

**COMENIUS UNIVERSITY IN BRATISLAVA
JESSENIUS FACULTY OF MEDICINE IN MARTIN**



XXXVIII. STUDENT SCIENTIFIC CONFERENCE

PROGRAM and ABSTRACTS

April 26, 2017

Martin, SLOVAK REPUBLIC

XXXVIII. Student Scientific Conference
Jessenius Faculty of Medicine in Martin
Comenius University in Bratislava

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PROGRAM AT GLANCE

Date: April 26, 2017

Place: Aula A Novomeského 9, Martin
Aula B Novomeského 9, Martin

Registration: April 26, 2017, 7.30 or before the beginning of your section

Opening ceremony (Aula A – Novomeského 9) **08.00 – 08.10**

Aula A

A1: Section of Clinical Disciplines I 08.20 – 09.45

- coffee break

A2: Section of Clinical Disciplines II 10.00 – 11.15

- coffee break

A3: Section of Nursing 11.30 – 12.30

Aula B

B1: Section of Theoretical Disciplines 08.20 – 10.00

- coffee break

B2: Section of Non-Medical Study Programmes 10.30 – 12.10

- coffee break

Closing ceremony (Aula A – Novomeského 9) **13.00**

Duration of lectures: 8 minutes, discussion – 4 minutes

Language: Slovak, Czech or English

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SECTION OF CLINICAL DISCIPLINES I

(8.20 – 09.45)

GENETIC BACKGROUND OF PLATELET HYPERAGGREGABILITY IN PATIENTS WITH DEEP VENOUS THROMBOSIS

Martin Gellen

Tutor: Juraj Sokol, MD., PhD.

Department of Hematology and Transfusiology, JFM in Martin, CU in Bratislava

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Clinic of Neurology, JFM in Martin, CU in Bratislava

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Tutor: Mária Janíčková, MD., PhD., MPH

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Filip Olekšák^{1,2}

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<p>³Department of Physiology JFM in Martin, CU in Bratislava</p>	
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Department of Nursing, JFM in Martin, CU in Bratislava

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Department of Nursing, JFM in Martin, CU in Bratislava

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Department of Nursing, JFM in Martin, CU in Bratislava

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Nikola Muchová

Tutor: Mgr. Mária Zanolitová, PhD.

Department of Nursing, JFM in Martin, CU in Bratislava

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Institute of Medical Biophysics, JFM in Martin, CU in Bratislava

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Department of Medical Biochemistry, JFM in Martin, CU in Bratislava

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Biomedical Centre in Martin, Department of Medical Biochemistry,
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Department of Histology and Embryology, JFM in Martin, CU in Bratislava

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²Biomedical Center Martin, JFM in Martin, CU in Bratislava

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Veronika Sekanová, Monika Beliančinová

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Department of Medical Biology, JFM in Martin, CU in Bratislava

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Patrik Zakarovský¹, Miroslav Kolenkáš¹

Tutors: Prof. Michal Javorka, MD., PhD.^{1,2}, Ing. Jana Krohová¹

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coffee break

„AULA – B“

SECTION OF NON-MEDICAL STUDY PROGRAMMES

(10.30 – 12.10)

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Tutor: Mgr. Lucia Mazúchová, PhD.

Department of Midwifery, JFM in Martin, CU in Bratislava

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Department of Midwifery, JFM in Martin, CU in Bratislava

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Martina Gahérová

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Institute of Midwifery, Jessenius Faculty of Medicine, Comenius University in
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Department of Social Medicine and Public Health, Faculty of Medicine, Palacky
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Department of Public Health, JFM in Martin, CU in Bratislava

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Department of Midwifery, JFM in Martin, CU in Bratislava

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AWARDING AND CLOSING CEREMONY

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NOVOMESKÉHO 9, AULA A

ABSTRACTS

All abstracts are available in English at <http://www.jfmed.uniba.sk/veda/svoc/>

GENETIC BACKGROUND OF PLATELET HYPERAGGREGABILITY IN PATIENTS WITH DEEP VENOUS THROMBOSIS

Martin Gellen

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Background: Sticky platelet syndrome (SPS) was described by Holliday at the 9th Conference on Stroke and Cerebral Circulation in Arizona in 1983. The results of recent studies suggest SPS to be a common cause of arterial and venous thrombosis. According to Mammen and Bick, SPS is the second most common hereditary thrombophilia after resistance to activated protein C (APC-R) and the most common thrombophilia associated with arterial thrombosis with the incidence of 21%, approximately.

Material and methods: We examined 86 patients with SPS and history of deep venous thrombosis and 102 healthy people. SPS diagnosis was established by light transmission aggregometry (PACKS-4 aggregometer, Helena Laboratories, USA) according to methods and criteria developed by Mammen et al. We were interested in two single nucleotide polymorphisms (SNPs) of PEAR1 gene (rs12041331, rs12566888) and two SNPs of MRVI1 gene (rs7940646, rs1874445).

Results: We identified two SNPs of PEAR1 gene with higher occurrence in patients with SPS and deep venous thrombosis (rs12041331, rs12566888). We also identified two high-risk haplotypes of PEAR1 gene in our haplotype analysis that are connected to SPS, a possible cause of spontaneous abortions (GG, TA).

Conclusion: Our results support the idea that genetic variability of PEAR1 gene can be associated with platelet hyperaggregability.

Acknowledgement: The study was supported by grants VEGA 1/0187/17 and VEGA 1/0186/17.

INFLAMMATORY MARKERS IN THE CEREBROSPINAL FLUID OF PATIENTS WITH MULTIPLE SCLEROSIS

Zuzana Kapičáková, Jakub Papirek

Tutor: Ema Kantorová, MD., PhD.; Prof. Egon Kurča, MD., PhD.;

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Introduction: Multiple Sclerosis (MS) is a chronic inflammatory and neurodegenerative disease affecting the central nervous system. The analysis of the cerebrospinal fluid (CSF) by isoelectric focusing followed by immunoblotting, is one of the standard methods helping to diagnose MS. We assumed that the level of CSF inflammatory markers could correlate with neurological disability measured by Expanded Disability Status Scale (EDSS).

Methods: Our group of patients includes 23 patients with MS in early stage of the disease and 7 control individuals (CON). Early stage of MS was defined as an experience of the first neurological symptoms not more than three years previously. In MS group, we found 9 patients with clinically isolated syndrome (CIS) and 15 patients with clinically definite MS (CDMS). We evaluated 4 CSF markers: the type of oligoclonal bands, the number of oligoclonal stripes, IgG index, IgG index via Reiber calculation. We measured differences between MS patients and CON, and then we correlated the CSF markers with EDSS using free statistical software PAST.

Results: Patients with MS were younger (31,6y) than CON (45,4y). We found significant differences between MS and CON in all immunological markers. However, in the group of MS patients the link between the markers and EDSS absent. We did not also detect significant differences in CSF markers between CIS and CDMS.

Conclusion: The monitored inflammatory markers in cerebrospinal fluid may serve as reliable markers confirming the diagnosis of MS. However, it cannot be used to predict the prognosis of the disease.

ANTIPLATELET DRUGS IN DENTAL MEDICINE

Emília Malíková, Beáta Marčanová

Tutors: Mária Janíčková, MD., PhD., MPH

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Introduction: An antiplatelet drug is a member of a class of pharmaceuticals that decrease platelet aggregation and inhibit thrombus formation. Patients with platelet aggregation inhibitor therapy possess a higher risk of bleeding during and after invasive dental procedures. Acetylsalicylic acid (ASA) and adenosine diphosphate (ADP) receptor antagonists (e.g. ticlopidin, clopidogrel) are the most often used antiplatelet agents. The aims of our research are as followed: 1. To define long-term antiplatelet therapy (APT) setting of effectiveness in patients undergoing invasive procedures. 2. To identify period of time prior to the dental procedure for optimal discontinuation of APT in order to reduce periprocedural risk of bleeding. 3. From clinical point of view to evaluate and record the risk of bleeding during dental procedures.

Material and methods: 12 patients receiving APT (9 with ASA, 2 with ADP receptor antagonists, 1 on dual antiplatelet therapy) in period since October 2016. Platelet aggregation in patients was measured by impedance and light transmission aggregometry (LTA) after stimulation by arachidonic acid (AA) or ADP.

Results: We found that platelet aggregation values in all patients on ASA therapy were in the range of therapeutic reference values (AA less than 20%, i.e. AA 8.14% in average). In 2 ADP antagonist treated patients we found platelet aggregation values 47% and 52% (ADP 49.5% in average). 1 patient on dual APT showed subtherapeutic antiplatelet effect (83% vs. 68%). After seven days of ASA or ADP receptor antagonists discontinuation we registered two to twelve fold increase in platelet aggregation.

Conclusion: 1. All examined patients were receiving APT with ASA before invasive dental procedure. 2. After seven days of discontinuation of APT with ADP antagonists, our patients' platelet function was restored enough to prevent increased bleeding during dental procedure. 3. During and after procedures (mostly teeth extractions) no bleeding complications occurred partially due to thorough realization of the procedures and due to emphasis made on local haemostasis.

CHANGES OF BONE MARROW STROMA IN PRIMARY AND SECONDARY ACUTE MYELOBLASTIC LEUKAEMIAS

Filip Olekšák^{1,2}

Tutors: Tomáš Balhárek, MD., PhD.¹; Juraj Sokol, MD., PhD.²

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Introduction: Bone marrow (BM) microenvironment plays an active role in pathogenesis of myeloid neoplasms, including heterogeneous group of acute myeloblastic leukaemias (AML), which are considered to be prognostically the worst.

Material and methods: We analysed BM stromal changes including proportion of BM macrophages, myelofibrosis and angiogenesis in 81 cases of primary AML without history of myelodysplastic syndrome (MDS) or treatment and 25 cases of secondary AML evolving from MDS, diagnosed in Martin and treated in two centres (Martin, Košice) in years 2009-2016. Macrophages and vessels were visualised immunohistochemically using antibodies anti-CD68 (clone PG-M1) and anti-CD34 and their proportion was estimated semiquantitatively and histomorphometrically per high power field. Bone marrow fibrosis was analyzed by Gomori staining and graded according to consensual criteria into MF0-3.

Results: AML patients in our upgraded cohort showed median survival only 165 days (range 0-2742), but in contrast to previously published data, without significant differences in survival according to primary and secondary origin. We confirmed, that secondary AML with MDS history show more frequently increased number of BM macrophages (48% cases of primary versus 90% of secondary AML) and less frequently reach complete remission (58,5% versus 41,2%), but without significant influence on overall survival. Similar results we observed also in presence of collagen myelofibrosis (MF2-3), which was more frequent in cases of secondary AML (72% versus 43% in primary), but again without any statistical significance. Insignificant was also BM angiogenesis, paradoxically without clear correlation to BM fibrosis.

Conclusion: BM stromal changes, which could be examined in routine BM trephine biopsies, seem to be not specific and variable among patients with AML, without significant relation to prognosis and patient survival. It is questionable what is the role of applied treatment (especially hypomethylation), which is used in last years for treatment of MDS.

NEURODEGENERATION MARKERS FOUND IN THE EARLY STAGES OF MULTIPLE SCLEROSIS

Lívia Ridzoňová, Alžbeta Kmecová

Tutors: ¹Ema Kantorová, MD., PhD.; ¹Prof. Egon Kurča, MD., PhD.; ²Ing. Petra Hnilicová, PhD.

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Introduction: Multiple sclerosis (MS) is an inflammatory and neurodegenerative disease of the central nervous system (CNS). Our work aims to evaluate the rate of neurodegeneration and the relationship between neurodegeneration and traditional clinical markers in patients with the early stage MS.

Material and Methods: 24 MS patients, experiencing their first neurological symptoms not more than three years previously, were compared with 22 healthy age- and gender-matched controls (CON). Clinical disability was quantified according to Expanded Disability Status Scale (EDSS). Structural MRI images of all subjects were inspected for brain lesions to allocate patients into groups based on number of lesions (≥ 20 and < 20). All study participants underwent 1H-MR spectroscopy (1H-MRS) of the hypothalamus, which is a structure that hasn't been studied widely. Concentrations of glutamate + glutamine (Glx), choline (Cho), myoinositol (mIns), N-acetyl aspartate (NAA) expressed as ratio with creatine (Cr) were correlated with clinical markers. Statistical analysis was done using PAST.

Results: The only significant difference between MS patients and CON was observed in NAA to Cr ratio ($p = 0.03$ Mann-Whitney). NAA to Cr ratio was found to be lower in MS patients than in controls. However, NAA to Cr ratio did not match with any of the markers studied (EDSS, MSSS, age, duration of the disease, number of lesions). We found weak correlation of Cho to Cr ratio with EDSS ($r = 0.32$, $p = 0.026$ Kendall).

Conclusion: As far as NAA is considered to be a reliable marker of axonal damage, our results show predominance and independence of neurodegeneration in MS patients, even in the early stage of the disease. Correlation between Cho to Cr ratio and EDSS supports the role of myelin disintegration on disability progression.

TRAP-INDUCED PLATELET AGGREGATION IN PATIENTS RECEIVING DABIGATRAN

Linda Sorsakova, Aneta Knazurova

Tutors: Juraj Sokol, MD., PhD.; Ingrid Skornova, MA, PhD.; Lubica Vadelova, MA; Janka Zolkova, MA

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Background: Previously, warfarin was the only option for oral anticoagulation in patients with atrial fibrillation (AF). Currently, three new direct oral anticoagulants (DOACs) are approved as alternatives to warfarin. Dabigatran was the first new oral anticoagulant approved for stroke prevention in AF, followed by the oral anti-factor Xa inhibitors rivaroxaban and apixaban. The aim of the present study was to assess the effects of dabigatran on in vitro platelet aggregation in patients with non-valvular AF.

Material and methods: Light transmission aggregometry (LTA) was performed using the international protocol for the laboratory investigation of platelet function. We want to emphasize that testing was performed on patients without any antiplatelet or non-steroidal anti-inflammatory drugs (10 – 14 days before measurement) and with normal platelet count ($\geq 150 \times 10^9/L$). The antecubital venous blood was collected into tubes containing 3.2% buffered sodium citrate (anticoagulant-blood ratio 1:9) to assess platelet aggregation. Platelet aggregability was tested with platelet-rich plasma using platelet aggregometry (PACKS-4 aggregometer, Helena Laboratories, USA). Blood samples were stimulated with thrombin receptor agonist peptide - TRAP (32 μmol).

Results: This was a single centre study quantifying platelet aggregation in 28 patients treated with dabigatran by light transmission aggregometry. The thrombin receptor activating peptide (TRAP)-induced platelet aggregation was significantly lower two hours after taking dabigatran compared to baseline value (79.39 ± 13.38 vs. 90.14 ± 10.5).

Conclusion: The TRAP-induced platelet aggregation was reduced in cardiovascular patients two hours after receiving dabigatran.

Acknowledgement: The study was supported by grants VEGA 1/0187/17 and VEGA 1/0186/17.

ANTI-Xa ACTIVITY IN RIVAROXABAN AND APIXABAN-TREATED PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION

Lukáš Urban

Tutor: Matej Samoš, MD., PhD.

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Background: Oral factor Xa inhibitors – rivaroxaban, apixaban - had been introduced for prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (NV-AF). The aim of this study was to assess the trough and peak anti-Xa activity in rivaroxaban and apixaban-treated patients with NV-AF.

Patients and Methods: A single-centre prospective observational study was performed. We enrolled 41 oral factor Xa inhibitors-treated patients (21 rivaroxaban-treated and 20 apixaban-treated) with NV-AF. The trough and peak on-treatment anti-Xa activity was assessed with factor Xa-calibrated anti-Xa chromogenic analysis.

Results: The anti-Xa trough activity was 63.0 ± 44.4 ug/l and the peak activity was 172.4 ± 96.3 ug/l. No significant differences were found in anti-Xa trough activity (49.7 ± 40.7 ug/l versus 77.0 ± 44.8 ug/l, $p = 0.06$), and in anti-Xa peak activity (191.2 ± 116.9 ug/l versus 152.6 ± 65.7 ug/l, $p = 0.20$) between rivaroxaban- and apixaban- treated patients.

Conclusion: This post-marketing study demonstrated the real-world anti-Xa activity in oral factor Xa inhibitors-treated patients with NV-AF, and no significant differences in anti-Xa on-treatment activity comparing rivaroxaban and apixaban.

DICHOPTIC TRAINING USING THE OCULUS RIFT IN A TREATMENT OF AMBLYOPIA

Lýdia Bušovská

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Introduction: The purpose of the study is to evaluate the effect of dichoptic visual training using the virtual reality head mounted display in a treatment of amblyopia.

Material and methods: Group of 130 amblyopic patients, comprises of 80 men and 50 women and children with a mean age 20.9 ± 13.9 years, was treated by dichoptic visual training. Patients played videogame (Vivid Vision, San Francisco, USA) run in the Oculus Rift DK2 and HD twice a week for 60 minutes. Best corrected visual acuity (BCVA) was noticed before and after the training.

Results: BCVA was improved from a value of 0.39 to 0.49 ($p < 0.05$) in whole group. The highest change of BCVA, 0.5 ($p < 0.05$) was observed in a group of children from 0 to 8 years old. Change of BCVA was 0.08 for people from 9 to 53 years old. Taking into consideration the age criterion, the highest change of BCVA was reached by patients with beginning value between 0.2 and 0.3 without statistic significant correlation. Respond rate to therapy was 60.8 %. After the training patients subjectively described the improvement of stereo vision and peripheral vision.

Conclusion: The results of our study confirm that intensive stimulation of visual cortex using virtual reality leads to the improvement of BCVA in some cases of amblyopic patients. The advantage of dichoptic training using a virtual reality head mounted display is that it enables the treatment of amblyopia not only in the case of children, but also of adult patients.

DECOMPRESSIVE CRANIECTOMY IN PATIENTS WITH TRAUMATIC BRAIN INJURY – EFFECTIVITY AND LIMITATIONS

Martin Hanko

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Introduction: Decompressive craniectomy (DC) has been recently proven effective tier II therapeutic procedure in treatment of refractory posttraumatic intracranial hypertension. However its full potential and effectivity is yet to be described and this surgery remains controversial. The goals of our study include analysis of efficiency of DC and description of risk factors associated with unfavourable outcome.

Material and methods: 24 patients who underwent DC during years 2015-2016 were prospectively observed. Selected demographic, clinical and radiographic factors were analysed and compared with patient's GOS (Glasgow Outcome Scale) at the time of their last known clinical check (3.5 month in average).

Results: We observed mortality of 29.2%. Good outcome (GOS 4-5) was achieved by 29.2% of patients as well. Preoperative GCS ≤ 5 ($p=0.018$), intraventricular bleeding ($p=0.0057$), midline shift above 16 mm ($p=0.0067$) and progressive increase of intracranial lesion's volume ($R=-0.41$, $p=0.046$) especially its extracerebral component ($R=-0.46$, $p=0.02$) were identified as statistically significant negative prognostic factors.

Conclusion: DC is effective in management of patients with traumatic brain injury. Good outcome is achieved by 29.2% of patients. Described negative prognostic factors (preoperative GCS ≤ 5 , intraventricular bleeding, midline shift above 16 mm and increasing volume of traumatic lesion) could help in targeting this surgery only to patients who are expected to benefit from it.

PUPILLOMETRY – A NOVEL BIOMARKER OF ALLOSTATIC REGULATION

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Introduction: The aim was the study of changes in pupillary light reflex (PLR) and their comparison between left and right eyes. We evaluated sensitivity of PLR parameters to the shift in the dynamic balance of the autonomic nervous system during and after mental load.

Material and methods: Thirty eight students (age: 23 ± 0.2 yr., BMI: 22.5 ± 0.4 ; 24 women) were examined. Pupillary light reflex was applied separately for both eyes using the Pupillometer PLR-2000 (NeuroOptics, USA) device in four phases: at the initiation (T1) – before mental arithmetics test (T2; basal phase) – after mental arithmetics test (T3) – at the end of measurement (T4; recovery phase). Every phase lasted 2 minutes. PLR parameters: INIT - initial value of the pupil diameter before the application of light stimulus, END - final value of the pupil diameter after illumination at the peak of the constriction and Delta - pupil reactivity during PLR.

Results: PLR parameters for both eyes were diminished after mental arithmetics test, as well as in the recovery phase. The significant difference between the left and right eyes was in Delta parameter, which revealed a significantly lower reactivity compared to the right eye ($p=0.006$ **).

Conclusion: The study is focused mostly on evaluation of the parasympathetic subdivision parameters during PLR. Sympathetic activation during mental load supresses parasympathetic effect, which is reflected in parameters for both eyes. Effect of lateralization could participate in different reactivity of both eyes (Delta), wherein the parasympathetic activity is under the dominant influence of the left hemisphere, and the PLR parameters are expressed more for the right eye. The knowledge may also be used to investigate the activation and inhibition of subcortical and cortical centers which also modulate these responses.

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MONITORING OF NUTRITIONAL STATUS IN PATIENTS AFTER SURGERY OF THE PANCREAS

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Introduction: The proximal resection of the pancreas (Whipple operation) belongs to the challenging and complicated operation. It is indicated for malignant and benign diseases of the pancreas, in which the majority of patients have altered nutritional status in terms of wasting, eating disorders, and indigestion. The result is malnutrition with hypoproteinaemia and hypoalbuminaemia with all consequences, including perioperative and postoperative complications.

Material and methods: Prospective analysis of 30 patients who underwent Whipple operation. The indications for surgery were malignant tumors of the head of the pancreas and chronic pancreatitis. Patients were monitored preoperatively, on the day of surgery, on the third and fifth postoperative day and on the day of discharge from hospital. During the entry examination was made nutritional screening and assessment of anthropometric parameters. In the course has been monitored laboratory parameters, nutritional intake and output, anthropometric parameters and the incidence of complications.

Results: In the study group was observed weight loss in all patients. Similarly, in varying degrees, it occurred in all patients hypoproteinaemia and hypoalbuminaemia. The degree of alteration of nutritional status directly correlated with the occurrence of complications in the postoperative period. Between the two arms (pancreatic cancer vs. chronic pancreatitis) were no significant differences in the endpoints.

Conclusion: Monitoring of nutritional status in patients with pancreatic disease belongs to the key measures in preoperative, peri- and post-operative period. Early detection of nutritional deficit preoperatively allows to prepare the patient for surgery with appropriate nutritional support. Perioperative monitoring helps in indicating the proper nutrition and consequently reduces the incidence of postoperative complications and allows patients earlier convalescence.

ISOPROSTANES AND OBSTRUCTIVE SLEEP APNOEA SYNDROME IN CHILDREN

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Introduction: In the past decades obstructive sleep apnea syndrome (OSAS) in children has become widely recognized as a frequent disorder associated with potentially serious clinical morbidities as neurobehavioral consequences, cardiovascular and metabolic morbidity. It is believed that repeated episodes of hypoxia and reoxygenation promote production of reactive oxygen species and oxidative stress. F2-isoprostanes are considered as reliable biomarkers of oxidative stress and can be easily detected in urine, which offers the possibility of non-invasive measurements even in noncollaborative patients. The aim of this study was to find if the urinary concentration of 8-isoprostane as a marker of oxidative stress is elevated in children with OSAS.

Material and methods: Children with snoring underwent the Sleep Clinical Record (SCR) and the standard full-night videopolysomnography in Paediatric sleep laboratory Martin. The urine sample for the measurement of 8-isoprostane was collected the morning after the polysomnographic recording and analysed by ELISA method.

Results: 11 children (9 boys, 2 girls) with clinical symptoms of OSAS were included. Average age was 8.9 ± 4.2 years, BMI 21.5 ± 6.7 kg/m², SCR 7.8 ± 3.2 , obstructive apnoe/hypopnoea index (oAHI) 26.7 ± 31.9 events/TST, oxygen desaturation index (ODI) 22.2 ± 26.1 and concentration of 8-isoprostane 2.94 ± 2.20 ng/ml. There was established moderate correlation between concentration of 8-isoprostane and oAHI ($r=0.566$, $p<0.01$) and ODI ($r=0.420$, $p<0.01$). Moderately strong correlation were found between SCR and concentration of 8-isoprostane ($r=0.612$, $p<0.01$). 36.4% of children had blood pressure over 95 percentile for appropriate age, height and sex, where the significant higher oAHI (46.6 ± 24.6 events/TST vs. 5.4 ± 6.4 events/TST, $p<0.05$) and also higher concentration of 8-isoprostane (5.01 ± 2.04 ng/ml vs. 1.76 ± 0.84 ng/ml, $p<0.01$) were presented in comparison with children without hypertension.

Conclusion: The study showed that OSAS also in children leads to oxidative stress, and 8-isoprostane may be used as one of the non-invasive screening marker of the severity of OSAS in combination with other laboratory tests and questioners.

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„BIOFEEDBACK“ TRAINING – A TOOL FOR STRESS DECREASE?

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Introduction: Biofeedback training represents a modern therapeutical method based on voluntary modification of individual's physiological processes with the purpose of improving somatic and mental well-being. Biofeedback is increasingly used in a variety of clinical settings, enhancement of physical/cognitive performance or stress management. We aimed to study the effect of short-term biofeedback - relaxation training on autonomic regulation in healthy young people.

Material and methods: Twenty healthy young men (age 21.4 ± 1.7 y.; BMI 23.7 ± 2.7 kg/m²) were examined under standard conditions. Continuous ECG-signal and electrodermal activity were recorded during protocol: Rest (P1; 6 min) – Go/No Go test (P2; 6 min) – Biofeedback relaxation training (P3; 10 min) - Rest (P4; 6 min) – Go/No Go test (P5; 6 min). Evaluated parameters: mean RR-interval, high-frequency band of heart rate variability (HF-HRV), electrodermal activity (EDA), reaction time, errors of omission and commission. State anxiety was evaluated before and after the protocol using STAI questionnaire.

Results: HF-HRV significantly increased during the first Go/No Go test (P2) compared to rest (P1) ($p=0.002$), but not during the the second Go/No Go test after relaxation (P5 vs. P4, $p=0.810$). In contrast, EDA was significantly increased during both Go/No Go tests – before and after relaxation training (P2 vs. P1, $p<0.001$; P5 vs. P4, $p=0.019$). Reaction time was significantly shorter during P5 compared to P2 ($p=0.043$). No significant differences were found in errors during the tests. State anxiety was significantly lower after the protocol compared to the baseline values ($p<0.001$).

Conclusion: Our findings revealed that cardiac vagal control was sensitive to short-term relaxation training indicating potential effect of central inhibition before relaxation and “calm-state” after acute relaxation in young healthy people. In contrast, sympathetic overactivity indexed by higher EDA during both periods could indicate slower sympathetic response to relaxation; thus, we suggest a necessity of long-term biofeedback training on sympathetic arousal.

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OPINIONS OF HEALTH CARE PROFESSIONALS ON PSYCHIATRIC PATIENTS

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Introduction: People suffering from psychiatric disorders are often faced with prejudices and the stigmatization primarily in lay society. However, certain prejudices and misconceptions can also occur between health care professionals. The aim of the work was to determine the opinions of health care professionals on psychiatric patients.

Material and methods: The group was consisted of 80 health care professionals (with a predominance of nurses n76) working in community-based facilities and ADOS (n22), psychiatric departments (19), somatic departments (n24) and 15 respondents did not mention their workplace. The average length of practice of the respondents in the entire group was 21.32 ± 11.61 year. The opinions of medics on the mentally ill, we measured by the our own designed questionnaire, containing 31 statements (Cronbach's Alpha =0.747), by which the respondent expressed the degree of agreement/disagreement with a Likert's scale where 1- is complete disagreement, 3-I do not know to answer, and 5 means-absolute agreement.

Results: We confirmed that certain prejudices against the mentally ill can occur between health care professionals. The psychiatric patients were deemed to be incompetent to lead a normal life (65%) and have a normal job (53.8%). Respondents also expressed doubts (12.7%) or did not know to answer (49.4%) whether psychiatric patients should have children. Respondents also considered the mental illness for a not completely curable (78.7%). The opinions about psychiatric patient's inability to control themselves still persist (21.6%).

Conclusion: The finding that the health care professionals were stigmatizing psychiatric patients is striking mainly because of reason that they are the ones who come into frequent contact with mental ill persons and have more information about psychiatric disorders than the lay public. Currently they should be a source of destigmatization, of raising the subconscious about mental disorders and of demolishing myths about psychiatric patients.

DIGNITY OF THE ELDERLY PEOPLE FROM NURSE'S PERSPECTIVE

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Introduction: Preserving dignity is an important element in the healthcare. The human population is aging and a problem of dignity is becoming increasingly topical. The aim of our study is to investigate how an experienced nurse interprets the dignity of the elderly, and what factors affect it.

Material and methods: The single case study research design was adapted. The face to face interview, which lasted 30 minutes, was used to obtain data. The thematic analysis was used for data analysis. The interview was conducted in the Home for the seniors in Kysucké Nové Mesto with 42 year-old nurse, who has 18 years of experience with providing nursing care. Before the interview informed consents of workplace authority and respondent were obtained. This study is seen as a pre-research for more broadly research within the bachelor thesis.

Results: Based on the thematic analysis, the interpretation of personal dignity of the elderly, as well as the positive and negative factors affecting this kind of dignity was identified. Within the personal dignity these subthemes were identified: to be wanted and loved; life story; Menschenwürde. Positive factors affecting the dignity were: gentle approach; respect to patient; nurse's positive relationship to occupation; praise for the little things; smile and personal greeting; give the patient time; relieving unpleasant situation. Negative factors affecting the dignity were: costly care; shortage of the staff; insufficiently paid staff; hypersensitivity and touchiness of patients; everyday dilemmas; chiding of patients; wicked humiliation of patients.

Conclusion: Identified themes and subthemes can be used as the underlying framework of follow-up research. A pilot single case study demonstrated the functionality of the chosen methodology. Other research on a larger sample may contribute to a deeper reflection on the issue of the dignity of older people in our socio-cultural context.

A DRINKING REGIMEN IN CHILDHOOD

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Introduction. Drinking regimen is an important part of healthy lifestyle. Sufficiency of fluid is essential for digestion and metabolism. It ensures the supply of oxygen and nutrients to tissues and cells. It is essential for blood circulation. Fluid is necessary in regulating of body temperature and excretion of oxidants from the body. The aim of our study was to find out what kinds of drinking regimen have children in younger and older school-age in district Dolný Kubín.

Material and methods. The prospection was realized by questionnaire created by ourselves and it was oriented to drinking regimen of students, popularity of drinks, liquids intake, assurance of liquids in school and free time. Other questions were oriented to knowledge, for example selection of an appropriate and inappropriate drinks or symptoms of dehydration. The research sample consisted of 241 students of 4 primary schools from 4th and 9th grade in district Dolný Kubín.

Results. Liquids intake among respondents is insufficient. Average daily intake among younger students is 1330 ml and among older students is 1400 ml. Boys intake more liquids than girls. Most of the respondents drink liquids during the day, 17 % younger students and 30 % older students drink liquids mostly in the afternoon. The most favourite drink among respondents is tea. The most of respondents drink tea during breakfast and at school. During the day they drink pure water the most. 51 % younger and 37 % older students like sweetened drinks. Respondents drink cola drinks with frequency once a month. The most of respondents answered correctly, which drinks are appropriate and which drinks are inappropriate, what are the symptoms of dehydration and they correctly marked averments about cola's drinks.

Conclusion. Insufficiency of water acts negative to function of tissues, organs and whole body. Insufficient drinking regimen affects physical and mental activity, for that reason enough hydration is so important. Education of students and pedagogues in primary prevention can enhance quality and quantity of water intake.

PROBLEM OF DEHYDRATATION OF GERIATRICS PATIENTS

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Introduction: Problem of dehydration in geriatric patients is increasing with age and number of chronic diseases. In geriatrics, dehydration is described as stand-alone geriatric syndrome. In nursing, hydration management is part of the satisfaction of basic need to fluid intake. Focus is on assessment of risk factors (RF) and defining characteristics (DCH) of nursing diagnoses in domain Nutrition, class Hydration.

Material and methods: Quantitative descriptive study was conducted in the House of nursing in Zborov (n = 147). Empirical data were obtained by retrospective analyse of medical records of patients in 2016 who met the minimum criteria for classifying as geriatric patients (n = 136) - age over 65 years, polymorbidity. Items of research protocol consisted of: clinical symptoms of dehydration (RF, DCH), biochemical parameters (urea, creatinine, sodium), recommended daily fluid intake (RDI) - nomogram, a list of nursing interventions. Data collection and evaluation were realised in electronic form. Data were processed by methods of descriptive statistics in MS Excel.

Results: Number of patients were 136 (94 women, 42 men), average age was 80.6 ± 7.34 years. The most frequent RF were: age, dependency based on ADL, impaired physical mobility, risky medication, decreased thirst sensation. The most frequent DCH were: polymorbidity, decreased skin turgor, fatigue, dry skin/mucous membranes. According to biochemical parameters 93 patients were hydrated, and 43 were dehydrated. Out of 87 patients, whose intake and output of fluids were recorded, 45 patients fulfilled RDI, 42 didn't. Out of that 42, 37 patients were marked with 5 and more DCH for diagnose Deficient fluid volume, and 28 were ranked dehydrated according to biochemical parameters. Most frequent interventions were: monitor temperature, taking blood test, monitor mental status, oral hygiene.

Conclusion: Problem of dehydration in long-term care is common, because fluid intake is multifactorial. Nurse must be able to identify situations in which patient is in risk of dehydration and use wide range of interventions to maintain and increase fluid intake.

SPECIFICS OF HYGIENIC CARE FOR NEWBORNS

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Introduction: The hygienic care and breastfeeding are some of the basic needs of a newborn. Proper hygienic care is important indicator of our health, therefore, it is necessary to perform hygiene thoroughly, have enough information and knowledge about it. The aim of our study was to ascertain pregnant women's lack of knowledge in the hygienic care for a newborn and suggest fields of education, which are important in the context of prenatal preparation.

Methodology: We used a questionnaire of our own construction, which was divided into 6 fields of hygienic care about a newborn. The questionnaire consists of 25 items related to knowledge of the mothers-to-be. The accuracy of answers was set by literature related to this issue. The questionnaire was given to 130 respondents.

Results: Average success rate was 62%, which is E on the grading scale. The questionnaire was filled successfully by 63 respondents (60 – 100%). 38 respondents failed (59% or less). Success rate was following: A – 1.98%, B – 1.98%, C – 10.98%, D – 14.85%, E – 32.67%. Average success rate of 53 pregnant women, who underwent prenatal preparation, was 63.17% and 48 pregnant women, who didn't, was 60.24%. We didn't notice any differences in success rate between women who were expecting their first child and women who were expecting their other child. The highest success rate was in field „Safety and protection during bath“ and the lowest success rate was in field „Umbilical cord care“. The question with the lowest success rate (9.90%) was about the interval and process of cleaning baby's ears and the question with the highest success rate (98.02%) was about taking care of baby's eyes.

Conclusion: Undergoing the prenatal preparation plays a part in pregnant women's knowledge, however, it isn't significant. The aim of prenatal preparation should be preparation for childbirth and parenting, including the care for a newborn. We suggest to pay attention to themes, which we consider the most problematic in hygienic care.

DIFFERENCES IN MECHANICALLY INDUCED TRACHEOBRONCHIAL COUGH IN ANESTHETIZED FEMALE AND MALE CAT

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Introduction: There are interesting differences in the occurrence of the cough reflex and its threshold between female and male subjects. Higher cough response in females was recently observed also in guinea pig animal model.

Methods: We compared the cough response in female (16 mean weight 2.70 ± 0.10 kg) and male (18 mean weight 3.91 ± 0.17) cats that were anesthetized by pentobarbital. The cough reflex was induced by mechanical probing of the tracheal region of airways by soft polyethylene catheter. Cough response is unstable during initial trials. Therefore, approximately 5th (non-adapted) and 23rd (adapted) cough stimulation trial was taken for independent analysis. The number of coughs renormalized to 10s stimulation duration together with peak inspiratory and expiratory esophageal pressure were analysed. Mean values \pm SE are reported.

Results: The number of coughs in the female and male group (9.5 ± 1.3 vs. 12.0 ± 1.4 non-adapted and 6.4 ± 1.2 vs. 7.0 ± 0.9 adapted) as well as peak inspiratory esophageal pressures (1.20 ± 0.19 vs. 0.89 ± 0.10 kPa non-adapted and 0.90 ± 0.16 vs. 0.81 ± 0.14 kPa adapted) were similar (all $p > 0.16$). However, the amplitudes of expiratory esophageal pressure in females appeared lower than that in males (2.14 ± 0.27 vs. 3.64 ± 0.61 kPa; $p < 0.05$ for non-adapted cough; 1.02 ± 0.15 vs. 1.93 ± 0.43 kPa; $p = 0.06$ for adapted cough).

Conclusions: The sex differences in mechanically induced coughing are limited in anesthetized cat animal model. We propose that the experimental conditions and possibly physique of the animals could significantly influence the cough-related sex differences. The contribution of an arousal state and therefore “cough” receptors dependent coughing with negligible modulation from C-fibers are considered to be the most significant factors. This work was supported by the VEGA 1/0072/16 and 1/0253/15. This work was supported by the Slovak Research and Development Agency under the contract No. APVV-0189-11”.

INFLUENCE OF REPERFUSION INJURY ON MYOCARDIAL PROTEINS

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Introduction: Reperfusion injury of myocard is associated with nitration of protein's tyrosines. Nitration of tyrosine can affect protein function (protein can be inactivated or undergo a gain-of-function), which leads to pathological function of myocard.

Materials and methods: In our experiments we used hearts of 6 months old and 26 months old rats, concretely homogenates and mitochondria, which were divided into three groups – control, ischemic and ischemia-reperfusion. We determined concentration of proteins spectrophotometrically, the presence of nitrotyrosines was detected using antibodies and mass spectrometry.

Results: While the concentration of proteins was not affected during aging and after IR injury, the amount of nitrotyrosines was significantly elevated in IR group of both ages (11-fold higher in 6-month / 4-fold in 26-months) when compared to the control. The proteins underwent electrophoresis on polyacrylamide gel (1D) and nitrotyrosine-modified proteins were visualized with specific antibodies. Modified proteins were excised from the gels, cleaved and identified using Mass spectrometry (Ultraflex extreme MALDI-TOF) and compared with SwissProt and NCBI nr databases. 1D electrophoresis revealed 12 mitochondrial proteins, 5 of them with significant changes ($p < 0.05$) after myocardial IR injury. Reduced protein nitration was observed in malate dehydrogenase, 39kDa and 42kDa subunits of NADH ubiquinone oxidoreductase, creatine kinase S-type. On the contrary, nitration of ATP synthase subunit beta was elevated by 20% after IR injury, which has impact on energy production in mitochondria.

Conclusion: Consequence of the ischemia-reperfusion injury is the modification of protein by radicals of oxygen and nitrogen. Mitochondrial proteins are also attacked. It causes redox and energy disbalance with impact on the myocardial function.

MR IMAGING REVEALS VOLUMETRIC CHANGES OF BRAIN STRUCTURES DURING THE TREATMENT OF DEPRESSIVE DISORDER

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Introduction: Hippocampal complex (HC) may have a substantial role in depressive disorder (DD). Studies suggest that depressed persons display hyperactivity in the hypothalamic-pituitary-adrenal (HPA) axis. This results in elevated glucocorticoids, which may negatively affect neurogenesis and cause excitotoxic damage in the HC. Chronic excess stress on the HPA axis is believed to cause structural changes in HC and amygdala (AM), which are the main structures regulating mood and behaviour. What is more, neuropsychological studies have identified deficits in HC-dependent recollection memory. Antidepressant medication may avoid these effects and increase neurogenesis and level of brain-derived neurotrophic factor (BDNF) by blocking hyperactivity HPA axis. The aim of this study was to investigate the effect of antidepressants on brain structures, primarily on HC and AM.

Materials and methods: Eleven depressive patients underwent high-resolution MRI session before and after being treated by selective serotonin reuptake inhibitor antidepressant (therapy duration from 2 to 10 weeks). Data from MRI were segmented and volumes of brain structures were evaluated using a program FreeSurfer. Volume changes of selected brain structures were statistically compared before and after treatment and correlated to clinical parameters of the patients.

Results: We observed changes of HC and AM volume after treatment that corresponded with improvement of state of psychiatric patients. Volume of right HC was increased by 2,2% ($p=0,001$ paired Students t-test), in left hippocampal volume was no significant change ($p=0.905$), right AM increased in volume by 2.2% ($p=0.070$), left AM by 7.0% ($p=0.001$). Volume of gray matter raised by 1.4% ($p=0.0003$).

Conclusion: Our data suggests there is a change in volume of HC, AM, gray matter during treatment of patients with depression. Increase of these volumes could be a consequence of antidepressant treatment, because antidepressants reduce level of glucocorticoids, so that negative effect on HC is blocked and they reactive BDNF, stimulating neurogenesis. Changes in the volumes of HC and AM reflect neuronal plasticity. Results are remarkable, despite of the limitation of a small preliminary patient cohort.

CHARACTERIZATION OF COUGH RESPONSE IN NAÏVE FEMALE GUINEA PIGS

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Epidemiological studies indicate, that overwhelming majority of patients treated on specialized cough clinics for chronic cough are postmenopausal women. Moreover, homogeneity amongst these patients worldwide suggests a distinct clinical entity, etiopathogenesis of which remains unclear. In basic cough research, only models utilizing male animals are used and upon further investigation why the literature databases fail to provide an answer. Therefore, we decided to characterize cough response in female guinea pigs, which could provide a model suitable for study of hormonal influences on cough physiology. First experiment utilized Dunkin-Hartley guinea pigs (8 females and 9 males – control group) were repeatedly exposed to aerosols of 0.4M citric acid, 50 μ M capsaicin and distilled water for 10 minutes in whole-body plethysmograph. Airflow traces and sounds were simultaneously recorded. Aim of second experiment was the construction of dose-response curves for citric acid and capsaicin utilizing another 5 female and 5 male guinea pigs. Average number of coughs to citric acid in females (12.5 \pm 3.5 – 24.5 \pm 6.5 – 18.5 \pm 6) did not differ from males (13 \pm 5.5 – 18 \pm 2.5 – 19 \pm 4). Number of coughs to capsaicin did not differ between females (15.5 \pm 3 – 16 \pm 2.5 – 15 \pm 6) and males (8 \pm 2 – 10 \pm 2.5 – 14 \pm 6), neither did number of coughs in response to distilled water (females: 5 \pm 2 – 7.5 \pm 3.5 – 5.5 \pm 3.75; males: 5 \pm 2 – 5 \pm 3 – 6 \pm 2). Cough latency showed similar tendencies. Dose-response curves did not differ significantly between genders. Based on our results we conclude, that cough response obtained in naïve female guinea pigs over time is relatively stable and comparable to that of male guinea pigs, which is documented by similar cough response and its variability. However, these experiments have to be conducted in sensitized animals, because hormonal influences can be more evident in pathologic conditions.

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SURVIVIN AND P53 IN COLORECTAL CARCINOMAS

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Introduction: Survivin plays key role in negative regulation of the apoptotic pathway. p53 is important regulator of cell cycle and apoptosis. They represent diametrically opposed signals in apoptotic regulatory mechanisms.

Method: We studied the role of survivin and p53 in group of 40 colorectal cancers (CRC). We assessed the expression pattern of proteins in question with regards to the subcellular location, the intensity of staining and percentage of positive tumor cells. Then, we studied the relationship of survivin expression pattern with tumor grade.

Results: Survivin was expressed in 34 cases (85%), whereas p53 in 32 cases (80%). For survivin, combined nuclear and cytoplasmic localization was present in 18 cases (53%), nuclear localization in 14 cases (41.1%), and cytoplasmic only in 2 cases (5.9%). Survivin revealed moderate and/or strong immunoreactivity in 28 cases (82.4%), and 23 cases (67.6%) showed more than 25% positive tumor cells. For p53, 30 cases (94%) showed nuclear localization and 2 cases (6%) nuclear and cytoplasmic reaction, 18 cases (56%) revealed moderate and/or strong intensity of immunoreaction, and 23 cases (71.8%) showed less than 25% labelled tumor cells. Moreover, we found out that nuclear and combined nuclear and cytoplasmic localization was associated with higher grade: G2 was present in 10 of these cases (29.4%) and G3 in 13 cases (38.2%).

Conclusion: Survivin is commonly expressed in CRC. Subcellular localization of survivin and tumor grade in CRC revealed significant correlation ($p=0.0018$). There was no significant relationship between survivin and p53 protein. Our results suggest that survivin was not down-regulated by p53 in CRC. We confirmed the importance of nuclear and combined nuclear and cytoplasmic survivin staining, which may be a notable immunohistochemical parameter and valuable diagnostic and prognostic biomarker.

THE EFFECT OF EXOGENOUS SURFACTANT IN ENDOTOXIN-INDUCED LUNG INJURY

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Introduction: Pulmonary surfactant is a unique mixture of phospholipids and specific surfactant proteins (SP)-A, B, C and D that decreases surface tension at the air-liquid interphase. Surfactant proteins play a role in the lung defence by modulating inflammatory response and elimination of pathogens from alveolar surface. When reaching respiratory system, bacterial lipopolysaccharide (LPS) aggregates endogenous surfactant and thus causes its inactivation. The aim of the study was to investigate if administration of exogenous surfactant can reverse the harmful effect of LPS on the lungs.

Material and methods: Adult male rats (Wistar, n=31, b.w. 340±30g) were anaesthetized, tracheotomised and the endotracheal tube was inserted. Animals were treated with either 100, 500 or 1000 µg/ml LPS (*E.coli*, 055:B5) intratracheally to induce lung injury. For further experiments, rats with LPS 500 µg/ml were treated with exogenous surfactant (Curosurf[®]) at dose 50 mg phospholipids/kg b.w. and controls received sterile saline (volume dose 2.2 ml/kg b.w.). The animals were artificially ventilated for 5 hrs and then overdosed by anaesthetics. Left lung was lavaged by sterile saline and right lung was used for further analysis. The levels of investigated markers were determined in homogenized lung (HL) tissue and bronchoalveolar lavage fluid (BALF). Lung edema was expressed as wet/dry weight ratio.

Results: LPS at dose of 500 µg/kg results in a reliable model of experimental lung injury. In comparison to controls, it leads to lung edema formation (p<0.01), and the increase in levels of IL-1β (p<0.01), ANGPT2 (p<0.05) in HL and BALF, as well as the oxidative stress in HL (TBARS, p<0.05). There was a tendency to increase in SP-A level in BALF (p=0.056). The administration of surfactant reduced ANGPT2 in BALF (p<0.05 vs. LPS), while decrease of IL-1β, MCP-1 in BALF was not significant (p>0.05 vs. LPS). Surfactant therapy also reduced the lung edema (p<0.05 vs. LPS).

Conclusion: Intratracheal administration of LPS leads to changes reminiscent of bacterial infection. Administration of exogenous surfactant mitigates inflammation, edema formation and oxidative stress.

ANTI-TUMOR EFFECTS OF CLOVE BUDS IN THE MODEL OF BREAST CARCINOMA

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Introduction: Chemoprevention, which includes the use of natural substances to reduce the risk of disease, is now becoming an area of intense research. Based on our previous experiments, it seems that cocktail of low-dose phytochemicals present in plant-derived functional foods may be highly effective in mammary carcinogenesis, more than isolated phytochemicals.

Methods: The preventive effects of clove buds were evaluated in the model of N-methyl-N-nitrosourea-induced rat mammary carcinogenesis. Cloves were dietary administered at two concentrations of 0.1 % and 1 %. The experiment was terminated 13 weeks after carcinogen administration. At autopsy, mammary carcinomas were removed and prepared for histopathological and immunohistochemical analyses.

Results: Dietary administered cloves caused the dose-dependent decrease in tumour frequency by 47.5% and 58.5% when compared to control. Analysis of carcinoma cells in animals showed bcl-2, Ki67, VEGFA, CD24, and CD44 expression decrease and Bax, caspase-3, and ALDH1 expression increase after high dose cloves administration. MDA levels were substantially decreased in rat carcinomas in both clove groups. The evaluation of histone modifications revealed increase in lysine trimethylations and acetylations (H4K20me3, H4K16ac) in carcinomas after cloves administration. TIMP3 promoter methylation levels of CpG3, CpG4, CpG5 islands were altered in treated cancer cells. An increase in total RASSF1A promoter methylation (three CpG sites) in low dose clove group was found.

Conclusions: Our results clearly demonstrated preventive effect of clove buds in the breast carcinoma model. This is the first mention about the anticancer effects of cloves against cancer stem cells and epigenetic markers in vivo.

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LEFT VENTRICULAR EJECTION TIME AND ITS DETERMINANTS

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Introduction: Left Ventricular Ejection Time (LVET) as one of the systolic time intervals is affected by multiple factors including activity of sympathetic nervous system. The aim of this study was to describe the behaviour of LVET during different conditions together with other cardiovascular measures potentially influencing it and to assess its dependence on vascular properties and heart rate at rest.

Material and methods: LVET has been measured in 50 healthy subjects (28 female, 22 male) with a mean age of 18.7 years (SD = 1.88) together with Thoracic Fluid Content (TFC, marker of preload), Stroke Volume (SV), SV/LVET ratio and Systemic Vascular Resistance (SVR, marker of afterload) by means of impedance cardiography (CardioScreen® 2000, Medis, Germany) and photoplethysmographic volume-clamp method for continuous finger arterial blood pressure recording (Finometer Pro, FMS, Netherlands). Arterial stiffness was examined (cardio-ankle vascular index – CAVI) by VaSera VS-1000 (Fukuda Denshi, Japan). During protocol, we attempted to evoke autonomic nervous system changes by orthostatic test (HUT, head-up tilt) and mental arithmetic (MA) test.

Results: Results show a significant decrease in LVET, SV and SV/LVET during HUT and mental arithmetic task ($P < 0.0001$ for each). SVR was significantly higher in both challenges (HUT: $P < 0.0001$, MA: $P = 0.003$), TFC was decreased at HUT and increased during MA ($P < 0.0001$ for both). At rest, LVET correlated significantly negatively with CAVI ($\rho = -0.319$, $P = 0.025$) and heart rate ($\rho = -0.523$, $P = 0.0001$) but no significant correlation with SVR and TFC was found.

Conclusion: LVET was decreased during increase of sympathetic activity in both challenges regardless the preload changes. At rest, the important determinants of LVET include arterial stiffness and heart rate.

Support: APVV-0235-12, VEGA 1/0087/14, VEGA 1/0117/17 and ITMS project “Biomedical Center Martin” no. 26220220187, this project is co-financed from EU sources.

THE EXPLORING OF THE MENTAL AND PHYSICAL HEALTH IN PREGNANT WOMEN

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Introduction: Pregnancy is a period that puts on the body women special requirements, can be can be burdensome for the mental and physical side, it brings a lot of mental and physical changes, positive emotions, and experiencing anxiety, which can affect the quality of life for pregnant women. The aim of the study was to investigate the effects of pregnancy on the mental and physical health, the quality of life and anxiety symptoms in pregnant women.

Methods: Exploratory method was used questionnaire. The first part of the questionnaire consisted of six questions of its own design intended to assess mental and physical health. The second part consists standardized QoL-Grave, focused on finding out the quality of life of women during pregnancy. Cronbach α QOL-GRAV was 0.87. The third part consists of a standardized questionnaire, the Beck Anxiety Scale (BAI), which measured symptoms of anxiety in pregnant women. Cronbach α BAI was 0.68. Participants were 304 pregnant women with normal pregnancy, with the average age 27 ± 4.95 years. For the evaluation we used descriptive statistics, Pearson correlation coefficient and analysis of variance (ANOVA).

Results: Most women assess their mental and physical health during pregnancy positively and most also reported a positive effect of pregnancy on the mental (25% fully agreed, 45% agreed earlier) and physical health (18% fully agreed, 35% agreed earlier). Based on evaluation of BAI we found that most respondents had moderate symptoms of anxiety (51%) and moderate symptoms of anxiety (27%). The impact of age, parity, pregnancy period, did not show statistically significant in view of the quality of life of the anxiety symptoms are in pregnant women.

Conclusions: Midwives who accompany women during pregnancy should inform women about changes in mental and physical health, should be concerned about its management, identify risks associated with mental or physical changes, when problems should be able to advise and propose all the solutions to improve the quality of life of women during pregnancy.

WOMEN AWARENESS LEVEL OF SEXUALITY AT PREGNANCY

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Introduction: Sexuality, as one of the basic needs is an important matter for a pregnant woman, as well. Pregnancy is a time of physical and mental changes that influence sexuality. The aim of this study was to find out the awareness level about sexuality at women during pregnancy.

Material and methods: The chosen method is an author-made questionnaire. The research file consists of 242 pregnant women at average age of 28.07 (\pm 5.13) years. Descriptive statistics method was used in evaluation, Chi-squared test of independence and Pearson correlation coefficient (r).

Results: We found out that majority of pregnant women (66.5%) notices some changes in their sexuality during pregnancy. The most common reason for lowered sexuality was tiredness, fear, discomfort and nausea. Nearly 47.5% of women expressed concerns about sexual intercourse during pregnancy, mostly providing reasons as fear of miscarriage, preterm birth, hurting the child or infection. We also found the statistical significance ($r=0.13$; $p=0.052$) at the time of pregnancy by trimesters and concerns about the intercourse at pregnancy. Although most women (62%) stated that they have information about sexuality and intimate life at pregnancy, we cannot be satisfied since the level of information in most cases was not satisfactory, which we had found out at examining and interviewing the respondents. We found out the statistical significance ($r=0.23$; $p=0.0001$) between the times of pregnancy by trimesters and level of mentioned awareness at pregnancy. Most women (78.1%) showed certain interest and stated that they wanted to be informed about this issue by their gynaecologist, information brochure or midwife. The most common source of information was the Internet and most women (56.6%) were not informed about this issue by their gynaecologist or midwife.

Conclusion: Awareness level about expected changes in sexuality during pregnancy should be routinely increased by midwives to secure the optimal level of awareness about issue of sexuality at pregnancy.

BIRTH PLAN FROM THE PERSPECTIVE OF WOMEN AND MIDWIVES (COMPARISON)

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Introduction: A birth plan is a way to express a maternal preferences during childbirth. At medical staff can cause a feeling of mistrust and frustration to themselves. The aim of this work is to find out how is used birth plan in practice. We focused mainly on the degree of respect birth plan for midwives and maternal satisfaction with the use of birthing plan.

Methods: The research was based on two questionnaires. One for women who used the BP during labor. Second one for midwives. The questionnaire was distributed via Internet. The sample consisted of 100 respondents. 50 midwives average of 14.02 years of experience and 50 mothers average age of 30.54. Data were processed using simple descriptive statistics.

Results: Based on the results, the use of birth plans are increasing. The most common preferences of the BP by the mother were: bonding (92%), support person (partner; 86%), change positions throughout I. stage of labor (78%), alternative positions for II. stage of labor (70%), and giving priority to spontaneous disruption of tissue in the perineum area before episiotomy (68%). In most cases have been planned preferences respected and 54% of women said they birth plan was helpful. On the other hand, midwives said that women with BP aren't calmer and is more difficult working with them, but try to respect the BP. The most commonly midwives respected partner at birth (100%), ability to change position in I. stage of labor (96%) and hydrotherapy (98%). The least respected were the requirements of uncontrolled pushing (70%), unshaven genitals (66%) and don't administer enemas (40%).

Conclusion: The results point to the fact that midwives and mothers have a different perception of practical use birth plan. Mothers are more satisfied with the use of BP and they recommend the use of BP in 96 %. All midwives reported that birth plan respects, but they recommend the use of BP in future 46%.

EVIDENCE SYNTHESIS OF EFFECTIVENESS OF EXISTING PREVENTIVE PROGRAMS FOR CARDIOVASCULAR DISEASES IN INDIVIDUALS WITH LOW SOCIAL ECONOMIC STATUS

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Introduction: A systematic review (SR) on the effectiveness of preventive programs for cardiovascular diseases (CVDs) is of importance due to the large prevalence of CVDs within Europe and the EU, resulting in 4 million and 1.9 million deaths per year respectively, according to the 'European Cardiovascular Disease Statistics 2012 edition'. Our objective was to develop the protocol for systematic review by methodology of JBI and PRISMA-P guidelines.

Material and methods: The review question was developed using the PICO acronym (Population, Intervention, Comparison, Outcome). Then a preliminary search was conducted with aim of identifying any existing similar systematic reviews within PROSPERO, Cochrane Library, JBI Library and PUBMED. The scoping exercise was applied to specify our inclusion criteria.

Results: The review question and inclusion criteria are as followed: 'Which preventive program is most effective in reducing the risk of developing cardiovascular diseases?' and inclusion criteria: Population: Adults of all ages both males and females without any existing CVDs with a low social-economic status. Intervention/Comparison: Preventive programs with pharmacological and nonpharmacological interventions that reduce risks of CVDs. Primary outcome: Effectiveness of individual preventive programs in reducing the development of CVD. Title was registered with JBI and protocol of systematic review was submitted to JBI library.

Conclusion: Developing a Systematic Review protocol is the first key step in developing full SR. Once the protocol of SR was finished, next steps are; search in all databases, paper retrieval of relevant studies, critical appraisal, data extraction, meta-analysis, produce recommendations for further research and future practice.

PUBLIC HEALTH IMPORTANCE OF HEAVY METALS IN INDIVIDUAL WATER SOURCES

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Introduction: Heavy metals rank among environmental contaminants with potential impact on human health. The goal of the analysis was to analyse selected heavy metals in samples from individual water sources considering their public health significance.

Material and methods: Samples were collected from November 9, 2016 to April 5, 2017 from 25 households having individual water source in the Horný Kalník village. We analysed manganese, copper, chromium, cadmium and lead using atomic absorption spectrophotometry (AAS). Questionnaire was used to obtain additional information on operation and technical condition of the wells as well as use of the water.

Results: Limit values (0.05 mg/l) of manganese for drinking water were exceeded in 9 of 25 samples. Limit values of copper for drinking water were not exceeded. Chromium, cadmium and lead were undetectable in all samples. 5 of 25 households use well water for drinking. 20 households reported having no information about the possibilities to analyse the heavy metals in the water. Two households used filtration device for the operation.

Conclusions: The levels of heavy metals in the water from monitored area are at the permissible level except increased concentration of manganese corresponding with composition of geological bedrock in the given area. Water from individual sources with concentration of manganese exceeding the limit value was not used as a drinking water. The main problem is rare usage of filtrating systems as well as lack of information in lay population. Therefore, water from individual sources present a potential problem in localities with increased level of the heavy metals in the environment.

THE OPINIONS ON MOTHERHOOD AMONG ADOLESCENT GIRLS

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Introduction: Motherhood is an important part of life of every woman. The aim of our study was to find out views on motherhood among adolescent girls. In the partial targets we were focused on the concept of motherhood as seen by adolescent girls, positive and negative benefits of motherhood, factors that influence girls in shaping their views on motherhood, and their intention to start a family of their own in future.

Methods: The non-standardized questionnaire of our own design was employed in the study. The study sample consisted of 141 female students of the third (n=57), fourth (n=79) and fifth (n=5) grade. The age of the respondents ranged from 17 to 20; the average age was 18 ± 0.79 years. For data processing we used a simple descriptive statistics.

Results: In analyzing the results, we found that most respondents (88%) plan to start a family in the future. More than half of respondents (n = 57) wants to have more than 3 children. The average age of adolescent girls deemed most appropriate for having a baby was 24.87 years. The most cited reason for having a family was mutual love and attraction partners; and the most important condition was a long-term relationship. In forming views on motherhood in adolescent girls, the greatest impact of the family (62%) and partner (60%) was found. Respondents considered being happy (61%) the most positive benefit of motherhood; and less time for themselves (52%) the most negative one.

Conclusion: Despite the varying opinions of young people on motherhood nowadays, in our research we found out that motherhood is in the eyes of adolescent girls still perceived positively. From the perspective of midwifery, it is a favourable outcome, in particular with regard to the trend of decreasing fertility, as well as a fact that starting a family and also the birth of the first child is moving increasingly into higher age, which brings many risks with it.

POSSIBILITIES TO EVALUATE PHYSICAL OVERLOAD VIA SELECTED METHODS

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Introduction: Disorders of musculoskeletal supporting system are constantly on the rise in the work environment. Therefore, it is very important to pay attention to objectification, assessment of physical load, to categorize works and elimination of the risks to the lowest possible level.

Material and methods. In total, 62 respondents participated - tailors in the investigation. 96.8% of them women and 3.2% of them men. Questionnaires were used for subjective assessment. Checklists, results from EMG, results from the Regional Public Health Authority in Martin were used for objective assessment.

Results. Average age of participants was 39.4 ± 8.3 years with the average duration of exposure 9.3 ± 4.7 years. Based on the results from the Regional Public Health Authority in Martin we found out over limit values during operations like sewing rear seat cover, difference (-) 2040 moves of left hand and (-) 3840 moves of right hand during whole shift at 10% F_{max} and (-) 14 640 moves of left hand and (-) 24 240 moves of right hand during whole shift at 30% F_{max} . We found out that 43.5% of respondents visited doctor because of problems with certain parts of body. 48.4% of respondents were unsatisfied with their work.

Conclusion. Nowadays, number of occupational diseases are on increase because of long time, excessive and one-sided load in 2nd category of works. Labor factors and physical load should not be evaluated separately but together with another working factors. There is no compact evaluation procedure of physical load in Slovakia, which reflected stated conditions and will be defined by legislation. The methods used for subjective assessment are valid as compared with objective ones. These can be used by employers, health services but also regional public health authorities.

ACCOMPANYING PERSON IN LABOR FROM THE PERSPECTIVE OF MIDWIVES

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Introduction: The presence of accompanying persons (AP) should be a normal part of practice in delivery rooms. The aim of our study was to investigate the impact of accompanying person on woman in labor, as well as on work of midwife from view of midwives.

Methods: The research was conducted using the own designed questionnaire with demographics and fact-finding questions which took the form of the statement, followed by a range of approval / disapproval. The questionnaire was distributed electronically and in printed version. Data was collected between October 2016 and January 2017. The respondents consisted of 95 midwives ($n = 95$), who were experienced with AP with an average age of 33.55 ± 11.29 . For data processing was used basic descriptive statistics. In identifying dependencies in terms of age, length of service or territorial units was used for correlation analysis, and nonparametric Kruskal-Wallis test.

Results: In general we can evaluate that midwives consider AP as a significant support for a woman in labor, because in seven fact-finding statements correlation analysis confirmed a high level of agreement ($p < 0.05$). 51.57% of respondents ($n = 49$) agreed that AP is a benefit and facilitate work of midwives. Simultaneously up to 75.78% ($n = 72$) of respondents think that psycho-physical preparation for labor should be a condition of participation of an AP. All respondents ($n = 95$, 100 %) are the most faced with a partner in a role of AP, but nevertheless 68.42% ($n = 65$) have reservations about the doula. In all other respects it did not show significant statistical differences except the communications. Midwives from Eastern Slovakia consider questions from AP at least annoying and they are trying to improve the communication.

Conclusion: Research has shown that despite the fact that the presence of an AP can in some cases be a burden in the performance of work, midwives evaluate AP, especially a partner, for the important support for a woman in labor.

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