LEFT ATRIAL FLUTTER AFTER RADIOFREQUENCY ABLATION OF ATRIAL FIBRILLATION

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Keywords. Atrial flutter; atrial fibrillation; electroanatomic mapping; radiofrequency ablation.

Introduction. Left atrial flutter is a supraventricular tachyarrhythmia which originates from the left atrium and is recognized to be due to macroreentrant circuit around the anatomic barriers such as the mitral annulus or pulmonary veins. Regular atrial tachycardias or flutter can be a complication of radiofrequency ablation of atrial fibrillation – pulmonary vein isolation. Electroanatomic mapping system is used to confirm the mechanism and visualize the site of origin of arrhythmia. For macroreentrant arrhythmia localised around the mitral annulus linear lesion between the left inferior pulmonary vein and the mitral annulus ("mitral isthmus") is performed.

Case report description. A 41-year-old woman hospitalized to the department of cardiology due to tachycardia. She complained of fatigue for several days and tachycardia of 120 bpm was registered. Radiofrequency ablation of atrial filbrillation – pulmonary vein isolation – was performed in 2014 due to the reccurent atrial fibrillation episodes. Atrial flutter with a rapid ventricular response was identified in the ECG. Left atrial flutter which can be associated with previous radiofrequency ablation was suspected and it was decided to perform electrophysiologic study and radiofrequency ablation. In order to confirm the site of origin and size of macroreentrant tachycardia CARTO electroanatomic mapping system was used. Activation map which confirmed mitral annular flutter was constructed. Linear lesion in "mitral isthmus" was performed leading to a normal sinus rhythm after the procedure.

Conclusion. Left atrial fibrillation is a possible complication of radiofrequency ablation of atrial fibrillation – pulmonary vein isolation. To destroy the arrhythmogenic tissue radiofrequency ablation of the reentrant area is performed and isoelectric line in the "mitral isthmus" is formed leading to a normal sinus rhythm after the procedure. Because of atypical localization detailed visualisation using electroanatomic mapping system is required.

Summary. Left atrial flutter can be a complication of radiofrequency ablation of atrial fibrillation. The mechanism is confirmed using mapping system and ablation is performed. A case of 41-year-old woman is reported. The patient with anamnesis of radiofrequency ablation of atrial filbrillation was hospitalized due to tachycardia. Activation map was constructed which confirmed mitral annular flutter. When linear lesion between the left inferior pulmonary vein and the mitral annulus was performed a normal sinus rhythm was restored.

MULTIFOCAL PLASMABLASTIC LYMPHOMA ASSOCIATED WITH HIV

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Keywords. Plasmablastic lymphoma (PBL), B cell lymphoma, Extranodal lymphoma, HIV

Introduction. PBL is a rare aggressive non – Hodgkin lymphoma (NHL) associated with immunosuppression. It has a predilection for oral cavity of HIV patients but may arise in other extranodal sites (H. Stein, N. L. Harris, E. Campo, 2008).

Case report. A 33 year old HIV positive white female, an active intravenous drug user, suffering from chronic hepatitis C, presented to gynecology clinic after 4 years of monitoring for HIV complaining of gradual distention and pain in lower abdomen.

Computed tomography scan of the abdomen and pelvis showed enlarged ovaries (12 and 8 cm) with solid and cystic structure and ascites. Total hysterectomy with bilateral salpingoophorectomy and deomentization was performed in oncology clinic.

3 months later patient presented with dyspepsia. Esophagogastroduodenoscopy with biopsy was performed.

Stomach mucosal, submucosal and ovarial histopathology was consistent with PBL showing diffuse infiltration of large atypical cells with abundant cytoplasm, round – ovoid nuclei, multiple binuclear cells and cells with prominent nucleoli. The neoplastic cells were positive for LCA, CD138, kappa, CD56 (vague focal cytoplasmic reaction) and negative for CD79a, CD20, CD3, CD4, CD8, CD7, CD117, synaphophysin, CD30, CD99, CD34, ALK1, CKAE1/AE3, S100, HMB45, calretinin, cyclinD1. Ki67 up to 70%.

Conclusion. Immunohistochemical investigation of pathological tissue in case of primary extranodal lymphoma is vital to specify the lymphoma subtype.

Summary. PBL is a very rare pathology and extra-oral localization and makes the diagnosis even more challenging. In analyzed case extra oral PBL in HIV positive patient involving stomach and both ovaries was diagnosed with immunophenotping studies gradually excluding all differential diagnoses which include other lymphoid malignancies, epithelial and neuroendocrine tumors.

SYSTEMIC MASTOCYTOSIS WITH MULTIORGAN INVOLVEMENT

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Keywords. Systemic mastocytosis. Bone marrow. Hepatosplenomegaly.

Introduction. Mastocytosis is a clonal neoplastic proliferation of mast cells that accumulate in one or more organ systems. The direct etiology is unknown. Incidence is 1 in 150000 (Lim Kinn et al., 2009). Cutaneous subtype (CM) is a skin infiltration by mast cells and is most common in children. Systemic mastocytosis (SM) is generally diagnosed after the 2nd decade of life and is characterized by involvement of at least one extracutaneous site with or without skin lesions (S. H. Swerdlow et al., 2008).

Clinical manifestation varies depending on site of involvement e.g. bone pain, hepatosplenomegaly, lymphadenopathy, headaches, nausea, vomiting, diarrhea, pancytopenia (Di Bacco R. S., 1982; Akin C, Metcalfe D. D., 2004).

Case report. A 60-year-old white male presented to Riga East Clinical University Hospital hematology department with increasing dyspepsia and headaches. Splenomegaly (17.3 cm) and enlarged abdominal lymph nodes (LN) – 1.5–2.5 cm on ultrasonography and leukocytosis (WBC 15.9×10^9/l) on full blood count were found. Laparoscopic parapancreatic biopsy of abdominal LN and trephine biopsy were performed.

LN architecture was completely disrupted by diffuse infiltration of atypical small to medium sized round, oval and spindle shaped cells with round hyperchromatic nuclei and eosinophilic cytoplasm. Immunohistochemically atypical cells were positive for LCA, CD117, and negative for CD20, CD30, CD23, CD1a, S100, CD4, CD68.

Bone marrow biopsy revealed large focal mast cell aggregates densely packed along the bony trabecules and accompanied by fibrosis, with immunohistochemical profile identical to that of atypical cells infiltrating the LN.

Conclusion. In cases of SM without cutaneous involvement immunohistochemical investigation of bone marrow and LN biopsies is vital for correct diagnosis due to otherwise unspecific presentation.

Summary. SM is a rare mast cell disorder with skin involvement in 80% of cases, generally diagnosed after age of 20. In presented case the patient is 60 years old with leukocytosis, splenomegaly, enlarged abdominal LN and no cutaneous manifestation. Diagnosis was established with immunohistochemical investigation of bone marrow biopsy.

A CASE OF PRIMARY LYMPHOBLASTIC LYMPHOMA
OF THE BONE IN A CHILD

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Keywords. Primary lymphoma of the bone, lymphoblastic lymphoma, pediatric oncology.

Introduction. Primary lymphoma of the bone (PLB) is a rare disease (3% of primary bone tumors and 1% of lymphomas); pediatric cases are even rarer. The clinic is nonspecific, it may present with multiple fractures, neurological symptoms due to spinal compression, joint and bone pain, palpable mass. Diffuse large B-cell lymphoma is the most common histological subtype; other variants are casuistic. There are only several cases of lymphoblastic PLB published; the exact diagnosis is important, since lymphoblastic PLB should be treated according to acute leukemia protocols with good prognosis.

Case report. 16 years old boy presented with a 4-month history of pain in legs, right elbow and shoulder and B-symptoms; subcutaneous nodules on back and cheek had appeared lately. The complaints intensified and new subcutaneous nodules appeared after admittance. Blood test showed increased LDH 1340 U/L and growing, other indices were normal. MRI revealed multiple lesions in both femurs and tibias, right humerus and pelvis (mostly left side). Aspirate and trephine biopsy of left iliac bone showed total infiltration by polymorphic medium-sized immature cells with B-precursor phenotype CD45weak, CD19+, CD79a+, CD20-, CD10weak, CD34-, TdT+, bcl2+, Ki67 up to 70%. Biopsy of the skin nodule revealed the same infiltrate. No blast population was found in the right iliac and in blood.

B-cell neoplasm with acute leukemia phenotype was diagnosed and BFM-ALL standard risk treatment commenced. MRD at day 15 was 2% with excellent radiological response; at day 33 MRD was < 10E-4. Two weeks later, while still on intensive chemotherapy, radiological relapse occurred in pelvic bones, undetectable by bilateral cytology, flow or histology. The patient was switched to BFM high-risk arm and is currently under treatment.

Conclusion. The case demonstrates that B-lymphoblastic PBL, besides being extremely rare, associates with diagnostic difficulties. Morphologically, tumor cells were larger and more pleomorphic than the majority of pediatric B-precursor cell leukemia's. The infiltrate was patchy, with a high risk of sampling artifact. Differential diagnosis of pediatric small blue round cell tumors in this setting is broad and includes Ewing sarcoma / PNET, neuroblastoma, osteosarcoma, other types of lymphoma (particularly Burkitt), rhabdomyosarcoma and other rare tumors. Thus, combined clinical, surgical, radiological and laboratory input was necessary in this case. Contrary to the literature data, however scarce, the patient did not respond well to therapy.

Summary. An extremely rare subvariant of rare tumor – lymphoblastic PLB – is reported. 16 years old boy presented with multiple bone lesions, patchy infiltration of bone marrow, skin metastases and normal blood counts. Morphologically, tumor was of small blue round cell type with convincing B-precursor phenotype. Pediatric regimen for acute lymphoid leukemia was administered with good initial response and very early relapse.

16 March 2016

THROMBOTIC THROMBOCYTOPENIC PURPURA.
CLINICAL CASE REPORT

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Keywords. Thrombotic thrombocytopenic purpura, thrombocytopenia, plasma exchange.

Introduction. Thrombotic thrombocytopenic purpura is a rare and life-threatening disease with mortality rate > 90% in the absence of appropriate treatment. Pathogenesis linked with von Willebrand factor cleaving protease ADAMTS13 deficiency that is either congenital or acquired. Clotting in small blood vessels results in end-organ damage (brain, heart, kidneys), and intravascular hemolysis.

Case report description. A 35 years old woman, with no significant past medical history, was admitted to Daugavpils Regional Hospital (DRH) with a stomachache, nausea, fatigue, foot rash. Her complaints developed within a week. Two weeks before symptoms onset had spent a week in Italy.

Normocytic anemia (RBC 3.23 mln, HGB 9.6 g/L) and thrombocytopenia (PLT 13 10x9/L) were detected. Upper endoscopy revealed multiple gastric petechiae. Signs of increased erythropoiesis were noted in sternal puncture. On the 6th day of hospitalization patient developed left-hand partial paresis, her verbal communication ceased. CT brain scan was performed with no acute abnormality found. Anemia and thrombocytopenia persisted, increased reticulocyte count, bilirubin, lactate dehydrogenase, D-dimer. Schistocytes were found on a peripheral smear, RBC and moderate proteinuria in the urine.

In DRH she received 2 platelet, 2 RBC and 16 fresh frozen plasma units' transfusions, pulse corticosteroids (CS). Due to shortness of breath, thoracic CT was performed, where cardiac dilation with pulmonary congestion and bilateral hydrothorax, ascites were found. As patient's condition remained stable but severe, she was transferred to Pauls Stradins Clinical University Hospital (PSCUH) intensive care unit for further treatment. She received 5 plasma exchanges (PEX) and oral CS. After this her overall condition improved, neurological deficiency disappeared, platelet count became normal (PLT 182). The patient was transferred back to DRH for observation. But three days later despite CS therapy PLT decreased to 30 without any complaints and clinical symptoms. She was readmitted to PSCUH, received 2 more PEX, CS infusions. After a week in a good condition with satisfactory laboratory data: normal PLT (229), light anemia (RBC 3.2, HGB 10.5) the patient was discharged from the hospital. No relapses occurred in the next 5 months.

Conclusion. Our case report presents a patient with an acute acquired idiopathic TTP. She had hemolytic anemia, thrombocytopenia, neurological, gastrointestinal and other end-organ damage symptoms: heart failure, abnormal urine analysis, rash. The therapy of choice is PEX with fresh frozen plasma and CS therapy that improve symptoms and prognosis.

Summary. The results of laboratory tests play a central role in TTP diagnosis that can be established in every hospital. ADAMTS13 activity detection is favorable for further prognosis. Inter-hospital collaboration facilitates patient care and treatment.

16 March 2016

BONE MARROW CRYPTOCOCCOSIS IN HIV PATIENT

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Keywords. Bone marrow (BM) cryptooccosis (CRC), disseminated CRC, CRC and HIV

Introduction. *Cryptococcus neoformans (CN)* is an encapsulated yeast-like fungus that causes predominantly neurological disease in immunocompromised individuals (Waters L, Nelson M, 2005). Other principal sites of *CN* infection are lungs, skin and disseminated disease, which is defined as the recovery of *CN* from blood, sterile body fluids or tissues other than pulmonary tissue (Taneja J, et al., 2008). Disseminated disease is uncommon and almost always occurs in HIV-infected patients (Baligh Ramzi Yehia, et al., 2009). BM involvement has been rarely reported (Ashwini B. R, et al., 2014).

Description of the case. A 28-years-old female was admitted to Latvian Infectology center with dyspnea, cough, febrile temperature, headache and pain in oral cavity involving esophageal site.

HIV infection was then primary diagnosed in patient by positive serology for HIV1 antigen (Ag); CD4 count was 15cells/mm^3, CD8 – 312cells/mm^3. Routine blood tests showed mild leukopenia, moderate anemia and mild thrombocytopenia. Blood and liquor serology was positive for cryptococcal (CR) AG. Chest x-ray showed hilar lymphadenopathy (LD) and features of bilateral interstitial pneumonia. Computer tomography scan showed bilateral hilar LD, mild mediastinal and periaortal LD, splenomegaly (SM) (16 x 8.6 cm), pericardial effusion.

Due to pancytopenia, diffuse LD and SM BM biopsy was indicated to exclude hematological malignancy (HM). BM biopsy showed a hypercellular marrow – 85%, myeloid / erythroid ratio of 1:1, myeloid linage with reduced maturation, erythroid linage hyperplasia with disrupted architecture, without atypia. Megakaryocytes were normo- and hyperlobulated, different in size and organized in diffuse multiple clusters. Multiple focal necrosis with macrophage infiltration and with clusters of round capsulated yeast forms were detected, which were Periodic Acid Shiff positive. Diffuse mild reticular fibrosis was present.

Patient was investigated for other HIV opportunistic infections. Patients' final diagnosis was HIV1 infection at stage C3; bilateral pneumocystis pneumonia; disseminated CRC and CR meningitis.

Conclusion. BM CRC can mimic HM. BM biopsy is a useful tool for the diagnosis of disseminated fungal infection in immunocompromised patients with pancytopenia, LD and SM.

Summary. Patient with primary diagnosed HIV infection and clinical symptoms characteristic of HM was diagnosed with BM CRC after thorough investigation. Disseminated CRC with BM involvement is a rare condition; its' clinical presentation can mimic HM, so in that particular case BM biopsy was crucial to establish the diagnosis and choose optimal theraphy.

16 March 2016

SEPTIC SHOCK IN INFANT WITH MENINGOCOCCEMIA WITHOUT CLINICAL EVIDENCE OF MENINGITIS

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Keywords. Meningococcal sepsis, septic shock, purpura fulminans.

Introduction. The prevalence of serum bactericidal antibody is the lowest in infants 6 to 24 months of age, and this window susceptibility correlates with the peak incidence of meningococcal disease. Meningococcal sepsis occurs in 5% to 10% of patients and is characterized by fever and petechial or purpuric rash which can progress to fulminant meningococcal septicemia (purpura fulminans) when patients present with severe and persistent shock with little or no signs of meningitis.

Case report description. A patient, 1 year 5 months old boy with no immunisation, presented at Emergency Department of Children's Clinical University Hospital with rapid onset of spiking body temperature up to 38.5–40.0 °C. Patient was admitted to ICU due to progressing symptoms of septic shock: dyspnoe, microcirculation and perfusion disorders, petechial to haemorrhagic rush, oliguria, metabolic acidosis, drowsiness, BP 70/32 mmHg, HR 188, PLT 64 *10^3/uL, HGB 8.7 g/dL, CRP 199 mg/L. Blood culture results revealed presence of *N. meningitidis*. Diffuse skin haemorrhagic lesions were still progressing. Septic shock management included an aggressive systematic approach to resuscitation.

After initial septic shock management general condition remained severe. There were significant signs of MODS, skin and soft tissue necrosis in distal phalanges both upper and lower extremities and suspect gastrointestinal tract (GIT) perforation. Therefore, urgent laparatomy and laparascopy were performed which resulted in ileostoma. Later on an amputation of 18 distal phalanges on both upper and lower extremities was performed.

Conclusion. The shock state is frequently dominant in the manifestations of meningo-coccal disease. There is a critical need to establish diagnosis as early as possible, since there is only narrow time window between progression from initial symptoms to death. An intensive search for petechiae and ecchymoses is determinative. Goal-directed therapy for septic shock includes an aggressive systematic approach to resuscitation targeted to improvements in physiologic indicators of perfusion and vital organ function.

Summary. The case report demonstrates a 1 year and 5 months old boy with septic shock due to progressive fulminant meningococcal septicemia (purpura fulminans). After initial intensive shock management patient still remained with MODS and because of soft tissue necrosis an amputation of 18 distal phalanges on both upper and lower extremities was performed. Furthermore, due to MODS microcirculatory disturbances in GIT occurred. Consequently, urgent laparatomy and laparascopy were also performed.

MECKEL'S DIVERTICULUM

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Keywords. Meckel's diverticulum, obstruction and adhesion.

Introduction. In the 7th week of embryonic life, the Vitelline duct running from the terminal ileum to the umbilicus and yolk sac should disappear; failing to do so, results in Meckel's diverticulum (MD). This congenital malformation of gastrointestinal tract occurs in 2–4% of the population and can cause several complications: bleeding, obstruction, diverticulitis, rarely tumours and spontaneous perforations. Younger patients usually present symptoms of bleeding however in adults, obstruction and diverticulitis are most common.

Case report. A 44-year-old male presented with sharp epigastric pain, nausea and vomiting. During physical examination the abdomen was soft and without peritoneal sign. Abdominal X-ray showed small bowel distention and the patient was treated conservatively for partial ileus. Treatment was unsuccessful and CT scan showed changes consistent with mesenteric small bowel volvulus.

During laparotomy an inflamed MD was discovered 30 cm from the Ileocaecal valve, and the cause of the obstruction was determined to be strangulation. The small intestine was examined for viability. Merkel diverticulum was excised and the small intestines were decompressed.

Two days after the operation, the patient was still deteriorating and a second laparotomy was performed. Adhesions were found between the loops of the small intestines at the site of the original MD. The adhesions were surgically removed and the whole of the small intestine from the ligament of Treitz was re-inspected and again decompressed. There were no grounds for resection of the small intestines, after noting adequate peristalsis and mesenteric pulse; the abdomen was closed with a drain.

Conclusion. This case illustrates the common presentation of symptomatic MD and the potential seriousness of MD often thought of as benign and common condition. The case highlights two things. First, the difficulties in combining clinical presentation and radiological anomalies. Second the difficulties of choosing either conservative or surgical treatment. Conservative treatment may lead to delayed surgical treatment and possibly causing irreversible damage. However surgical treatment with its known complications and unpredictability is also not without risks

Summary. MD is a common congenital malformation and rarely presents as an acute surgical case. This case report is a typical example of MD complications, which occurs in most adults. It emphasises the importance of considering MD as a differential diagnosis in patients presenting with acute abdomen and to avoid unnecessary delay and treatment.

CUTANEOUS MELANOMA: DIFFICULTIES IN DIAGNOSTICS, INDIVIDUALISATION OF THERAPY

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Keywords. Melanoma, diagnostics, therapy.

Introduction. Skin melanoma is a tumour that can be visually detected nevertheless it is still discovered mostly in late stages. In 2013, the number of newly discovered Stage III and IV cases was 21%, but in 2014. 25% of all cases. Melanoma is diagnosed during physical examination, via inspection and palpation of the formation. Dermatoscopy is used in addition to the examination to view the formation in a magnification of 7 to 10 times in order to improve diagnostic accuracy. Despite the simple methods of detection of skin cancers, there are still too many cases of misdiagnosed melanoma.

Case report description. A female, aged 30 years, noticed a nevus near the right ear in 08/2012, visited a dermatologist, and the formation was removed using laser treatment. Histologically collected material – Intradermal nevus with papillomatosis. In 09/2012, the patient underwent excision of formation that developed on a cicatrice, histologically – pagetoid type recurrent pigmented nevus was found. Patient admitted to LOC in 11/2012. Repeated examination of the first time removed tissue sample was carried out, and the patient was diagnosed with *Melanoma, Clark IV.* 11/2012– *Lymphonodulectomia colli dextra*, reprt from pathologist:– macrometastases of pigment, epithelioid and spindle cell melanoma were found. Initiation of cytokine interferon alfa-2b was indicated. Metastases in the neck were found in 04/2013 and surgical treatment was performed *Operatio Crile lim. V dx*, histologically – spindle cells with a giant cell components and pigmented melanoma complexes in the soft tissue were found. Subcutaneous metastases were found in 07/2013 followed by surgery *Operatio modo Crile limen II–V dexter, Extirpatio glandulae parotis lobus inferior sinistra, Excisio tumor cutis pigmentosa*. Histologically: spindle cell melanoma complexes in subcutaneous tissue were found. The patient was switched from interferon to Rigvir therapy. A tissue sample was tested and mutation in the BRAF gene was found. A subcutaneous lump was found in 11/2013. followed by *Operatio modo Crile II – III dx*. Histologically – metastasis of pigmented melanoma were found. CT scan detected lung metastases and surgery was performed in 01/2014. The patient discontinued use of *Rigvir* in 03/2014 after which the patient joined a compassionate use programme offered to melanoma patients –programme that involves administration of treatment that acts as BRAF and MEK inhibitors. No disease progression was detected up to 12/2015.

Conclusion. Diagnostic procedures and treatment should be carried out in specialised hospitals to acquire the best results. Diagnostic mistakes contribute to delays in patient treatment and may affect the course of the disease and also increase the risk to develop complications. Patient did not improve after use of first line therapy therefor according to the guidelines second line therapy was started which also gave no results.

Summary. Diagnostic mistakes made dermatologist and pathologist led to delayed diagnosis. Within a short period, 7 different surgeries were performed, and they, potentially, had negative impacts on the course of the disease. An individualised treatment plan was

prescribed according to guidelines for adjuvant therapies available in Latvia, but there still was no effect. Disease control and positive dynamics were achieved after initiation of treatment with MEK and BRAF gene inhibitors.

SUPERIOR VENA CAVA SYNDROME AFTER PAPVC CORRECTION

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Keywords. Partial anomalous venous connection, atrial septal defect, vena cava superior syndrome.

Introduction. PAPVC is a rare congenital heart disease mostly associated with ASD. Obstruction of the pulmonary venous connection and stenosis of SVC along with possible injury to the sinus node are well described complications after surgical correction of this combined anomaly. Timely diagnosis of the complication can ensure early correction and benefit to the outcome of the patient.

Case report description. A 55 year-old male has presented with palpitations, dizziness and shortness of breath on exertion. It was known that a congenital defect of some sort was found in childhood. With a transthoracic echocardiogram and the contrast CT of the chest a diagnosis of PAPVC with a sinus venosus ASD was established. Patient underwent surgical correction. An autologous pericardial patch was employed to repair PAPVC and close ASD. A created connection to left atrium was "bulging" and obstructing inflow of the SVC. The inflow of the SVC was widened by autologous right atrial appendage. On the fourth postoperative day he has developed shortness of breath at rest, palpitations and upper body edema with cyanosis. A SVC syndrome was suspected and diagnosis was confirmed by contrast CT. Intravenous heparin was initiated. Redo surgery has taken place on the next day. SVC was found narrowed at its ostia to the right atrium and fully occluded by thrombus up to the origin of the innominate vein. Thrombectomy performed with assistance of a Fogarty catheter. An autologous right atrium patch removed. Ostia of the SVC widened using PTFE patch. A postoperative course was uncomplicated. 30 days after the discharge due to sick sinus node a permanent pacemaker was implanted.

Conclusion. In our case a few factors might have led to the development of the SVC syndrome: inadequate sizing of the patch we used to enlarge the outflow of the SVC, over tension at the SVC and patch swelling point, over bulging of the patch we used to create a "tunnel" from right superior pulmonary vein to left atrium, a temporary discontinuation of the intravenous anticoagulation during the patient transfer to the ward.

Summary. PAPVC with ASD is a rare congenital heart disease and has to be treated by surgery. Obstruction of the pulmonary venous connection and stenosis of SVC along with possible injury to the sinus node are known complications after surgical PAPVC correction. In the case we presented patient underwent elective surgical correction of PAPVC and ASD. On the fourth postoperative day a SVC syndrome was suspected and was confirmed by contrast

CT. An urgent reoperation was performed. SVC was found fully occluded by thrombus, a thrombectomy was performed and ostia of the SVC enlarged by PTFE patch. A patient made uneventful recovery. In our case a combination of the several factors have led to the acute thrombosis and obstruction of the SVC and development of the SVC syndrome.

THE IMPORTANCE OF METHANOL ASSAYS: A CASE REPORT

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Keywords. Methanol poisoning, metabolic acidosis, hemodialysis

Introduction. Methanol poisoning is considered to be a hazardous, life threatening intoxication. It is known to clinically present with various complications and clinical outcomes, including a high number of lethal outcomes. The key aspect of treatment for this intoxication is the management of the metabolic acidosis caused by the poisoning. Hemodialysis is an efficient method in removing methanol and its toxic metabolite formic acid. This results in correction of the metabolic acidosis and patient outcome improvement.

Case report description. Male patient, 39 years of age, was admitted to the emergency department with complaints about vision loss and shortness of breath. The anamnesis of the patient established that he had been intaking illegal alcohol for two days, with a questionable suicidal motive. After evaluation the patient was transferred to the toxicology department to receive further treatment of methanol poisoning. With the diagnosis established and the metabolic acidosis classified as severe – the patient received standardized treatment for severe methanol poisoning with ethanol and hemodialysis.

The first methanol assay of the patient (20min after admission) showed a methanol concentration (MC) of 0.7 ‰. This was followed up by two assays due to the severe and not improving state of the patient. The first assay (11h after admission) showed a persistent MC of 0.7 ‰, and the second one (32h after admission) showed a MC of 0.32 ‰ – estimated hemodialysis was adjusted do to these findings. The last methanol assay (50h after admission) gave a negative result, hemodialysis was terminated and after receiving a full examination, patient was discharged as stable 6 days after hospitalization.

Conclusion. This patient showcases that in some cases it is not possible to provide effective treatment of methanol poisoning solely on prediction models and guideline approved hemodialysis schemes. Methanol assays help with the adjustment of therapy – reducing the risk of premature termination of treatment.

Summary. Methanol assays are very valuable in cases of illegal alcohol poisoning. Despite the fact that they may sometimes not be easily available, they allow clinicians to adjust detoxification therapy – increasing patient safety and improving patient outcome, especially in severe cases.

SJOGREN'S SYNDROME ASSOCIATED WITH
ENTEROPATHY AND T-CELL LYMPHOMA

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Keywords. Sjogren's syndrome, celiac disease, T-cell lymphoma.

Introduction. Sjogren's syndrome (SS) is a chronic systemic disorder characterized by autoimmune exocrine glands inflammation that causes keratoconjunctivitis sicca, xerostomia and systemic organs injuries. In SS prolonged hyperstimulation of immune cells may lead to increased incidence of lymphoma in 5% of the patients. In rare cases SS could be associated with enteropathies: celiac disease, biliary cirrhosis.

Case report. A 64 year-old woman presented to the hospital with complaints of persistent dry mouth, dry eyes, weight loss, musculus atrophy, anemia, increased ESR. Further history revealed many years of xerostomia. This time, Sjogren's syndrome was objectively diagnosed by sialometry, Schirmer test, sialobiopsy, clinical symptoms and was treated with plaquenile and prednisolon. There were no objective findings of paraneoplastic syndrome in hematological, gastroenterological, and endocrinological system parts. Therefore, the paraneoplastic cause of decreasing weight was excluded. Worsening of xerostomia led to ektropion, pseudofakia, trichiasis. In that case, cataract operation was made (cyclosporin A, doxycycline were prescribed). Systemic treatment for SS wasn't effective and symptoms were rapidly progressive: the treatment was changed into biological therapy (rituximab). After first course of rituximab, symptoms were weakend. However, few months after the discharge, patient revisited to emergency room with melena and persistent weakness. The labaratory findings showed thrombocytopenia, posthemorrhagic anemia. The CT angiography demonstrated an active bleeding from intestine, massive clots in colon. Due to findings there was made a laparatomy. During an operation 5 tumors and the part of intestine were resected. Histopathology of tumor showed: enteropathy associated T cell lymphoma, I type. The diagnoses was also confirmed with bone marrow biopsy. During the chemotherapy pacient occured with febrilic neutropenia, pancitopenia, acinetobacter baumannii pneumonia, secondary hemophagocitosis, coagulopathy. With unstabile vital signs patient was transported to intensive care unit, where despite all treatment, septic shock and systemic processes caused the death of the patient.

Conclusion. More accurate examination should be conducted for patients with Sjogren's syndrome. Not just lymphoma should be excuded, but celiac disease or other enteropathies should be considered as well. Overlooked symptoms could cause very rare and fatal complications.

Summary. In this case report Sjogren's syndrome was associated with enteropathy during which extremely rare T cell lymphoma was established.

AGGRESSIVE SURGICAL TREATMENT
OF PULMONARY ABSCESS

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Keywords. Pulmonary abscess, lung abscess, empyema, thoracic surgery

Introduction. Pulmonary abscess is defined as a parenchymal necrosis with confined cavitation caused by microbial infection. Most patients with primary lung abscess improve with antibacterial therapy, and surgery is required in less than 1% of cases.

Case report description. A 45-year-old white male was admitted to intensive care unit at Liepaja Regional hospital with progressive dyspnea and cyanosis. Patient developed respiratory failure and was intubated for mechanical ventilatory support. Lung computed tomography (CT) scan revealed bilateral basal lung infiltrates with abscess formation and effusion, which was drained. Patient with primary diagnosis of right-sided middle and lower lobe abscessing pneumonia was commenced on antibiotics including Ceftriaxone, Ciprofloxacine and Metronidazol. After 7 days of treatment there was obvious deterioration of patient condition with development of sepsis and progression of lung abscesses and empyema and he was transferred to Pauls Stradins Clinical University Hospital in Riga for further treatment. Cultures from bronchial secretions revealed multiresistant *Klebsiella pneumoniae* and *Acinetobacter baumanii*, and antibiotics were changed Meropenem and Colistine. Patient still required ventilatory support and had tracheostomy on day 11 of hospitalization. Patient's overall status has improved and became more stable, however a repeated lung CT scan showed progression of lung abscesses and multiloculated effusion. Multidisciplinary team meeting confirmed urgency of surgical intervention in order to remove source of sepsis, right lower lobectomy or pneumonectomy were suggested as procedures of choice with given mortality risk up to 20%. On day 29 right-sided thoracotomy, pleurectomy and lung decortication, lower bilobectomy, modified thoracoplasty with partial resection of four ribs and following pleural cavity size reduction with rotated *m. latissimus dorsi* flap was performed. Patient had extremely quick recovery after surgery, tracheostomy was removed on day 4 after surgery, on day 7 he was transferred to ward and discharged on day 15 after surgery. Postoperative chest CT scan revealed significant improvement.

Conclusions. Lung abscess is traditionally treated conservatively with antibiotics and episodic percutaneous drainage. In septic patients with abscessing pneumonia surgical treatment is not primarily indicated and is considered high risk surgery, however carefully selected patient group could obviously benefit from aggressive surgical treatment. Although conservative and minimally invasive management is well established and has showed overall good results, this case raises discussion about situations where traditional approach might be insufficient.

Summary. We report a middle-aged man presenting to the ICU with severe respiratory distress. The patient was diagnosed with abscessing pneumonia and empyema. After conservative treatment failure patient was referred to surgical team. After pleurectomy and lung decortication, lower bilobectomy, modified thoracoplasty with partial resection of four ribs and following pleural cavity size reduction with rotated *m. latissimus dorsi* flap patient has quickly recovered and discharged from hospital with no signs of infection.

BOERHAAVE SYNDROME: A RARE CAUSE OF DYSPNOEA IN EMERGENCY DEPARTMENT

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Keywords. Boerhaave, dyspnoea, oesophagus.

Introduction. Boerhaave`s syndrome describes serious condition of the digestive tract. It is a transmural perforation of the oesophagus that occurs spontaneously in most patients. The diagnosis is often challenging and treatment must be prompt to prevent lethal septic complications.

Case report description. A 78 years old man presented to Emergency Department (ED) complaining of dyspnoea, general weakness and pain in the right side of the chest. Medical history revealed a visit to ED a week ago due to chest pain. Cardiac work-up and chest X-ray were normal and an ambulatory treatment for radiculopathy was prescribed. Previous conditions: prostate cancer, treated surgically 4 years ago. Physical examination showed that patient`s condition was serious: he was pale, tachycardic at 120 beats/minute, tachypnoeic at 36 breaths/minute and hypotensive with blood pressure of 90/60 mmHg. His mental state was normal and he had no fever. Chest auscultation revealed absent breath sounds on the left. Laboratory tests showed an increase of inflammatory markers: white blood cells count was 22.01×10^9/l and C-reactive protein level of 436.7 mg/l. Arterial blood gasses: hypoxemia 53.9 mmHg, elevated lactate level of 2.92 mmol/l. A differential diagnosis of severe pneumonia and pulmonary artery thromboembolism was established and chest Computed Tomography Angiography was performed. Imaging series showed hydropneumothorax and partial atelectasis of the left lung and small amount of fluid and pleural effusion with air in the right. A diagnosis of severe bilateral pneumonia was made. Patient was admitted to ICU due to respiratory failure and emergency thoracostomy with pleural drainage was performed. Afterwards patient started to complain of upper and right abdominal pain. Abdominal ultrasonography did not show any pathology and fibrogastroduodenoscopy (FGSD) was recommended to rule out digestive tract pathology. FGDS revealed a 2 cm diameter transmural perforation in the lower third of oesophagus and diagnosis of Boerhaave syndrome was made. During left thoracotomy a mass of pus and food particles were found in mediastinum. Due to severe inflammation of pleura and mediastinum various surgical procedures were performed during the hospital stay. Severe sepsis developed and caused acute kidney failure. A jejunostomy for enteral nutrition was performed, it was complicated with suture insufficiency, peritonitis and subdiaphragmatic abscess. Despite intensive surgical and antibacterial treatment after a month of care the patient passed away.

Conclusion. Dyspnoea and chest pain combination can be caused by various of reasons especially when the patient is elderly. A clinician must also consider rare causes of such symptoms.

Summary. Boerhaave syndrome remains hard therapeutic task especially when there are no signs of classical presentation – history of overindulgence of food and drinks, vomiting, chest pain and subcutaneous emphysema.

16 March 2016

REOCCURRING OBSTRUCTIVE UROPATHY WITH PYELECTASIS AFTER URETEROCYSTONEOSTOMY – A CASE REPORT

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Keywords. Ureterocystoneostomy (UCNS), Obstructive Uropathy (OU), Boari Plastic (BP) **Introduction.** UCNS is commonly performed as resolution therapy with excellent results in patients impressing with high grade UO/reflux due to distal ureteropathy. Common indications are VUS, distal stricture or injury. However, also these procedures can lead to short- and long term complications.

Case report. We describe a case of reoccurring OU seven years after initial UCNS in a patient with multiple urologic morbidities. The male patient born in 1988 in Armenia initially presented at our institution due to kidney insufficiency in the middle of December 2015. While communication appeared difficult it was found that he had undergone left-sided pyeloplasty 2006 and right UCNS 2007 for presumed VUS in Armenia. Further, he received both-sided PNS removal and double-J catheterization (DJC) at an other institution half a year ago. A MRI during that time showed bilateral massive calyx dilatation with starting parenchyma-atrophy on the right side. To date, laboratory values were unremarkable (incl. GFR) but US-examination yielded both sided DJC with III° pyelectasis and right (compensatory) kidney enlargement. SPECT-DMSA resulted in 21:79% (left:right) uptake. Periprocedural TMX 960mg 2xd therapy for DJC-exchange did not prevent exchange-associated life threatening pyelonephritis of the low functioning left kidney two days after the procedure. Admitted and treated with IV Meropenem 1g he promptly improved. At this point US measured the right renal pelvis still enlarged. Re-UCNS for an assumed distal ureteral stricture was conducted 2 weeks later in order to not further jeopardize right kidney function. Intraoperativly, we experienced difficult ureteral uncovering due to scaring and distal coalesce with the psoas facia. Following massive adhaesolysis, the distal ureter unveiled a wide atonic part with no evidence of stricture. BP ensued resection to bridge insufficient ureteral length and provided a tension free anastomosis, covered by omentum majus plastic. The right DJC was removed on the 9th POD with control ureteroscopy. On 10th POD cystogram was performed and SPC removed. No complications occurred postoperatively under Cefpodoxim 200mg 2xd. Another check up is planned after 1 month.

Conclusion. Following UCNS atonic and widened distal ureters can lead to reoccurring OU. The case showed that this complication can sufficiently be treated by BP and therefore, preserve remaining kidney function which is especially important in this young patient taking into account the left kidney impairment.

Summary. UCNS with BP provided resolution of reoccurring UO as a long term complication of prior UCNS in a young patient with multiple urologic morbidities and significantly reduced left sided kidney function, which demanded sufficient right kidney protection from any subsequent obstructive nephropathy.

16 March 2016

CEREBRAL VASOSPASM: A CASE REPORT

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Keywords. Cerebral vasospasm (CV), subarachnoid hemorrhage (SAH), computed tomography (CT)

Introduction. Cerebral vasospasm (CV) after SAH is a major clinical problem causing cerebral ischemia and infarction when the arterial narrowing is severe or diffuse. CV refers to delayed-onset of cerebral arterial narrowing in response to blood clots in the subarachnoid space after aneurysm rupture. It is common starting from 4th day after SAH, peaks in severity about the end of the first week, and resolves within three to four weeks.

Case report description. A 49 year old woman was admitted to hospital due to SAH. An emergent native head CT revealed a massive bilateral SAH in basal cysterns, Sylvian fissures, sulci of temporal and parietal lobe, intraventricular hemorrhage in both occipital horns and widespread cerebral edema. CT angiography and digital subtraction angiography demonstrated multiple aneurysmal sacs at the right internal carotid artery and right middle cerebral artery M1segment with ectatic terminal segment of internal carotid artery. Partial endovascular treatment of aneurysms of the right internal carotid artery was performed. For prophylactic reasons against cerebral vasospasm patient received oral calcium antagonist 6 times per day. Eight days after SAH patient developed left side hemiparesis with cognitive impairment. Cerebral angiogram was performed which showed severe and diffuse vasospasm in A1, A2 segments on the right anterior cerebral artery and M1, M2 segments on right middle cerebral artery. Intraarterial spasmolytic therapy which contained Papaverine and Nimodipine was applied. Nimodipine was continuously administered by intra-arterial infusion for 12 hours. Neurological deficit decreased after the therapy. On the seventeenth day patient was discharged from the hospital without neurological deficit, with modified Rankin scale 0. Endovascular treatment of remaining aneurysmal sacs has been recommended after two weeks.

Conclusion. The basis of pharmacological treatment of cerebral vasospasm is hyper dynamic therapy which includes combined induction of hypertension, hypervolemia and hemodilution. In case vasospasm becomes resistant to optimal non-invasive therapy, endovascular intervention is indicated.

Summary. Although preventative measures and vasospasm treatments have reduced the incidence and clinical impact of vasospasm, it continues to be an important cause of poor outcome. Primary objective is always to treat the aneurysm as soon as possible prior to vasospasm development, to prevent aneurysm rerupture. In spite of current treatment strategies, cerebral arterial vasospasm is still the major secondary complication following aneurysmal SAH, associated with high morbidity and mortality rate. This indicates the imperative requirment for new treatment procedures.

SECONDARY T--ACUTE LYMPHOID LEUKAEMIA / LYMPHOMA AFTER TREATMENT OF B-ACUTE LYMPHOID LEUKAEMIA IN PEDIATRIC PATIENT

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Keywords. Acute lymphoid leukaemia; secondary tumour; pediatrics

Introduction. Second malignant neoplasms (SMNs) arise after anti-tumor therapy due to mutagenic effect and suppressed antitumor immunity. SMNs after childhood acute lymphoid leukemia (ALL) are uncommon (cumulative incidence about 4% at 15 years). The most frequent SMN is acute myeloid leukemia, followed by MDS, brain tumors and carcinomas. Secondary ALL / lymphoblastic lymphoma is distinctly uncommon, and T-cell variant is casuistic.

Case report. 4 years old boy was hospitalized in March 2008 due to relapsing fever, pain in legs, extensive hemorrhagic rash and hepatosplenomegaly. Blood test revealed WBC 31.4x10E9/L (90% blasts), HGB 4.1g/dL, PLT 36x10E9/l. Marrow and blood flow cytometry and trephine biopsy showed B-precursor phenotype CD45weak, CD19+, CD79a+, CD20-, CD10++, mCD3/cytCD3/CD5/CD7-. B-precursor ALL was diagnosed and standard risk ALL BFM treatment commenced. MRD on day 15 was 5x10E-3 and on day 33 < 10E-3. Intensive treatment was completed in November 2011 and maintenance therapy finished in May 2011. The patient was in complete remission till October 2012, when his blood counts dropped (WBC 4.2 x10E9/L, Neu 30%, HGB 11.9g/dL, PLT 98x10E9/L. Flow cytometry revealed 16% blast population of the same B-precursor phenotype in bone marrow and 0.2% in blood. Due to the late relapse the patient received treatment according to ALL REZ-2002 with good response (MRD stably negative since the first control). Subsequent maintenance therapy was completed on 13.08.2015. 19.10.2015 the boy was hospitalized due to chest pain, fever and eye hematoma. CT revealed pathological mass 116x67x105mm in mediastinum, pleural and pericardial effusion. Flow of the pleural fluid and biopsy of the tumor showed T-precursor (cortical thymocyte) phenotype cytCD3+, mCD3-, CD7+, CD1a+, CD4+/CD8+, TdT+; 7% blast cells were found in bone marrow by flow without any data of the atypical B-cell population. IntReALL treatment protocol was commenced with positive radiological dynamics; MRD at 3 months was negative. The patient currently is on treatment and in the process of donor selection for allogeneic SCT.

Conclusions. The case is well documented and meets strict criteria of SMN, since under no conditions the initial B-cell clone could transform into T-cells. Due to low relapse rate of pediatric ALL and relatively poor survival in relapse, SMNs after relapse are rarely seen. T-ALL/T-lymphoblastic lymphoma by itself is uncommon and is a casuistic subtype of SMN; actually, only 3 cases of T-ALL after pediatric B-ALL could be found in literature, and only one of them developed after relapse.

Summary. We present a patient with initial B-ALL that relapsed in 4 years after diagnosis and, after attaining complete remission, developed secondary T-ALL of mostly extramedullary localization. The combination is extremely rare and presents a significant diagnostic and therapeutic challenge.

16 March 2016

GLOMUS TUMOR OF THE STOMACH:
A CASE REPORT

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Keywords. Glomus tumor, stomach, endoscopic submucosal dissection.

Introduction. Glomus tumor is a mesenchymal tumor composed of modified smooth muscle cells representing a neoplastic counterpart of the perivascular glomus bodies. Gastric glomus tumors are rare neoplasms. These tumors are most commonly described as solitary, well-defined, submucosal lesions in the antrum, presenting with a variety of symptoms. Histologically, it consists of vascular channels lined by endothelial cells surrounded by mantle of uniform small, round glomus cells with centrally placed nucleus lacking cellular atypia. The main purpose of diagnostic strategy is to differentiate glomus tumor from other submucosal tumors and to define the risk of maligancy.

Case report. A 59-year-old male was admitted to the Medical centre" Oberig clinic", Kyiv, Ukraine on April 10, 2015 due to intermittent epigastralgia, which could be temporarily relieved by eating. The patient denied any associated weight loss, fevers, chills, nausea, vomiting or melena. Acid suppression therapy had been administered with only minimal relief. The serum levels of tumor makers were all within normal limits.

Gastrointestinal endoscopy showing a round elevated lesion with an overlying normal mucosa. Endoscopic ultrasonography shows heterogeneous echogenicity due to internal hemorrhage and calcification. Computed tomography scan identified a mass on the antrum ~10 mm in diameter. An endoscopic submucosal dissection of the tumor was performed at the Medical centre" Oberig clinic", Kyiv.

The resected tumor was grossly well-circumscribed, solid masses with size ranged 10 mm. This glomus tumor showed typical histologic features characterized by central round to oval nucleus with inconspicuous nucleoli and clear to eosinophilic cytoplasm with distinct cell borders. According to the subclassification by Tsuneyoshi and Enjoji, the case was mixed solid and angiomatous type. Nuclear atypia was minimal, and mitotic count was less than 2/50 HPFs. Immunohistochemical study revealed diffuse strong staining for α-smooth muscle actin and vimentin, weak positive staining for h-caldesmon, and negative staining for CD34 and KIT (DAKO). The proliferation marker Ki-67 was positive in < 5% of tumor cell nuclei.

Conclusion. Glomus tumors of the stomach are quite rare. Clinically, they are often mistaken for gastrointestinal stromal tumors. Histopathologically, they need to be differentiated from carcinoids in which immunohistochemistry is of help. They present a diagnostic dilemma to both the clinician and the histopathologist. Endoscopic submucosal dissection may be effective treatment.

HEREDITARY ANGIOEDEMA

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Keywords. Hereditary angioedema, C1 inhibitor, Bradykinin.

Introduction. Hereditary angioedema (HAE) is a rare (1:30,000) A-D inherited potentially life-threatening disease. It is caused by mutations in the C1 inhibitor (C1INH) gene and results in an enhanced activation of the plasma contact system and generation of bradykinin. Angioedema is non mast cell mediated and has 3 types: type 1 ($\downarrow$C1INH Ag and C1INH function), type 2 (normal C1INH Ag, $\downarrow$C1INH function), type 3 (normal C1INH Ag and function). Type 3 has no abnormalities in the C1 inhibitor gene, it is thought to be an estrogen-dependent inherited form of angioedema occurring mainly in women. Despite it's distinguished underlying causes, different types have similar signs and symptoms. There are also other types of non mast cell mediated angioedema: acquired C1INH deficiency, ACE-I–associated angioedema, and nonhistaminergic idiopathic angioedema.

Case report. A 54-years-old white woman, who had been suffering from recurrent episodes of swelling, was referred to an immunologist. The patient's history revealed that she had the first episode in September 2009 when the patient was experiencing shortness of breath and trouble swallowing. The patient was diagnosed with bronchial asthma. In the summer of 2012 the patient's hand got swollen, in autumn her right foot got swollen. In 2013 the patient suffered from similar episodes involving her tongue, face, hands, feet, and her airways. Prior to the episodes pruritus of the affected area occured. In 2014 the patient had similar episodes of swelling but an allergologist connected the symptoms to an allergic reaction to poplars. Sensitivity tests revealed no allergic reactions. In May 2015 the patient's tongue got swollen, she had shortness of breath, and a strangling sensation. The patient was admitted to the internal medicine ward where the hereditary angioedema was suspected. The patient had no response to corticosteroids and antihystamines. In summer 2015 she was referred to an immunologist. The patient's peripheral blood serum was examined for C3, C4 complement components as well as for C1 inhibitor antigen level and it's activity. The results were in normal ranges. But clinically there were recurrent attacks of oedema for no apparent reason. The patient was diagnosed with type 3 hereditary angioedema. Though usually recommended, in this case the patient wasn't advised to take androgens due to normal C1 inhibitor activity. The patient was prescribed bradykinin antagonist for emergency use when swelling of the airways occur. The patient is kept under ambulatory observation as an underlying condition could have caused these symptoms.

Conclusion. HAE is a severe disease that places a heavy burden on quality of life. It is crucial to recognize the distinction between mast cell–mediated angioedema and bradykinin-mediated hereditary angioedema. Bradykinin-mediated angioedema often manifests clinically as severe or even life-threatening swelling that does not respond to the standard therapies effective for mast cell–mediated angioedema.

Summary. A 54-years-old woman had been experiencing recurrent episodes of swelling starting from 2009. Several misdiagnosis were made – bronchial asthma, flat foot, an alleric reaction to paplor. In 2015 the patient's tongue and her airways got swollen, she was admitted to internal medicine ward, where hereditary angioedema was suspected. The immunological examinations, including C4,C3, C1INH Ag and C1INH function, were done. The patient was diagnosed with type 3 HAE. Treatment with bradykinin antagonists is recommended when an episode affecting her airways occurs. The patient is being observed as an underlying condition could be causing the episodes.

A CASE REPORT OF CONGENITAL
MIDLINE CERVICAL CLEFT

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Keywords. Congenital, neck anomaly, cleft of neck

Introduction. A congenital midline cervical cleft (CMCC) is a rare congenital anomaly of the anterior neck. Only 205 cases have been published. Characteristic findings of the malformation are cleft in the midline of the anterior neck, a cephalic nipple-like skin tag and a caudally located blind sinus. Underneath the defect may be a fibrous cord. Embryo-pathogenesis is still unclear although many hypotheses exist; the most accepted one is impaired fusion of first or second brachial arches in the midline where a disruption of interaction between mesoderm and ectoderm could play an important role which can explain the absence of skin appendages in the cleft affected skin region. CCMC may present as an isolated finding or associated with other pathologies such as thyroglossal duct cysts, bronchogenic cysts, cleft lower lip, tongue, mandible and congenital heart lesions. This case report presents our experience managing CMCC in a 5-month-old patient.

Case report description. A five-day old male infant was referred to Children's Clinical University Hospital for further evaluation of the defect in anterior neck diagnosed at birth. He was born at the 41st gestation week by vacuum extraction due to fetal distress. Prenatal scans were reported to be normal. Examination revealed a cutaneous skin lesion of the anterior neck in the midline, with an associated skin tag cranially and a sinus tract opening caudally. No discharge was noticed. Micrognathia was also remarked but no other malformations were found. Karyotyping was performed; a normal male karyotype (46, XY) was reported. Neck ultrasound underneath the superficial skin defect detected a thin anechogenic zone. MRI of the neck revealed a fat containing fistula in the subcutaneous tissue, which caudally reaches thymus. No connection with trachea was identified. The patient was treated surgically at 5 month of age. The CMCC caused neck contracture and limited elevation of the neck. A complete excision of the scar was done under general anaesthesia. The defect was closed with 4-flap Z plasty technique. The post-operative course was uncomplicated. Histopathological examination of excised material reported stratified squamous epithelium with signs of parakeratosis over the lesion and hypertrophy on the nipple-like skin tag. Fibrosis and absence of normal skin appendages in derma was noticed. The sinus tract showed common features of upper respiratory tract-pseudostratified ciliated columnar epithelium and dermal seromucious glands.

Conclusion. Reported patient with CMCC was successfully treated using Z-plasty technique. In a 3-month post-operative follow up the wound healing was excellent without any limitation of neck movement.

Summary. CMCC, an uncommon malformation of the anterior neck, is presented at birth with typical findings. Without surgical repair, CMCC causes contracture of the neck and limits its motion. To avoid complications and for cosmetic reasons an early surgical intervention with Z-plasty is recommended.

SIMULTANEOUS CONCURRENT GROWTH OF METASTATIC MELANOMA AND MENINGIOMA

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Keywords. Melanoma metastasis, meningioma, simultaneous growth, concurrent growth.

Introduction. Simultaneous occurrence of meningioma and single brain metastasis is uncommon and is mostly associated with primary tumour origin in breast, ovaries or lungs (Maiuri *et al.*, 2002; Maiuri *et al.*, 2005). Melanoma is the third most common primary cancer metastasing to brain (Sloan et al., 2009), but there are only few documented cases of co-occurrence of metastatic melanoma and meningioma (Wong et al., 1999; Pal et al., 2010).

Description of case. A 57-year-old male was admitted to a neurosurgical unit for elective resection of suspected two metastases of melanoma. Patient complained of two epileptic seizures within the preceding few weeks, but there was no evident neurologic deficit during objective examination. His medical history was remarkable for primary skin melanoma on his back as well as neurosurgical resection of melanoma metastasis from left frontal brain lobe one year before the current episode. At present, magnetic resonance imaging (MRI) with contrast enhancement revealed two neoplastic masses in left frontal lobe. The largest lesion, measuring approximately 2.5 cm in diameter, was located in left frontal lobe under the bone flap from previous craniotomy. It was characterised by contrast uptake and perifocal oedema. A smaller focus (diameter 4–5 mm) was found anteriorly close to the larger neoplastic lesion. Compared to the preceding MRI two months earlier, extensive growth of larger mass was apparent. There was also no evidence of smaller lesion in previous MRI. Thoracic and abdominal computed tomography did not disclose any metastases.

Elective frontal craniotomy was performed within 160 minutes. The small lesion coalesced with *dura mater*; therefore resection with removal of dura was performed. The large focus was located in site of previously resected melanoma metastasis. The postoperative period was smooth. Patient was sent for further radiation therapy by local oncological council.

Histological examination of the larger neoplastic lesion showed tumour consisting of atypical cells with light cytoplasm and obvious cell and nuclear pleomorphism. There was no evidence of pigment in cell cytoplasm. Necrosis was also visible. By immunohistochemistry (IHC), tumour expressed S-100 and HMB-45. The proliferation fraction by Ki-67 was 31.6%. In contrast, the small lesion exhibited both morphology, that was typical for meningioma,

and immunophenotype characterised by expression of EMA and progesterone receptors in association with low proliferation fraction (2.0%). Thus, concurrent growth of melanoma metastasis and meningioma was evident.

Conclusion. Although concurrent appearance of melanoma metastasis and meningioma is rare, here we report such colocalisation with morphological and immunohistochemical proof. Radiological findings and tumour growth pattern of this case proposes that malignant process locally can induce uncontrolled cell proliferation and result in growth of benign tumour.

PULMONARY ARTERIAL HYPERTENSION ASSOCIATED WITH CONGENITAL HEART DISEASE. WHEN TO OPERATE?

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Keywords. Atrial septal defect, pulmonary arterial hypertension, defect closure, sildenafil

Introduction. Pulmonary arterial hypertension (PAH) is a specific subgroup of pulmonary hypertyension (PH). PAH is defined as an increased mean pulmonary arterial pressure (mPAP) of ≥25 mmHg at rest and an elevated pulmonary vascular resistance (PVR) of > 3 WU with a normal pulmonary artery wedge pressure ≤15 mmHg. PAH is a common complication of congenital heart disease (CHD) when an intra- or extracardiac shunt exists. Operability is considered when the shunting is left-to-right.

Case report description. A 54 year-old-male complaining of palpitations due to atrial flutter was admitted to the cardiology ward in June 2008. While a transesophageal rhythm restoration was performed the transesophageal echocradiography revealed an ASD (2 cm) with a bidirectional shunt, the right ventricular systolic pressure (RVSP) was 85–90 mm Hg thus indicating PAH. On coronary angiography an occlusion and stenosis of several arteries was seen. Right heart catheterization revealed an ASD (left-to-right shunt). The mPAP was 67 mm Hg, PVR – 4.7 WU. The patient was recommended an ASD closure and coronary artery bypass grafting. According to the current guidelines in such cases (PVR > 4.6 WU) closure of the ASD is contraindicated. PAH-specific therapy (sildenafil 20mgx3 for a month) was prescribed prior to surgery. In November 2008 percutaneous transluminal coronary angioplasty was performed. In February aortocoronary shunting and closure of ASD with a patch leaving a residual 1cm in diameter shunt was done. Postoperatively the patient's RVSP was 34 mmHg. In 2010 the patient underwent percutaneous residual shunt closure with an occluder. On echocardiography in 2012 no residual shunt was seen, RVSP – 40–45 mm Hg, tricuspid regurgitation I-II. The patient was seen on a follow-up visit in November 2015. The patient hadn't experienced any PAH-CHD associated complications, had no dyspnea, cyanosis or edema. 6 minute walk test results were excellent – 519 m.

Conclusion. This case report emphasizes the importance of the case-by-case approach for evaluation of the PAH-CHD patient's suitability for operation as surgical correction is the most effective way to limit the progression of PAH. PAH-specific treatment should always

be considered not only to improve the patient's quality of life and to decrease the mPAP but also to decrease the PVR thereby achieving operability.

Summary. A 54-year old man who suffers from coronary artery disease along with pulmonary arterial hypertension associated with congenital heart disease (PAH-CHD) required coronary artery bypass grafting (CABG) surgery. The atrial septal defect (ASD) was closed (surgically with a patch, transcatheter closure with an occluder followed) as well despite the fact that according to the current guidelines his pulmonary vascular resistance (PVR – 4.7 WU) was considered too high for the defect to be operable (2.3–4.6 WU – borderline operable). The patient was given PAH-specific treatment in order to lower his PVR thus achieving operability.

MULTIORGAN INJURY IN HEMOLYTIC UREMIC SYNDROME

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Keywords. Hemolytic uremic syndrome, Shiga toxin producing *Escherichia coli*, acute kidney injury, encephalopathy, Eculizumab

Introduction. Hemolytic uremic syndrome (HUS) is a thrombotic microangiopathy characterized by thrombocytopenia, hemolytic anemia and renal insufficiency. HUS is a leading cause of acute kidney injury in young children. It is most commonly associated with infection caused by Shiga toxin producing *Escherichia coli* (STEC-HUS), although genetic forms, termed atypical HUS (aHUS), have been reported. They are associated with mutations in complement regulator genes, thus leading to activation of alternative pathway of complement. There is evidence that complement activation is also an important step in STEC-HUS pathophysiology (D. Ortho *et al.*, 2009; J. M. Thurman *et al.*, 2009).

Case report description. A 2-year-5month old girl was hospitalized in Children's Clinical University Hospital on the 25th of June, 2015 with fever, vomiting, colicky abdominal pain and bloody diarrhea. An initial diagnosis was – acute respiratory virus infection, gastroenterocolitis, dehydration II. On subsequent days the patient's clinical status deteriorated. She became oligoanuric, developed facial, lower extremity and abdominal wall edema. Laboratory work-up on the 2nd day identified raised urea and creatinine levels, thrombocytopenia. The girl became hypertensive. The patient was transferred to ICU with signs and laboratory data of acute kidney injury and suspicion of HUS. On the 3rd day peritoneal dialysis was initiated. Later the patient developed hemolytic anemia. Shiga toxin producing *Escherichia coli*, serotype O26 was identified in stool. Plasma activity of ADAMTS13 was > 96%. C3 and C4 levels were normal. The patient developed endocrine pancreatic insufficiency, thyroid insufficiency. Neurological status deteriorated – patient developed decreased level of consciousness, irritability, aphasia and tetraparesis. Magnetic resonance imaging revealed organic CNS injury. As the patient had HUS with multiorgan involvement, severe neurological impairment and the standard treatment wasn't effective, decision was made to treat her with anti-C5 monoclonal antibody Eculizumab. Patient received first dose on 10th of September (77 days after hospitalization). As a result there was

some clinical improvement. The child started talking and became less emotionally labile, but remained paretic with some improvement in mobility. Patient was discharged on 28th of October, 2015 to continue her rehabilitation.

Conclusions. Activation of the alternative pathway of complement plays a role in pathogenesis of STEC-HUS, therefore evidence is emerging that Eculizumab can be used not only in the treatment of aHUS, but also for severe cases of STEC-HUS, especially with CNS involvement (A. L. Lapeyraque *et al.,* 2011; M. Noris, F. Mescia, G. Remuzzi, 2012). Presented patient was the first to receive treatment with Eculizumab for HUS in Children's Clinical University Hospital. It is possible that the patient would have benefited if the treatment was begun earlier.

Summary. HUS can potentially progress to multisystem disease with life threatening complications. Patient was discharged with the final diagnosis of Shiga toxin producing *E. coli* acute gastroenteritis; hemolytic uremic syndrome with multiorgan injury; acute kidney failure; peritoneal dialysis (28.06 – 12.09.15); secondary thyroid dysfunction; secondary pancreatic functional impairment; toxic encephalopathy; tetraparesis (diffuse muscular hypotonia with spasticity in extremities distally); chronic kidney disease; secondary arterial hypertension; secondary anemia.

POLYRADICULONEURITIS ASSOCIATED
WITH SARCOIDOSIS

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Keywords. Sarcoidosis, polyradiculoneuritis, lymphadenopathy, biopsy, steroids

Introduction. Sarcoidosis (SA) is an idiopathic, multisystem granulomatous disease which mostly affect lungs [Kasliwal et al.,2013]. Hilar and mediastinal lymphadenopathy (LAD) is a typical SA presentation. Dermatologic manifestations are seen in 25%, but neurosarcoidosis (NS) occur in 5–13% of all SA cases. SA can affect central nervous system (6–8%) and peripheral nerves (4–20%) [Hebel et al., 2014]. Cerebrospinal fluid (CSF) abnormalities are seen in 80% and serum angiotensin-converting enzyme (SACE) is elevated in up to 50% of all the NS cases [Ginat et al., 2011]. The diagnosis is supported by a tissue biopsy. Steroids are the first-line treatment.

Case report description. The patient, a 68-year-old male arrived to the emergency department with a complaint of progressive weakness in legs. An examination revealed a light asymmetric distal paraparesis, areflexia in legs, absence of pathological reflexes and a red rush on left knee. Thoracic and lumbosacral magnetic resonance imagining (MRI) excluded any lesion of spinal cord or nerve roots. Neurography showed sensorimotor demyelinating axonal polyneuropathy in legs' nerves. To exclude neuroinfection a lumbar puncture was performed. Results of CSF: pleocytosis (81/µl) with 81% of lymphocytes, elevated protein level (1.92g/l), but acid-fast bacillus smear, tick-borne encephalitis and Borrelia burgdorferi antibodies were negative. Lung computed tomography (CT) showed centriacinar bullous emphysema with fibrotic elements and marked mediastinal LAD, but an abdominal CT – retroperitoneal

LAD. Transbronchial lung biopsy results demonstrated a possible sarcoidosis. Skin biopsy of the rash showed granulomatous inflammation process, supposedly sarcoidosis. SACE level was elevated (179.71U/l) in the blood tests.

Based on the results of examination, NS was suspected. Prior to Medrol therapy, patient had a deep peripheral paraparesis with muscle hypotrophy. After one month of treatment improvement occurred – the patient had average distal peripheral paresis in the left leg with a significant muscle atrophy in both legs. Lung CT showed positive dynamic, but SACE level was decreased to 11.93U/l, CSF cell count 4/μl (lymphocytes 100%), protein level 0.99g/l. Due to the examination results and a good response to therapy diagnosis polyradiculoneuritis associated with SA was made.

Conslusions. The diagnosis of polyradiculoneuritis associated with SA is made by using a combination of clinical presentation, imaging, diagnostic testing, and biopsy results.

Summary. Diagnosis polyradiculoneuritis associated with SA was made to a 68 years-old male with a progressive weakness in legs, based on examination results (CT scan and MRI, LAD, abnormal CSF and biopsies), positive clinical and laboratory response to steroid treatment.

COMPLICATIONS OF FEMORAL NECK FRACTURES TREATED WITH UNIPOLAR HEMIARTHROPLASTY: TWO CASE REPORTS

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Keywords. Femoral neck fracture (FNF), complications, hemiarthroplasty

Introduction. FNF is a frequent injury in the population older than 60 years. FNFs represent a great health care problem causing decreased mobility, inability to do daily activities, increases morbidity and mortality rates. To avoid the poor outcome of internal fixation and for early mobilization, hemiarthroplasty is a commonly used treatment for this condition in the elderly. But is it the best choice of treatment?

Case report description. We present two cases of patients with FNF who had complications after unipolar hemiarthroplasty. The first case shows a 67-year-old woman who was admitted to the Hospital of Traumatology and Orthopedics in year 2014 with severe pain in left hip region and reduced leg mobility. The patient had a left FNF after a fall on her left side one month ago witch was treated with unipolar hemiarthroplasty. Radiographs of the left hip showed migration and angular deformity of the left unipolar prosthesis. Left hip revision surgery was performed and the unipolar prosthesis was changed to a bipolar. The patient had a right FNF in year 2013 witch also was treated with a unipolar hemiarthroplasty. In year 2015 the patient had a lateral dislocation of the right hip prosthesis and she is awaiting a second revision surgery.

The second case shows a 62-year-old man with epilepsy and vascular dementia who was admitted to the hospital with pain in left hip region after a fall on his left side. Radiographs of the left hip showed a FNF witch was treated with unipolar hemiarthroplasty. After nine months the patient had another fall witch caused breakage of the unipolar

prosthesis and periprosthetic fracture with dislocation of the proximal femur. Reimplantation of the prosthesis and osteosynthesis of the proximal femur was done. Postoperatively there was a dislocation of the prosthesis which could not be treated with closed reduction. The patient developed redness and tenderness in the surgery wound area. Do to suspicion of infection it was decided to take out the prosthesis and rinse the joint. Microbiologic testing identified coagulase-negative staphylococcus. The patient received Ciprofloxacin and was discharged from the hospital.

Conclusion. Currently there is no consensus about the optimal method of treatment in elderly patients with intact cognitive functions and good pre-fracture mobility- weather to use hemi- or total hip arthroplasty. Unipolar hemiarthroplasty is associated with such complications as acetabular erosion, protrusion, aseptic femoral loosening, infection, dislocation, periprosthetic fracture and breakage of implant. A good option for treating these complications is conversion of symptomatic hemiarthroplasty to total hip arthroplasty.

Summary. We present two cases of patients with femoral neck fracture who had complications after unipolar hemiarthroplasty – a 67-year-old female with migration and angular deformity of left and lateral dislocation of the right unipolar prosthesis; a 62-year-old man with breakage of the unipolar prosthesis, periprosthetic fracture and dislocation of the prosthesis with deep infection.

THE INDUCTION OF HYPERTHYROIDISM IN PATIENT WITH NON-TOXIC GOITER AFTER RADIOIODINE THERAPY: A CASE REPORT

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Keywords. Hyperthyroidism, non-toxic goiter, radioiodine therapy.

Introduction. The term non-toxic goiter refers to abnormal growth of the thyroid gland with normal thyroid hormone production. There is no consensus regarding the optimum treatment of non-toxic goitre.

Case description. Department of Nuclear Medicine, Medical University of Bialystok, Bialystok, Poland. A 44-year-old female, with non-toxic goiter was referred to our Department for thyroid volume reduction. Serum levels of FT_4, FT_3 and TSH were within normal range, high resolution ultrasonography show enlarged thyroid glands (50 ml), with 2 nodules: one in the left and one in the right lobe. Malignancy was ruled out by ultrasound-guided fine-needle aspiration biopsy. Thyroid radioiodine scintigraphy showed homogenous and diffuse uptake in the right lobe, with very low uptake in the left lobe, radioiodine uptake (RAIU) after 24 and 48 h was 32.3 and 33%. The effective half-life measured by the use of RAIU was about 7 days. The activity dose was calculated by Marinelli's formula and the patient received 280 MBq of I-131. The absorbed dose was about 200 Gy. Follow up control was done every 4 weeks. After 3 months of radioiodine therapy, the patient developed hyperthyroidism. TSH serum levels decreased and serum FT_4 and FT_3 increased, the TSH receptor antibodies increased, anti-thyroglobulin antibodies and anti-peroxidase antibodies were within normal

range. The patient received antithyroid drugs to control the hyperthyroidism, after 6 months of radioiodine therapy the patient was in subclincal hyperthyroid state, thyroid scintigraphy showed homogenous and diffuse uptake in both lobes with small reduction in the thyroid volume. RAIU after 24 and 48 h was 53 and 48% respectively. The patient received more doses of antithyroid drugs to achieve euthyroidism before the second dose of radioiodine therapy.

Conclusion. Radioiodine therapy is non-invasive, safe and cost effective method of therapy for reduction of goiter even in patient with low radioiodine uptake and should not be restricted to elderly, or to patients with high operative risk.

Summary. In this case radioiodine therapy induced hyperthyroidism, maybe due to the activation of Graves' disease.

HEREDITARY HEMOCHROMATOSIS IN GENERAL PRACTITIONER PRACTICE

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Keywords. Hereditary hemochromatosis, general practitioner, porfiria cutane tarda.

Introduction. Hereditary hemochromatosis (HH) is an autosomally recessive inherited genetic disorder associated with a defect in the iron regulating hormone hepcidin, causing increased intestinal absorption of iron and subsequent deposition in the liver, pancreas, heart, joints, skin, and gonads. Mutation in the human haemochromatosis protein (HFE) gene is the most common problem [Bacon BR, 2012]. The majority of patients with HFE haemochromatosis express C282Y homozygosity, which accounts for 80%–85% of individuals with hereditary haemochromatosis. This mutation has a prevalence of 1 in 220–250 in the northern European population in which it is most commonly found [Bacon BR, Adams PC, Kowdley KV, et al., 2011]

Case report description. In 2008 a 38-year-old women with anamnesis of total hysterectomy comes to the general practitioner (GP) with complains of fatigue and headache. The laboratory results show increased liver function tests: ASAT – 42 u/L, ALAT – 70 u/L. Hepatic ultrasonography shows liver enlargement – 2 cm below the rib arc. GP does not send the patient to hepatologist. In 2009 the patient gets hospitalized to the regional hospital with complaints of severe headache and dizziness. Diagnosis: unspecified endocrine dysfunction. Year later the patient's neurological symptoms become more intense – hospitalized in PSKUS with complains of numbness in one side of the body. ALAT- 82 u/L. Diagnosis: generalized motor neuron lesion syndrome. Since 2010 patient has received a second-degree disability. Liver parameters unchanged. In 2011 again she gets hospitalized in PSKUS with the same complains. The patient's condition was evaluated by the council of doctors, their decision: benign myalgic encephalomyelitis, while recommending a treatment at the psychiatrist. GP noticed changes in skin color, sends to a dermatologist. Diagnosis: *porfiria cutis tarda* and he expressed suspicion about hemochromatosis. In 2012 performed genetic analysis: HH type 1, HFE gene C282Y mutation, homozygous. In 2014 was performed a genetic test for her children. It showed that her son is a carrier of the mutation.

Conclusions. After hysterectomy the body was no longer exempting from iron and began its increased accumulation. Neurological symptoms developed because of the iron deposition in peripheral nervous system. HH is a rare disease in GP practice, therefore, doctors do not search for more reasons in case of general symptoms such as: headache, dizziness, and fatigue. In this case, if the disease treatment was started earlier, it is rather possible that the patient would be able to work.

Summary. The case of 38-year-old woman with anamnesis of hysterectomy is presented. 6 years after the hysterectomy the patient starts to experience neurological symptoms which became more intense. From 2008 to 2011 liver in ultrasonography is enlarged and laboratory tests show increased liver function tests (ALAT, ASAT). GP regularly follows the patient's medical condition but does not send to a hepatologist. In 2011 GP noticed changes in skin color and sent the patient to the dermatologist. Diagnosis: *porfiria cutanea tarda* and *hemochromatosis suspecta*. In 2012 was performed a genetic test and proved HH. In 2014 the genetic analysis shows that the patient's son is a carrier of a mutation.

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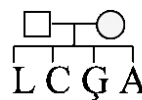*"Latvijas Ārsts" magazine*

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