

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



XXXII. STUDENT SCIENTIFIC CONFERENCE

PROGRAM and ABSTRACTS

**May 11, 2011
Martin, SLOVAK REPUBLIC**

XXXII. Student Scientific Conference
Jessenius Faculty of Medicine
Comenius University
Martin

The conference is supported by Modern education for modern society/Project is co-financed from EU sources, Dr. Jozef Lettrich Foundation and Martin city



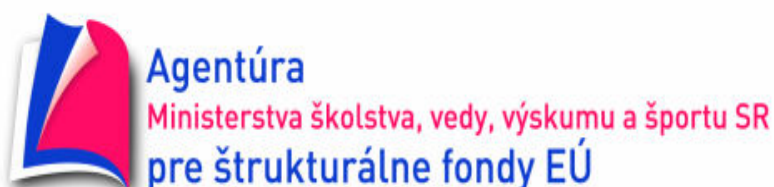
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PROGRAM AT GLANCE

Date: May 11, 2011

Place: Lecture halls A and B, JFM CU – Novomeskeho 7, MARTIN
(next to the student hostel)

Registration:

May 10 (17.00 – 18.00) and May 11, 2011 (7.30 – 8.00)

Opening ceremony – Lecture Hall B **8.00 – 8.15**

Lecture hall A

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- Coffee break
- **A2** Section of Preclinical Disciplines **10.45 – 13.00**
- Coffee break
- **A3** Section of Surgical Disciplines **13.15 – 15.00**

Lecture hall B

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- Coffee break
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Closing ceremony – Lecture hall B **15.15 – 15.45**

Farewell refreshment (student hostel) **17.00 – 19.00**

Duration of lectures (Slovak or English language):
8 minutes, discussion – 4 minutes

All abstracts are available in English at www.jfmed.uniba.sk – ŠVOČ

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AWARDING AND CLOSING CEREMONY

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ABSTRACTS

PI3K β AND PI3K δ REGULATE OSTEOCLAST DEVELOPEMENT AND FUNCTION

Dániel Csete

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Osteoclasts are bone-resorbing cells of myeloid origin. Phosphatidylinositol 3-kinases (PI3K) have crucial roles in regulating a variety of cellular functions, but their role in osteoclast biology is poorly understood. Here we tested the role of PI3K β and PI3K δ in osteoclast development using combined genetic and pharmacological approaches.

Murine bone marrow cells were isolated from wild-type, PI3K $\beta^{-/-}$, PI3K $\delta^{KD/KD}$ and PI3K $\beta^{-/-}$ PI3K $\delta^{KD/KD}$ mice and differentiated into osteoclasts *in vitro* in the presence of M-CSF and RANKL. Osteoclast differentiation and function were examined by TRAP-staining and resorption of artificial hydroxyapatite. For actin ring formation assays, cells were fixed and stained with Alexa488-Phalloidin. PI3K inhibitors TGX221 and IC87114 were used as selective inhibitors of PI3K β and PI3K δ , respectively.

Pharmacological inhibition of PI3K β and/or PI3K δ resulted in impaired osteoclast differentiation and function, as evidenced by decreased number of TRAP-positive multinucleated cells and resorption pits in *in vitro* murine osteoclast cultures. Genetic deficiency of PI3K β and/or genetic disruption of PI3K δ also led to impaired osteoclast formation, resorption and actin ring formation in *in vitro* osteoclast cultures.

PI3K β and PI3K δ are required for osteoclast development and function by regulating differentiation, bone resorbing activity and cytoskeletal organization.

MPL MUTATIONS IN MYELOPROLIFERATIVE NEOPLASMS

Marlen Fossan Aas

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OBJECTIVES: The MPL mutation is a rare mutation present in about 4-8% of patients with Primary Myelofibrosis (PMF) and 4-8% of patients with Essential Thrombocythemia (ET). MPL exon 10 mutations of the juxtamembrane region of the thrombopoietin receptor MPL causes activation of tyrosine kinase and accounts for a cytokine-independent growth of the thrombocytic cell lineage. Aim of the study is to detect MPL mutation for diagnosis myeloproliferative disorders (MD), and to establish this method in Department of Molecular Biology, JFM CU, for future use.

MATERIALS: 21 paraffin-embedded BM tissues with the diagnosis of ET and PMF provided by Department of Pathology, JFM CU.

METHODS: Deparaffinisation, DNA extraction and sequencing reaction for detection of MPL mutation in all samples provided. Nucleotide blast was used to evaluate sequence similarity.

RESULTS: One of the 21 patients was positive for the MPL mutation, another patient showed polymorphism in coding sequence of MPL gene. The mutation positive patient expressed a heterozygous form of MPL W515L mutation. In the sample showing polymorphism, the amino acid sequence was not affected, thus being without effect on the final protein.

CONCLUSIONS: Paraffin embedded samples may successfully be used for detection of MPL mutation. One of the 21 patients was MPL mutation positive proving this method valuable for future detection of MPL mutations in patients with MD.

This work was supported by Center of Excellence for Perinatology co-financed from ES ITMS code 26220120016 and Center of Excellence for Perinatology co-financed from ES ITMS code 26220120036.

THE CORRELATION AMONG IN VITRO TESTING OF CHEMORESISTANCE AND CYTOMETRIC PARAMETERS OF LEUKAEMIC CELLS

Anna Antošíková

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JFM CU, Martin

Tutors: Jozef Hatok, ScD, PhD.; Juraj Sokol, MD.;

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Resistance to chemotherapy is a major factor limiting successful treatment of acute myeloid leukemia (AML); one of the best characterized drug resistance mechanisms is extrusion of drugs by the energy-dependent multidrug resistance (MDR1) transport protein. The relationship of this protein to surface markers largely remains unclear. Therefore, we have studied the association of MDR1 gene expression with the expression of specific surface markers in AML. Furthermore, the basic aim of our work was to estimate profiles of drug resistance, based on predictive *in vitro* test, to help to choose the most effective cytostatic.

In our work MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazoline) test was used. The gene expression was established by reverse transcription polymerase chain reaction (RT-PCR) and expression of surface markers (CD11b-13-14-15-33-34-117) was assessed by flow cytometry.

MTT assay provides good correlation between AML (n=25) patients de novo and relaps. All samples were tested to 3 cytostatics minimally (cytarabine, mitoxantrone and daunorubicin). In addition, we found a high frequency of MDR gene expression: 10 out of 16 patients with relaps AML and 2 out 9 with de novo AML were MDR mRNA positive. No correlation between cluster designation surface markers and MDR gene expression in AML was found.

These results suggest that MDR gene expression and *in vitro* testing of chemoresistance can be used as prognostic factors and may be helpful in determining chemotherapeutic protocol for patients with acute leukaemia.

This work was supported by project "CREATING A NEW DIAGNOSTIC ALGORITHM FOR SELECTED CANCER DISEASES" co-financed from EC sources and European Regional Development Fund.

THE ROLE OF RABBIT MIDDLE MEDULLA RAPHEAL STRUCTURES IN THE GENERATION OF COUGH AND SNEEZE

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Eleven pentobarbitone anesthetized spontaneously breathing rabbits were used to study the role of medullary raphe midline in cough and sneeze. Two microinjections of excitatory neurotoxin kainic acid (2 mg/ml; 49 ± 1 nl, range 45-50 nl) or artificial CSF (51 ± 1 nl, range 38-60 nl) were accomplished in the medullary midline (1.6 - 2.8 mm rostral to the obex, 1.4 - 1.6 mm and 2.9 - 3.2 mm below the dorsal medullary surface). Airways reflexes were induced by soft nylon fiber, cough from the trachea and main bronchi, sneeze at conchae nasales. Blood pressure, esophageal pressure (EP) and EMGs of the diaphragm (DIA) and abdominal muscles (ABD) were recorded. DIA and ABD EMGs were normalized to their mean amplitudes during control pre-microinjection coughs. Paired t-test and Wilcoxon matched pairs test were employed in statistical analysis. Kainic acid microinjections reduced the number of coughs (mean \pm SE) from 3.8 ± 2.0 to 0.9 ± 0.7 ($p=0.016$), amplitudes of cough DIA from 90 ± 11 to 42 ± 13 % ($p=0.004$), ABD from 103 ± 9 to 37 ± 15 % ($p=0.006$), inspiratory EP from 0.67 ± 0.13 to 0.36 ± 0.12 kPa ($p=0.013$), expiratory EP from 1.70 ± 0.54 to 0.89 ± 0.46 kPa ($p=0.008$) and amplitudes of sneeze ABD from 81 ± 9 to 55 ± 13 % ($p=0.027$) and expiratory EP from 1.47 ± 0.38 to 0.83 ± 0.25 kPa ($p=0.012$). Other parameters as those after artificial CSF microinjections were not significantly altered. The contribution of neurons at medullary raphe midline to the control of the cough and sneeze is markedly diverse.

GENETIC AND BIOCHEMICAL FACTORS ANALYSIS IN RELATION TO ISCHEMIC STROKE

Daniel Čierny

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Nowadays, ischemic stroke is one of the most frequent causes of morbidity in developed countries. In the development of stroke, strong genetic elements interacts with environmental factors and personal way of life. The aim of our study was to analyze serum levels of panel of chosen biochemical markers in addition with gene polymorphisms in poststroke patients. We focused on *insertion/deletion polymorphism* of the *ACE gene*, single nucleotide polymorphisms G399A in *XRCC1* gene and C677T in *MTHFR* gene.

In our study, we used blood samples taken from 77 individuals with clinically and CT proven diagnosis of ischemic stroke. Patients were divided into the several groups, according their sex and clinical neurological deficits. Biochemical markers were analysed by a standard methodology and compared to reference intervals used in the Department of Clinical Biochemistry in University hospital Martin. Gene polymorphisms were studied by polymerase chain reaction and restriction analysis. Results of genetical analysis were compared to controls with diagnosis of vertebrogenericalgic syndrome. In the groups of patients, we found elevated serum levels of total cholesterol, triacylglycerols, γ -glutamyltransferase and C-reactive protein. According to the gene polymorphisms, the frequency of the T allele (*MTHFR* gene) as well as the frequency of G allele (*XRCC1* gene) was higher compared to controls. We found no association of I/D polymorphism of *ACE* gene with ischemic stroke. The results of our study confirm the role of single nucleotide polymorphisms of *MTHFR* and *XRCC1* gene in etiopathogenesis of ischemic stroke, as well as elevated levels of serum lipides. Elevated serum level of C-reactive protein supports the evidence of increased inflammatory response induced by cerebral ischemia.

EVALUATION OF ELECTRODERMAL RESPONSE DURING PASSIVE ORTHOSTASIS AND MENTAL STRESS

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Department of Physiology, JFM CU, Martin

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Electrodermal response (EDR) is a method of measuring the electrical conductance of the skin. EDR evaluation can be used as an indicator of psychophysiological arousal reflecting mainly the sympathetic nervous system activity. Aim was to study the electrodermal response during passive orthostasis and mental stress.

Material and methods: We evaluated electrodermal response (Psychometer, UK) from 1-minute periods during 13 min lasting recordings from healthy young volunteers in 4 different states: supine position at rest, lying with mental stress (arithmetic test), passive orthostasis (45° head-up tilt) and 45° head-up tilt with mental stress (passive orthostasis+arithmetic test). The EDR mean value and standard deviation in each state were used to quantify the effect of the passive orthostasis and mental stress (arithmetic test).

Results: EDR mean values were significantly higher in response to both physiological stressors. No significant difference in electrodermal response was found between passive orthostasis and mental arithmetic test.

Conclusion: We propose that the evaluation of electrodermal response during passive orthostasis and mental arithmetic test should be considered as a sensitive method to detect mainly sympathetic reactivity indicating physiological arousal to stress.

This study was supported by Centre of Excellence for Perinatal Research (CEPV II No. 26220120036, co-financed from EU sources).

CHEMOPREVENTION OF CHEMICALLY INDUCED RAT MAMMARY CARCINOGENESIS BY ROSUVASTATIN

Eva Hanusková and Elena Vetešková

Department of Medical Biology, JFM CU, Martin

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Epidemiological and experimental studies have indicated that 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors, or statins, play a role in the risk reduction of several human neoplasias including breast cancer. In this study, chemopreventive effects of rosuvastatin in the model of N-methyl-N-nitrosourea-induced mammary carcinogenesis in female rats were evaluated. Rosuvastatin was dietary administered at two concentrations of 25 mg/kg (0.0025%) and 250 mg/kg (0.025%). Rosuvastatin treatment began 7 days prior to carcinogen administration and subsequently continued 17 weeks, until the end of experiment.

Rosuvastatin administered in higher concentration in the diet apparently decreased tumor frequency and average tumor volume, as well as lengthened the latency period compared to control animals. In this experimental group, a histopathological classification of mammary tumors have revealed a shift in the rate of poorly differentiated and well differentiated invasive tumors to higher representation of well differentiated invasive lesions after treatment with rosuvastatin. Rosuvastatin, administered at a lower dose did not demonstrate changes in tumor parameters in comparison with the control group. With the exception of HDL-cholesterol, the parameters of plasma lipid metabolism did not differ after rosuvastatin treatment. Rosuvastatin did not change the food intake and body weight in rats.

This study is the first about rosuvastatin used in rat mammary carcinogenesis. Hydrophilic rosuvastatin have shown lower antineoplastic activity than lipophilic statins in this model of experimental breast cancer.

CARDIOVASCULAR REGULATION CHANGES IN RESPONSE TO TWO PHYSIOLOGICAL STRESSORS

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Department of Physiology, JFM CU, Martin

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Physiological stressors (e.g. mental load, orthostatic test) are associated with the cardiovascular regulation changes. Therefore, the variability of cardiovascular parameters (heart rate, blood pressure) could provide important information about cardiovascular reactivity to the stress. **Aim** was to study a potential changes in selected parameters of cardiovascular regulation to passive orthostasis and mental stress using heart rate and blood pressure variability analyses.

Material and methods: We investigated continuous recordings of finger pressure waveforms (Finometer, Netherlands) from healthy young volunteers in 4 different states: supine position at rest, lying with mental stress (arithmetic test), passive orthostasis (45° head-up tilt) and 45° head-up tilt with mental stress (passive orthostasis+arithmetic test). The cardiovascular reactivity in response to stress was evaluated using blood pressure (BPV) and heart rate variability (HRV) short-term time and frequency-domain analysis in each state. Evaluated parameters of the HRV and BPV analysis: mean heart rate and blood pressure, SD, rMSSD, spectral powers in low and high frequency (LF, HF) bands.

Results: Passive orthostasis evoked significant changes in more evaluated parameters of HRV and BPV analyses (mean heart rate and blood pressure, spectral activity in LF, HF bands...) compared to mental stress.

Conclusion: The heart rate and blood pressure variability analyses were sensitive to detect cardiovascular autonomic regulation changes in response to two physiological stressors. It seems that response of the cardiovascular activity was more sensitive to passive orthostasis compared to mental arithmetic test.

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MEASUREMENT OF ZAP70 EXPRESSION BY QUANTITATIVE REAL-TIME PCR

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Introduction: Chronic lymphocytic leukemia (CLL) has a highly variable clinical course and also prognosis, with some patients requiring immediate therapy and others living without clinical manifestation for decades. According to the presence of specific molecular biomarkers we are able to predict not only prognosis but also the expected clinical course for individual patients. This information will help to identify the high-risk group of patients with poor prognosis, who will benefit from intensive therapy earlier than the clinical manifestation is obvious. Several studies have shown, that the most powerful prognostic factors is mutational status of immunoglobulin heavy chain (IgVH) and expression of ZAP70 (zeta chain associated proteinkinase). It means, patients with higher expression of ZAP70 in B-lymphocytes are associated with poor prognosis.

Goal: The main goal of our work was the implementation of measurement of ZAP70 expression by quantitative real-time PCR in the Department of Molecular Biology JLF UK.

Methods: In our experiment we have measured expression of ZAP70 in B-lymphocytes CD19+, separated from the peripheral blood of patients with CLL. Then we have isolated mRNA and we transformed it to cDNA, because cDNA is stable enough to be used in quantification process by real-time PCR (RT-PCR). For the creation of the standard curve we used plasmid with incorporated ZAP70 gene. Plasmid with incorporated ABL housekeeping gene served as a reference gene. These plasmids helped to check, if the RT PCR runs properly.

Results: Relative expression of ZAP70 was measured in 27 samples and results were related to the expression in cDNA isolated from B-lymphocytes of health blood donor included to this experiment as a calibrator sample. 21 samples showed higher expression. Six samples were ZAP70 negative. Though some problems have occurred at the beginning, this method was successfully implemented.

This work was supported by Center of Excellence for Perinatology co-financed from ES ITMS code 26220120016 and Center of Excellence for Perinatology co-financed from ES ITMS code 26220120036.

EFFECT OF EXPERIMENTAL FEVER ON HEART RATE VARIABILITY IN RATS

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Effects of heat stress induced by pyrogen administration on heart rate variability (HRV) was studied in 28 adult rats under general anaesthesia. The animals were divided into two groups: lipopolysaccharide group (LPS, n=13) and control group (C, n=15). Animals were injected intraperitoneally with LPS (100 $\mu\text{g}\cdot\text{kg}^{-1}$) and control group with an equivalent volume of saline. All parameters were recorded prior to (base) and 60, 120, 180, 240 and 300 min after LPS or saline administration. HRV evaluation was performed by time domain and frequency domain analysis of RR intervals.

Results: In LPS group, colonic body temperature continuously rose throughout the experiment and fever response was accompanied by increase in neutrophil count and decrease in total antioxidant status in peripheral blood. Heart rate significantly increased during fever, but heat stress had no significant effect on time domain variables of HRV (SDNN, RMSSD, PNN5, PNN10). Frequency domain analysis of HRV showed significant decrease in spectral activity of high-frequency band (HF-HRV) in LPS group at 300 min after pyrogen administration. Compared to normothermic controls, LPS animals exhibited reduction of HF-HRV at the maximum body temperature (38.6 °C) 300 min after endotoxin injection. The results indicate a change in cardiac vagal control during fever.

CHEMOPREVENTIVE EFFECTS OF SIMVASTATININ IN RAT MAMMARY CARCINOGENESIS

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Statins have proven therapeutic and preventative effects in cardiovascular disease. Based on preclinical evidence, statins demonstrated a risk reduction of several human neoplasias including breast cancer.

In this study, the antineoplastic effects of simvastatin in the chemoprevention of N-methyl-N-nitrosourea induced mammary carcinogenesis in female rats were evaluated. The drug was dietary administered at two concentrations - 18 mg/kg (SIMVA 18) and 180 mg/kg (SIMVA 180). Basic parameters of experimental carcinogenesis after simvastatin administration in animals were assessed. Mammary tumors were immunohistochemically and histomorphologically analysed.

In the SIMVA 180 group, simvastatin significantly suppressed tumor frequency by 80.5 % and tumor incidence by 58.5 % in comparison with the controls. Simvastatin in higher dose non-significantly decreased average tumor volume by 23.5 %, as well as non-significantly lengthened the latency period by 14.5 days compared to control animals. Simvastatin, administered at a lower dose did not change parameters of mammary carcinogenesis in comparison with the control group.

A histomorphological analysis of malignant mammary tumors has revealed a shift from high grade stage to low grade stage tumors after treatment with simvastatin (SIMVA 180). A significant decrease by 12% in Bcl-2 protein expression in treated mammary tumor cells compared to untreated tumor cells was observed. This study is the first mention about simvastatin used in experimental mammary carcinogenesis in vivo.

EXPRESSION PATTERN OF RECEPTORS FOR NEUROTROPHIC FACTORS IN VAGAL NOCICEPTIVE NERVE SUBTYPES

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Introduction: The inflammation in visceral tissues is often associated with local production of neurotrophic factors that have high potential to alter the phenotype and induce hypersensitivity in the nociceptive primary afferent nerves (nociceptors). This neural plasticity depends on the expression of the receptors for neurotrophic factors in the nociceptors.

Purpose: It was previously shown that the vagus nerves provide two functionally distinct subtypes of nociceptors to the esophagus: neural crest-derived jugular and placodes-derived nodose nociceptors. Here we addressed the hypothesis that the jugular and nodose nociceptors innervating the esophagus differ in expression profile of receptors for neurotrophic factors of the NGF and GDNF families in a guinea pig.

Methods: Single cell RT-PCR detection of multiple targets was performed on the vagal afferent nerves from the esophagus.

Results: The nociceptive neurons were identified by the expression of the capsaicin receptor TRPV1. We found that the neural crest-derived jugular nociceptors co-expressed GFL co-receptor subunit GFR α 3 (for artemin) and neurotrophin receptor TrkA (for NGF), but rarely expressed TrkB (for BDNF). In stark contrast, the guinea pig placodes-derived nodose nociceptors lacked GFR α 3 and TrkA, but expressed TrkB.

Conclusion: We conclude that the vagal neural crest- and placodes-derived nociceptors innervating the esophagus differ in expression pattern of receptors for the key neurotrophic factors.

POLYPHENOLIC SUBSTANCES AND ALLERGIC ASTHMA IN EXPERIMENTAL CONDITIONS

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Bronchial asthma is socially significant chronic respiratory disease. Some studies have suggested that the polyphenolic compounds might reduce the occurrence of asthma symptoms. The aim of our experiments was to evaluate the effect of 21 days Flavin7[®] (polyphenolic mixture of flavonoids and resveratrol, Vita Crystal Slovakia) administration on allergen induced inflammation of the airways in experimental conditions. The reactivity of tracheal smooth muscle was examined by *in vivo* and by *in vitro* method. The histological investigation of the tracheal tissue and BALF levels of IL-4, IL-5 were used as parameters of airway inflammation. 21 days administration of Flavin7[®] caused a significant decrease of specific airway resistance after histamine nebulization and decline in tracheal smooth muscle contraction amplitude to bronchoconstrictor mediators. Flavin7[®] minimized the degree of inflammation estimated on the basis of eosinophil calculation and levels of inflammatory cytokines IL-4, IL-5. In conclusion, administration of Flavin7[®] showed bronchodilatory and antiinflammatory effects in ovalbumin-sensitized guinea pigs.

Key words: experimental allergic asthma, polyphenols, Flavin7

ANALYSIS OF DIFFUSE LARGE B-CELL LYMPHOMAS ARISING IN EXTRANODAL LOCALISATION

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Introduction: Diffuse large B-cell lymphoma (DLBCL) is a heterogenous group of aggressive B-non-Hodgkin lymphomas including different clinico-pathological types, morphologic variants and phenotypic subtypes, which may arise as primary or secondary in nodal or extranodal (EN) tissues. EN lymphomas, especially those arising in mucosa associated lymphoid tissue (MALT) are generally considered to have some unique features. There is a question, if it is true also for EN-DLBCL.

Aims: In this study we analyzed some morphologic and phenotypic prognostic markers and bone marrow (BM) involvement in EN-DLBCL arising in MALT localisation.

Methods: We retrospectively reviewed biopsy reports of DLBCL cases diagnosed at our department in years 2004-2011 to identify EN-DLBCL cases presenting in MALT localisation. In these cases we analyzed morphology (centroblastic, immunoblastic or anaplastic), phenotype (profile of germinal center B-cells versus activated B-cells) and BM involvement in pretreatment staging BM biopsies.

Results: We identified 434 cases of EN-DLBCL arising in MALT, 54 (12.4%) of them showed presence of small cell component. Majority (88.4%) of 69 cases with classifiable morphology represented centroblastic variant. Phenotype was analyzed in 87 cases, from which 59 (67.8%) showed unfavourable ABC-profile and majority (83%) of 77 cases was bcl-2+ (62.5% of GCB and 92.5% of ABC). Pretreatment staging BM biopsy was available in 107 cases. Only 12 (11.2%) cases showed BM involvement (11 showed small cell infiltrate, only 1 blastic).

Conclusions: EN-DLBCL cases represent mixture of primary and secondary lymphomas. Majority of them show unfavourable phenotypic profile, but their tendency to BM infiltration seems to be low. When BM is involved, the infiltrate usually shows discordant small cell morphology, what suggests dissemination of primary low grade lymphoma.

OCCUPATIONAL AIR POLLUTION AND COUGH REACTIVITY IN HUMANS - A ROLE OF NASAL TRPA1 RECEPTOR

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The air we breathe is a mixture of gases, particulate matter and various agents, which are considered as pollutants. The effect of air pollution on respiratory system was not completely understood until the molecular background of TRPA1 receptor had been identified. Many of air-borne pollutants affects airways via TRPA1 mediated mechanism. Main stream of pollutants is trapped onto the nasal mucosa, because we prefer nasal breathing in rest.

The objective of our study was to test the effect of intranasal (i.n) TRPA1 relevant challenges on modulation of airway defense, which may contribute to the increased respiratory morbidity after pollutant exposure. 20 otherwise healthy volunteers were recruited to the study in which cough reflex sensitivity tests using capsaicin inhalation tests had been performed three times. First test was taken as a baseline, later tests had been performed after i.n. vehiculum (1% DMSO) and i.n. TRPA1 agonists AITC challenges. AITC is pungent compound naturally found in mustard oil or wasabi (10^{-3} , 20 μ l, into both nostrils). The effects were compared to those induced by i.n. TRPV1 relevant challenges which had been done before. The effects of i.n. AITC challenge differed broadly within subjects it induced sneezing, burning, lacrimation and nasal discharge. Cough sensitivity parameters were not influenced dramatically however the study is still running. Based on the data collected so far, we can assume that effects of TRPA1 relevant challenges on nasal symptoms and cough sensitivity parameters are less effective than these induced by nasal TRPV1 relevant challenges. This model does not mimic exactly the pattern of how the pollutants influence the airways, and other experiments and studies are planned to be performed to get deeper insight into this problem.

EFFECTS OF PDE4 AND 7 INHIBITORS ON *IN VITRO* AIRWAY REACTIVITY IN HEALTHY AND SENSITIZED GUINEA PIGS.

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Introduction: Phosphodiesterases (PDEs) are enzymes responsible for degradation of cAMP and cGMP to 5`AMP and 5`GMP. This can lead to several effects, like contraction of smooth muscle or stimulation of inflammation. Thus, PDE inhibitors may have significant clinical benefit in respiratory diseases associated with inflammation.

The aim was to evaluate the effects of selective PDE4 and PDE7 inhibitors on airway smooth muscle reactivity in *in vitro* conditions.

Methods: Healthy and sensitized male guinea pigs were used divided in 8 groups. After 1% ovalbumin sensitization (4 groups), tested drugs were administered once daily for 7 days i.p.: 10% DMSO (as vehicle) 1mg/kg, rolipram (ROL) 1 mg/kg, BRL50481 (BRL) 1 mg/kg, and ROL + BRL 0.5 mg/kg each. Organ bath method was used for measurement of tracheal and lung tissue strips contractions evoked by cumulative doses (10^{-8} – 10^{-3} mol/l) of acetylcholine (ACH) and histamine (HIS).

Results: In healthy guinea pigs the only significant relaxation was observed after ROL in ACH induced contractions. In ovalbumin sensitized animals, more pronounced relaxing effect of BRL in HIS induced contractions and of combination (ROL and BRL) in ACH induced contractions were observed.

Conclusions: Our results suggest that PDE4 and PDE7 inhibitors have stronger anti-inflammatory effects compared to direct effect on smooth muscle, with potential benefit of their simultaneous administration.

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EFFECT OF MENTHOL PRETREATMENT ON CITRIC ACID INDUCED COUGH IN GUINEA PIGS

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(-) menthol is the aromatic compound the principal component of the essential oil from the peppermint and is exploited in various medications. Direct antitussive action of the menthol is not completely clear, because the studies employing the menthol share conflicting evidence, including reports of respiratory distress in small babies induced by menthol treatment.

Based on the conflicting evidence, we decided to repeat the study performed by Morice and co workers, to re evaluate antitussive potential of menthol in guinea pigs and possibly analyze mechanisms responsible for adverse effects of menthol treatment.

15 Dunkin Hartley guinea pigs were placed to the double chamber plethysmograph, and were inhaling air (control), vapors of 1% menthol, and finally 5% menthol during 5 minutes pretreatment, and afterwards, they had undergone the cough challenge (inhalation of citric acid aerosol, 0,4 M; 10 min), the cough response was analyzed based on the airflow traces and cough sound.

1% menthol vapors pretreatment was effective in suppression of cough in guinea pigs, whereas 5% menthol vapor pretreatment did not influence the cough intensity significantly [number of citric acid induced coughs in order air treated vs 1% menthol treated vs 5% menthol treated (15 vs 8 vs 17, $p < 0.05$)]. However, after the 5% menthol pretreatment animals had revealed nasal discharge, salivation, and some of them had complained with difficulties of breathing manifested as acoustic breathing phenomenon and labored breathing with augmented movement of the abdominal and chest wall.

PRIMARY MALIGNANT LYMPHOMAS OF THE CNS

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Introduction – Primary malignant lymphomas CNS (PMCNLS) are malignant tumors constituting 3,1% of all primary brain tumors. They occur predominantly in diseased with immunodeficiency, particularly in patients with AIDS.

Aim – The aim is a retrospective analysis of the patients with malignant lymphoma (ML) CNS followed by comparison of obtained results with the literature data.

Methodology – In search of our patients it was needed to work with biopsy registry, from which we have compiled a set of 25 patients with ML CNS and set up the parameters for analysis. Searched parameters were: age and sex of patients, location of the lymphoma in the CNS, histological type of lymphoma, morphological, genotypic and phenotypic heterogeneity DLBCL CNS and positive/negative staging biopsy.

Results – PMCNLS in immunocompetent patients is usually found at age of 50-70 years, which corresponds with the age of our patients. The tumor was mostly located in the frontal lobe (28%). Series of 25 patients consisted of DLBCL CNS, from the morphological point of view the most common was centroblastic type of DLBCL (36%), of the phenotypic point of view ABC type of DLBCL (44%). 9 of the 25 cases represented clinically primary DLBCL CNS.

Discussion – The literature indicates that PMCNLSs occur predominantly in patients with AIDS, but in our set none of the patients was HIV+. Significantly worse prognosis of patients with primary location DLBCL in the brain is probably related to the ABC phenotype DLBCL, what was confirmed also in our study.

Conclusion – PMCNLS has increased in incidence over the past decades. The exact diagnostics of intracranial lesions is extremely important and its differential diagnosis should also include the PMCNLS.

Key words – Malignant lymphomas CNS, diffuse large B-cell lymphoma (DLBCL).

CRAC ION CHANNELS AND AIRWAYS DEFENCE REFLEXES UNDER THE CONDITIONS OF EXPERIMENTALLY INDUCED ALLERGIC INFLAMMATION

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Calcium activated calcium ion channels (CRAC) are responsible for contractile plateau of smooth muscle cells and secretory functions of immunocompetent cells. Their role in reactions of immune system is described in detail. Less knowledge exists about contracting role of widely distributed plasmalemmal CRAC of airways smooth muscle (ASM) cells. The presented study was focused on possible participation of CRAC on inflammatory airways disorders based on ASM malfunction, e.g. bronchial asthma. The acute and chronic administration (14 days) of CRAC antagonist (3-fluoropyridine-4-carboxylic acid) was used to examine of ASM contractility and ASM contractility associated reflexes in guinea pigs with experimental allergic airways inflammation. The following methods were used: 1) Evaluation of specific airways resistance *in vivo* conditions; 2) Evaluation of contractile response *in vitro* conditions by organ tissue bath method; 3) Citric acid induced cough reflex measurement. Experimental allergic airways inflammation was induced by repetitive exposure of guinea pigs to ovalbumin ($c=10^{-6}$ M) followed by histological investigation to confirm typical cellular pattern and microscopic inflammatory signs. CRAC antagonist administered as single intraperitoneal dose to guinea pigs with confirmed allergic inflammation, significantly reduced cough response on citric acid aerosol and the values of specific airways resistance *in vivo* conditions corresponded with finding *in vitro* conditions. Long-term application of CRAC antagonist resulted in more significant and almost harmonized results. Furthermore, the differences in cellular inflammatory pattern on single dose pointed on anti-inflammatory potency of agent. The results confirmed role of CRAC in pathophysiology and symptoms of experimental animal asthma model and could in future extent therapeutic possibilities or design new therapeutic strategy in asthma treatment.

UTILITY OF *EX VIVO* SINGLE FIBER NERVE ACTIVITY RECORDING FOR THE STUDY OF VISCERAL PAIN MECHANISMS

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The pain from internal organs (visceral pain) poorly controlled by available therapy is an important medical problem. In most instances the cause of this pain is untreatable or unknown. Peripherally acting inhibitors of afferent pain fibers (nociceptors) devoid of the side effects associated with centrally acting pain drugs are highly desirable. However, progress in development of novel drugs has been hampered by insufficient understanding of the neurobiology of visceral nociceptors. Here we present an approach to obtain mechanistic information on activation and sensitization of visceral nociceptors. We have worked with a modification of a classical electrophysiological technique-extracellular recording of the afferent nerve activity- adapted to address questions pertinent to sensory transduction mechanisms in the nerve terminals of esophageal nociceptors. This modification is *ex vivo* isolated innervated esophagus preparation in which the single nerve fiber activity is recorded from the cell body of an afferent vagal neuron with a mechanically sensitive terminal in the esophagus. Distinctive advantages of this modification include: high feasibility to isolate single afferent nerve fiber signal, controlled nerve terminal environment in which the major secondary confounding factors (including those dependent on central reflexes and circulation) are limited or eliminated, and the ability to control the intensity of stimuli and the concentrations of pharmacological agents. Preliminary data demonstrate the feasibility of the study of ion channels hypothesized to mediate the response to acid in the nerve terminals of esophageal nociceptors by using *in vivo* virus vector delivery of shRNA silencing the major sensory acid-sensitive channels TRPV1 and ASIC3. This combination of classical electrophysiology with modern molecular tools has high potential to generate novel information on visceral nociceptors.

BRAINSTEM NEURONAL POPULATIONS ACTIVATED IN A MODEL OF ALLERGIC RHINITIS – C FOS STUDY

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Introduction: The objectives of this project were to detect neuronal populations within the brainstem, which are activated by nociceptive afferent drive from the nasal mucosa via the trigeminal afferent fibers in naïve animals and animals with nasal trigeminal hyperresponsiveness.

Methodics: Practical part is based on two experiments in which we have been detecting expression of *c-fos* gene, and his gene product *fos* protein by immunohistochemical methods in brainstem neurons after stimulation of nasal afferents. First experiment was conducted in naïve animals, the second one performed later in animals with allergic rhinitis, in which the neural trigeminal hyperresponsiveness was induced by repeated antigene challenges. To activate the nasal nociceptors in both cases we used capsaicin.

Results: Stimulation of nasal nociceptive fibers by capsaicin lead to activation of neurons within the trigeminal main sensory complex, mainly in subnucleuscaudalis and subnucleusinterpolaris. FLI was also detected in the area of nTs and in some of the nuclei of ventral respiratory group. We suppose that these neuronal populations may contribute to the up regulation of the cough reflex in subjects suffering from rhinitis.

Conclusion: Experiment in animals with hyperresponsiveness have showed that despite the symptoms of rhinitis are progressively more and more intensive, the count of *fos* positive neurons (neurons which had been activated by our procedures) is not significantly different when comparing to naïve animals. Relationship between activation of trigeminal afferents and up vs down regulation of cough is a subject for further studies.

ADENOSINE-INDUCED HYPERSENSITIVITY OF VAGAL AFFERENT NERVES IN THE GUINEA PIG ESOPHAGUS

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Clinical studies showed that adenosine mediates functional chest pain originating from the esophagus. However, the effects of adenosine on the esophageal afferent nerve subtypes are unknown. Previous study has shown that adenosine directly activate esophageal nociceptors. We addressed the hypothesis that the stimulation of adenosine receptors induces except activation also mechanical sensitization of esophageal vagal nociceptors. Extracellular recordings of action potentials from vagal nodose neurons were made from the isolated innervated esophagus. Hypersensitivity was quantified as increased response to mechanical stimulation (esophageal distention) by intraluminal pressures of 10, 30 or 60 mmHg during 20 s. Nodose nociceptors were activated and sensitized both by the selective adenosine A_1 receptor agonist CCPA (0.1 μM), and/or the selective adenosine A_{2A} receptor CGS21680 (0.003 μM) that was approximately 2-fold increasing ($p < 0.05$). The existence of adenosine A_{2A} receptor was confirmed using pharmacological antagonism, hence selective antagonist A_{2A} SCH58261 (0.1 μM) inhibited sensitization of nodose esophageal nociceptors induced by stimulation of adenosine receptors. This response has been shown as reversible.

Our data indicate that in contrast to the esophageal jugular nociceptors which are activated via the adenosine A_1 receptor, nodose esophageal nociceptors are activated and sensitized via A_1 and/or A_{2A} receptors. Activation and sensitization of esophageal nociceptors via adenosine receptors may contribute to the symptoms in esophageal diseases.

TREATMENT OF DIABETIC MACULAR OEDEMA BY ANTI- VEGF

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Diabetic retinopathy (DR) is the most common cause of severe vision loss in people with diabetes. Retinal and choroidal neovascularization results to gradual destruction of the retina. Vascular leakage through the damaged vessel wall causes diabetic macular oedema (DME), significantly lowering the central visual acuity. DME is manifested by the swelling around the central part of the retina and area responsible for sharp vision. Vascular endothelial growth factor plays an essential role in stimulating angiogenesis and macular oedema. Therapy with Anti - VEGF preparations have revolutionized the treatment of neovascularization diseases of the eye.

These medications not only stop the angiogenic process and maintain visual acuity, but also improve visual acuity. We evaluated the effectiveness of intravitreal application anti-VEGF in therapy DME. Source data were patients treated with Macugen and Lucentis. The main outcome was visual acuity change and central macular thickness.

PRENATAL FETAL GENDER DETERMINATION USING NON-INVASIVE DIAGNOSTIC METHODS

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Introduction: In some specific cases, amniocentesis or chorion villi sampling can be avoided by non-invasive fetal gender determination using cell-free fetal DNA circulating freely in maternal blood.

Aim: To determine fetal sex using cell free fetal DNA prenatally and to assess accuracy and reliability of this non-invasive method of prenatal diagnosis in our conditions.

Methods: Blood samples were obtained from 46 women with singleton pregnancies. DNA was isolated and consequently amplified using Real time PCR and SYBR Green MasterMix. Y-specific SRY sequences were detected confirming male fetus. Real-time PCR results were compared with gender observed after delivery.

Results: In 44 cases concordant results were obtained. We reached 95,45% sensitivity (95 % CI 77,2 - 99,9 %) and 95,83% specificity (95% CI 78,9 - 99,9 %). The accuracy of this method was 95,65 %. The significance level was $p = 0,0001$.

Conclusion : Using above mentioned isolation and detection methods, fetal sex can be prenatally determined with high accuracy and reliability.

THE EPIDEMIOLOGIC STUDY OF CRANIOCEREBRAL TRAUMAS

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This study is focused on craniocerebral traumas noticed during the year 2010 on Clinic of Neurology in Martin University Hospital. We have chosen this topic because we consider it as very interesting to know how many and what type of craniocerebral injuries happened during the last year. Our aim is also to find out if the number of indicated RTG and CT scans are adequate to the number of patients examined. This study contains the information about traumas concerning age, sex, cause, presence of alcohol and imaging methods used in the process of diagnosis. The method of research we have chosen is retrospective clinic study of patient medical records from neurologic clinic particularly from pediatric and adult ambulances, emergency and the records of the patients hospitalized at other clinics examined by neurologist.

Total number of patient medical records processed was 9014 from which 1078 were craniocerebral traumas. Simple head traumas 302, commotion 494, contusion 81, epidural haematoma 16, subdural haematoma 58, subarachnoid bleeding 34, oedema 28, pneumocephalus + hydrocephalus+ hygroma 11, fissura + fracture of calva + fracture of cranial basis 45, cerebral herniations 4, diffuse axonal injury diagnosed by MRI scan) 5.

Our work will be completed by radiodiagnosis of particular injuries, their classification, the best choice of neuroimaging and statistic processing of our epidemiologic study.

AROUND-ORAL INFLAMMATION ODONTOLOGICAL ORIGIN

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Objective: Analysis of patients with inflammation around-oral odontological origin for a period of five years by gender, comorbidities and length of stay.

Methods: Data from medical records of Department of Stomatology and Maxillofacial Surgery University Hospital in Martin for the period 2005-2009 were evaluated in absolute numbers, percentages, processed in tables and graphs.

Results: The object of observation consists of a set of 318 hospitalized patients with around-oral inflammation. Patients with associated diseases was 100 (31%) patients without comorbidities 218 (69%). 181 men (57%), 137 women (43%). Children under 15 years with associated diseases was 7 (2%) with average length of hospitalization on 5.33, children under 15 years without comorbidities was 9 (3%) with average length of hospital stay 5.37 days. Patients with diabetes mellitus was 12 (4%) with average length of hospitalization, 5.88 day, patients with hypertension and coronary heart disease was 45 (14%) with average length of hospitalization, 5.69 day, patients with allergies to medicines or food were 39 (12%) with average length of hospitalization and 5.57 on patients with neurological diseases was 21 (7%) with average length of hospital stay 3.83 days.

Conclusion: Around-oral inflammation occurred more frequently in men (57%) than women (43%) in 1996-1998 was the reverse situation where the percentage of total admissions of women 57.7%, men 42.3%. The average length of hospital stay was longest in diabetic patients (5.88 days) compared with healthy patients (5.74 days) in comparison with other associated diseases patients, as confirmed in data from 1996-1998, where the average length of hospitalization 11.7 on diabetic patients, the other was 6.9 days.

COMPLICATIONS OF GASTRODUODENAL ULCERS TREATED SURGICALLY

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The work in a retrospective analysis deals with comparison of ulcer's disease complications occurrence solved surgically in patients treated using H2 blockers in 1990-1991 and in patients treated with proton pump inhibitors in 2009-2010.

In the first part, we compared the age structure of the files. The average age of hospitalized patients in the second set was 8.2 years higher than in the first set. We found that in the second set was decrease in needs of surgical hospitalization for ulcer's complications by 37.5%. In the second part, we compared the need for a surgical treatment which in the second monitored period decreased by 12.1% as a result of increased success of endoscopic treatment by 27.3%. Based on the success of conservative treatment, we noticed decrease of the planned operations in the second set by 34.5%, but increase of the acute operations proportion (79.3%). In the third part, we compared the types of surgical procedures. In both groups dominate in acute condition simple local operations (73.1% resp.86.95%). In the first set dominated referred operations in case of bleeding and perforation (53.4%), in the second set the local performance occurred most frequently in perforation (73.9%). In the fourth part, we compared the overall and the local complications. In acute operations was a lower incidence of complications in the second set by 24.45%. In the planned operations were higher complications in the second set by 5.2%.

In the last section, we compared mortality. Despite the much higher representation of acute operations and higher average of patient's age in the second set, there was 8.3% mortality, compared to the first set, which reached 4.16%. At a higher mortality rate in the second set involved particularly patients underwent acute surgery and polymorbid older patients (60%).

COMPARISON OF NONVARICEAL BLEEDING RECURRENCE FROM UPPER GASTROINTESTINAL TRACT IN THE ERA OF H2 BLOCKERS AND PROTON PUMP INHIBITORS

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The work in a retrospective analysis deals with relapsed nonvariceal bleeding from upper gastrointestinal tract in the period 1990 - 1991 in patients treated with H2 blockers and compares it with a period of years from 2009 to 2010 in patients treated with proton pump inhibitors.

In the first section, we compare the incidence of nonvariceal bleeding, where the second set there was a decrease of 39%. Bleeding in both groups occurred more often in men in 74.5 respectively 69.44%. The average age of patients with bleeding was higher in the second set for 8.8 year. Urgent surgical treatment was indicated in the first set in 20.3% in the second set in only 11.1%.

In the second section, we compare the incidence of bleeding recurrence during hospitalization, which was comparable in both groups 17.5 respectively 20%. The relapse occurred in the first set to 100% within 96 hours of initial successful conservative and endoscopic hemostasis. The second set was relapse within 96 hours in 85.7% of cases. While the first set of the relapse of bleeding required urgent surgical treatment for all patients in the second group was bleeding in the relapse successful stop using repeated endoscopic hemostasis in 57.2% and urgent surgical treatment was indicated in only 42.9% of patients.

In the third section, we compare mortality at nonvariceal bleeding from upper gastrointestinal tract, which was in both groups, despite a higher average age in the second set, comparable 6.8 respectively 8.3%.

Relapse of bleeding in the second set caused the death of only one patient.

ASSOCIATION OF ACE AND MTHFR POLYMORFISMS WITH ABDOMINAL AORTIC ANEURYSM (AAA)

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Background: The mortality of Abdominal Aortic Aneurysm (AAA) rupture could be greatly reduced by determining which patients are at the risk, then screening those patients prior to rupture. Polymorfism of Angiotensin converting enzyme (ACE I/D) gene is associated with decrease in ACE serum and tissue levels, resulting in lower levels of angiotensin II. Methylentetrahydrofolate reductase (MTHFR) is the primary enzyme of homocysteine metabolism. The MTHFR +677C>T polymorphism cause an alanin to valine change in the protein, which can influence aortic wall structure. Our aim was to investigate polymorfisms of ACE and MTHFR genes and their association with AAA.

Methods: This was case-control study of patients from Clinical of Surgery I., JFM CU, Martin. We investigated 125 individuals in 3 groups: Patients who has diagnosed AAA (n=9), their first-degree relatives (n=30) and control (n=86). ACE I/D and MTHFR +677C>T polymorfisms analysis was performed by polymerase chain reaction (PCR), respectively restriction fragment length polymorfism (RFLP) and gel electrophoresis. The association between specific genotypes and development of AAA were examined using logistic regression analysis to calculate odds ratio (OR).

Results: We found that the ACE D alleles (OR=1,15) and ACE I/D genotype (OR=3,5) are associated with elevated risk. A significant correlation also was found for MTHFR 677C>T Val/Val genotype (OR=2,4).

Conclusion: We conclude that genotypes of ACE I/D and MTHFR 677C>T Val/Val determines the risk of development of AAA. Early investigation of polymorfisms overall clinical investigation may markedly eliminate development and rupture of AAA.

MONITORING OF BISPECTRAL (BIS) INDEX IN UNCONSCIOUS PATIENTS WITHOUT SEDATION IN COMPARE WITH THEIR NEUROLOGICAL FINDINGS AND HEALTHY INDIVIDUALS

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Introduction: Bispectral index is complex parameter statistically gained, assessed by empiric practice commonly used in monitoring depth of unconsciousness in anesthetized patients. It is a dimensionless number. 0 means EEG silence, 100 full concentrations. In unconscious patient BiS not always correlate with neurological findings.

Aim of the research is to find if the BiS measured activity of patient`s brain and neurological findings correlate with cause of unconsciousness, neurological finding and compare it also with results of healthy persons.

Material and methods: We were monitoring BiS index in unconscious patients with different types of brain damage during common day in ICU. Patients undergo common nursing procedures. We compared results of patients with commonly known data of anesthetized patients and results of healthy individuals in several situations like active consciousness with opened eyes, active consciousness with eyes closed and imagining and mild sleep.

Results: In some patients, mostly patients with unconsciousness caused by subarachnoidal haemorrhage and without any neurological response BiS index correlated with state of mild sleep during the day and deep sleep when not stimulated, mainly during the night. In vegetative patient without intelligible response BiS index correlated with normal circadian rhythms and results of healthy individuals. **Conclusions:** Monitoring bispectral index is simple method which does not bother patient and is able to answer some questions we have about unconsciousness. Results affirm that BiS measured brain activity of unconscious patient may correlate with healthy individuals more than anesthetized or sleepy individuals. We know that the brain works. We still do not know what does it produce and if it is something comparable with common conscious brain production.

ANTIVACCINATION ACTIVITIES IN SLOVAKIA

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Introduction: Antivaccination activities are an actual problem in Slovakia.

Aim: To summarize and analyze web pages from Slovakia containing information on vaccines and vaccination.

Methods: Internet-based descriptive study and analysis of information on vaccines and vaccination available on Slovak webpages. Classification of reasons supporting or being against vaccination.

Results: Performing our search we found more than 80 000 hits on vaccines and vaccination from Slovak webpages on Internet. Some 94 met our inclusion criteria. Vaccine controversy is based on dispute over morality, ethics, effectiveness and safety.

Conclusion: There is a scientific evidence that the benefits of preventing infectious diseases overcome rare adverse effects of immunization. However, there are still individuals or groups which are against vaccination. Health communication must tackle with their various forms of disagreement.

IMAGE OF MOTHERHOOD

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She is born a girl, becomes a woman, but how to be a mother she learns all her life. In our essay we deal with what the role of the woman is, especially the role of mother.

We observe how time changed the importance and value of motherhood, what image of motherhood there was in the prehistorical age and today. The term motherhood can obtain different meaning for different people. This image is influenced by many factors– the society, which we are a part of, the culture, which we live in, but also by religion and by ethnicity. In general, the motherhood is not only pregnancy and delivery and full-time employment of women. Motherhood is broad concept, which we cannot clarify in only one essay and in million books either.

It is important to talk about the motherhood as much possible, so that we were as close as possible to this theme. We must pay attention to this topic, because the value of motherhood is being reduced in the society.

Motherhood requires a mature personality of woman - mother, so that she is able to positively accept her maternity and implement the role of mother as good as she can. Woman – mother is required to be connected with her professional role. Under certain circumstances this could mean giving up this role respectively to perceive it to be less important.

Therefore one of the roles of midwife is to prepare woman for motherhood already in psychoprophylaxis preparation before delivery.

HAND HYGIENE, AN IMPORTANT FACTOR IN PREVENTION OF NOSOCOMIAL INFECTIONS AT DEPARTMENT OF UROLOGY

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Introduction: Hand hygiene is the dominant instrument of medical practice in the prevention of nosocomial infection (NI), which is currently considered a problem not only medical and nursing, but also economic and social.

Methods: The aim of the study was to determine the level of knowledge regarding hand hygiene in relation to nosocomial infections (NI) and habits of nurses working at selected urology departments. The study involved 78 respondents - nurses from urological departments in different occupations with a clinical experience at least one year. We returned 58 questionnaires, which reached 74% response rate. As a method of collecting empirical data, we used questionnaire of its own design, prepared by the Center for Disease Control and Prevention (CDC) to conditions SR.

Results and discussion: Knowledge level of nurses on hand hygiene throughout the questionnaire is satisfactory enough (67.8%). We can conclude that knowledge of nurses meet only the minimum criteria on this issue. In the individual subgroups, questionnaire highest average score of knowledge was achieved in the care of hands - 91.4% and the lowest average score of knowledge was achieved in a subset of hand hygiene technique - 51.9%, meaning nurses do not even meet the minimum criteria in this matter, which we perceive negatively in relation to departments of NI. In terms of educational level of knowledge, the highest average score was achieved by nurses with a 2nd degree of higher education and PSS (70.7%). The lowest average score of knowledge was achieved by nurses with a 1st degree of higher education Bachelor (64.8%). When comparing the individual departments, the highest average score attained knowledge nurses from Department of Urology in Martin (69.6%), the lowest score was reached by nurse from Department of Urology in Zilina (67.2%), followed by nurses from Banska Bystrica (68.4%) and Kosice (69.1 %). The differences were not significant.

Conclusion: Identified adverse factors should be an incentive for management of individual departments. It is recommended to implement a multimodal strategy for a hand hygiene in practice. Important and critical to the success of hand hygiene practice is to implement an educational program, which should provide accurate and relevant information to implement strategies to improve hand hygiene in healthcare.

PERCEPTIONS OF "GOOD DEATH" BY EYES OF A SICK PERSON

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A good death is associated with the last leg of life, with the death of a man. A good death means something different for everyone; there is no single definition of good death. Correct understanding of the importance of "good death" for a particular person we can in providing nursing care contribute to tackling the patient with the situation approaching the end of his life.

The aim was to find out how sick perceive a "good death", what for them good death means, dying and death, whether in their neighborhood met with a good death, what other sources of support they are using. To conduct research, we chose as a research tool case report - a case method (CASE STUDY). As a research method we used interview and observation.

The analysis of the data, we found that each respondent understands a good death differentially, as also the terms of dying and death. Factors that influence the understanding of good death are also related to information about diagnosis, prognosis, and the avoidance of interview subjects, which relate directly to death, especially from sick people.

The issue of dying and death in today's society is still taboo. There are many books, magazines, articles about death and dying, but all this information is used very poorly in practice, therefore we have proposed comprehensive recommendations for practice.

LIFESTYLE DURING PREGNANCY – OCCURRENCE OF OBESITY?

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The prevalence of obesity has rising trend in developed countries, which reflects in excessive weight gain in women before and during pregnancy. Even moderate overweight is a risk factor for gestational diabetes and hypertensive disorders of pregnancy. The risk is higher in subjects with overt obesity.

The aim of this retrospective study is to find out the prevalence of overweight and obesity in pregnant women by age and education. Standardized questionnaire method, based on The Food Guide Pyramid (Anna Britt Agnsäter, 1974) has been chosen. The questionnaire includes items on nutrition (portion size and consumption frequency, alcohol intake, preference for low-fat food) and physical activity (frequency, duration and type of physical activity) during pregnancy. Moreover, it includes items to assess psychosocial burden and stress balancing ability, as well as items on family and personal history, age, number of births, place of residence and acquired education.

Compared to normal weight, maternal obesity is associated with a higher risk of cesarean deliveries, as well as anesthetic and postoperative complications. Maternal obesity also increases perinatal mortality rate. Although overweight and obesity prevalence in this target group is relatively low, it is important to take it into consideration in planning and implementing of preventive measures.

Midwives should be familiar with the assessment, prevention and treatment of overweight and obesity during pregnancy and puerperal period.

**MONITORING OF OCCURRENCE OF NOSOCOMIAL INFECTIONS AT
CLINIC OF ANESTHESIOLOGY AND INTENSIVE MEDICINE AT
UNIVERSITY HOSPITAL MARTIN IN 2010 ACCORDING HELICS
METHODOLOGY**

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Introduction: Intensive care units are usually reported to be places with the highest prevalence of nosocomial infections (NI).

Aim: To analyze incidence of NI at the Department of Anesthesiology and Intensive Medicine of the Martin University Hospital in Martin.

Methods: Retrospective study on occurrence of NI in 2010 according the HELICS methodology.

Results: During the period of observation (January-March 2010) we encountered 49 patients hospitalized at the department. 33 patients matched the inclusion criteria for study. None of them met the HELICS criteria for NI.

Conclusion: Use of the HELICS methodology is suggested as an important part of the solution for the weak notification of NI in Slovakia. It raises awareness of the problem and provides reliable data. We plan to continue and broaden our study of NI occurrence in 2010 and 2011.

EFFECTS OF CUSTODIOL N IN HEART TRANSPLANTATION

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Introduction: Currently, the maximal safe ischemic conservation time of donor organs in heart transplantation (HTX) is 4h, which limits the number of successful HTXs. In our study we examined the possibility of prolonged ischemic conservation times using the newly developed organ preservation solution Custodiol N in a canine HTX model.

Methods: We performed 17 orthotopic HTXs in dogs. Donor hearts were stored in the old Custodiol or new Custodiol N solutions for 8 and 12h. Left ventricular (LV) pressure-volume analysis was performed at baseline and 2h after starting reperfusion. Arterial pressure and coronary blood flow were continuously recorded. Tissue samples were taken from both native and transplanted hearts for histology and biochemical analyses.

Results: Hearts stored in Custodiol showed no contractile function after implantation, confirming the inability of the old solution to protect the heart against prolonged ischemia. In the groups of the new Custodiol N solution we observed spontaneous return of cardiac contractions, moreover, LV contractility did not significantly differ from baseline (end-systolic pressure-volume relationship, mmHg/ml]; 3.19 ± 0.61 vs. 2.97 ± 0.63 12h). We found higher myocardial ATP-level, and less severe tissue injury in the Custodiol N groups compared to Custodiol.

Conclusion: In the light of our results, with the use of the novel Custodiol N the currently achievable 4h of safe ischemic storage in HTX could be increased 3-fold, up to 12h.

ULTRASOUND EXAMINATION OF SPINAL CORD IN NEONATE

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Introduction: It is known that the conus medullaris ascends from its early fetal position in the sacral canal to the adult position which has been well established. An abnormally low conus is a factor in the diagnosis of tethered conus and other anomalies. That's why the knowledge of the range of the normal position of conus medullaris in neonate is important.

Purpose: To establish the normal range of the position of the conus medullaris in neonates and to compare the level of the conus medullaris in term neonates and the adults.

Objective: Ultrasonography has been proposed to be a non-invasive method to identify the position of the conus medullaris in neonates.

Methods: Forty seven healthy term neonates had been done the ultrasound examination of their lower spines. The level of the conus medullaris was related to upper, middle and lower thirds of a vertebral body.

Results: The position of conus medullaris varies from Th12- middle to L3-upper. The conus medullaris level was Th12-lower in one neonate (2,1%) , in 13 neonate (27,7%) it was L1-upper, in 4 neonate (8,5%) it was L1-middle. In 9 neonate (19,2%) the position of the conus medullaris was L2-upper, in 8 (17,0%) it was L2-middle and in 11 neonate (23,4%) it was L2-lower. The lowest position of the conus medullaris was L3-upper in one baby (2,1%).

Conclusion: After the birth the ascend of the conus medullaris is minimal because the position of the conus medullaris in neonates does not differ from the position in the adults.

SLEEP DISORDERS AND SUICIDALITY

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Background: The relationship between sleep disorders and suicidality was researched only in a few works til now. Works in particular highlight the causal relationship of nightmares and suicidality. Aim and methods: Identification of the relation of nightmares and sleep disorders with suicidality in patients with suicidal activity and healthy controls. The methodology we used was the Beck depression inventory and modified Circscreen. Results: The study group comprises 45 patients with suicidal activity, and 100 control subjects. We found out in patients a significantly greater middle and late insomnia, and they showed a statistically significant level in all scores of depressive symptoms (including suicidality) in comparison with healthy controls. When comparing suicidal and nonsuicidal subjects we found significantly higher early, middle and late insomnia in suicidal patients, were not found statistically significant differences in the presence of nightmares. Supported by sex differences in the patient group was found in women significantly higher scores in items increased daytime sleepiness, sadness, anhedonia, punishment feelings, self-dislike, fatigue and decreased appetite. All patients showed significant correlations of sleep disorders with depressive symptoms, more correlations (34) found in women than in men (16). Suicidal activity in patients did not correlate with sleep disorders, were not found differences in suicidality in relation to gender or according to the presence or absence of nightmares. There were no differences in suicidality in relation to use of alcohol and other drugs.

Conclusion: Suicidality is a complex phenomenon influenced by a wide range of factors. Based on our results is unrelated to parasomnia (nightmare), but we confirmed the association of suicidality and dyssomnia (insomnia).
Key words: sleep disorders, nightmare, suicidality.

ABI IN THE RISK STRATIFICATION INPATIENTS WITH CORONARY HEARTDISEASE

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Objective:To evaluate the significance of ankle-brachial index (ABI) in patients with acute coronary syndrome (ACS). To evaluate the relation between ABI and severity of coronary arterial disease, and its correlation with cardiovascular risk factors.

Methods:ABI was investigated with Doppler ultrasonic device and calculated from systolic ankle and brachial pressure measurements in patients on second day after percutaneous coronary intervention (PCI). We enrolled 106 patients (61M/45F, 63.1 ± 9.1 y.) with coronary arterial disease after PCI. This group included 50 (47%) patients after acute coronary syndrome and 56 (53%) patients who undergone elective revascularization and there were 41 (39%) patients with diabetes mellitus type 2.

Results:There wasno significant ABI difference betweenpatients with and without acute coronary syndrome (1.19 ± 0.27 vs. 1.19 ± 0.15 , $p=NS$). There were significant ABI differences in patients with and without diabetes (1.09 ± 0.22 vs. 1.21 ± 0.21 , $p<0.01$) and in patients with single vessel disease versus multi vessel disease (1.17 ± 0.12 vs. 1.07 ± 0.25 , $p<0.05$). In patients with indication to CABG was significant difference in ABI versus patients were not indicated to CABG (0.83 ± 0.31 vs. 1.16 ± 0.21 , $p<0.001$). ByLogistic Regression Analysis, old diabetic after ACS with $ABI<0.90$ have a risk of CABG 95.45%.

Conclusion: $ABI<0.90$ might be a marker of severity of the coronaryarterial disease in patients after acute coronary syndrome.

VOLUMOMETRIC HIPPOCAMPAL CHANGES DURING ANTIDEPRESSANT THERAPY

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Previous studies have shown that hippocampus plays an important role in depression. Volumetric studies have demonstrated hippocampal volume changes during depressive symptoms manifestation.

The purpose of our study was to detect volume changes of hippocampus in patients in the state of depressive symptoms manifestation and during antidepressant medication with at least 50% reduction of MADRS scale score. Eight patients (3 men, 5 women) in the age of 20 – 67 years ($45,25 \pm 14,29$) were examined using single voxel proton magnetic resonance spectroscopy, focusing on the hippocampal area at the time of depression symptoms manifestation and after at least 1 month of antidepressant SSRI or SNRI therapy. In six patients the volume of hippocampus increased ranging from 0.77% to 9.41%, in two patients decreased in 2.88% and 10.36%. Thus, in the overall group of patients the nonsignificant reduction of hippocampal volume was found ($p=0,208$). Interesting is finding of positive (although nonsignificant - Spearman = 0,12, $p=0,0778$) correlation of MADRS score and hippocampal volume in depressive symptoms manifestation and contrary, negative (although nonsignificant - Spearman = -0,238, $p=0,570$) correlation of MADRS score and hippocampal volume during treatment. The hypothesis of increase of the hippocampal volume during antidepressant therapy was not confirmed in our group of patients. Findings of opposite correlations (although nonsignificant) between MADRS score and hippocampal volume before and during therapy could indicate the different association of hippocampal volume and depressive symptoms expression at the time of their manifestation and during antidepressant medication. Nonsignificant findings could be related to the small number of examined subjects, thus further research with extended group of patients is necessary.

BIOCHEMICAL MARKERS IN THE DIAGNOSIS OF MONOCLONAL GAMMOPATHIES

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The aim of the study was to assess the diagnostics validity biochemistry parameters of paraproteins testing and compare with the recently introduced analytical methods for total and free κ and λ light chains (LC), estimations.

Protein electrophoresis (microgel agarose); immunoglobulins G, A, M, β_2 -microglobulin by the immunoturbidimetric technique, total proteins, calcium, phosphate, creatinine, CRP, albumin – by standard methods; κ and λ LC, using the immunoturbidimetry/nephelometry.

Using stepwise diagnostics started by electrophoresis, we examined 79 (of 7159 samples), where the examination revealed a paraprotein. Myeloma diagnosis on the order form correlated with biochemistry findings in 35%, with other related haematology diagnoses in 31,6%, but in 33% monoclonal protein was incidental. IgG myelom was found in 69/79, IgM 4/79, IgA 4/79; biclonal gammopathy 2/79; hyperviscosity syndrome 12,6%. Paraprotein concentrations IgG 23,4 (2,39-91,05) g/l, IgM 11,5 (6,3-27,9) g/l, IgA 13,16 (6,96-27,8) g/l; β_2 -microglobulin 3,8 (0,99-21,23) mg/l. The examination of LC confirmed κ myeloma in 71%, λ myeloma in 17,8%, biclonal gammopathy in 10,1%. Correlation κ/λ LC in relation to β_2 -microglobulin ($r=0,85$). κ/λ LC in relation paraproteins ($r= -0,1$).

Paraproteins occurs in 1,17% of total electrophoretic patterns. Finding of oligoclonal proteins in 33% of pathological samples was incidental and unexpected which suggests the need to introduce screening for gammopathy in elderly people. Haematologically suspected cases of myeloma were confirmed in 31,6%. Comparing the concentrations β_2 -microglobulin and a κ/λ LC concentrations demonstrated good correlation but a higher sensitivity for κ/λ LC. No correlation between the concentrations of κ/λ LC and the quantity of paraproteinemic immunoglobulins, was established, especially in very high values of paraproteins because of large differences in biological half-lives.

SELECTED ACUTE PHASE PROTEINS IN PATIENTS WITH MORE SEVERE FORM OF ISCHEMIC HEART DISEASE

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Aim: Atherosclerosis of coronary arteries as an inflammatory and multifactorial disease has hundreds of risk factors, from which play relatively important role inflammatory proteins. Some are also used as indicators of inflammation. In the study observed acute phase proteins (APP): ultrasensitive CRP (usCRP) as a reference inflammatory marker, coeruloplasmin (polyfenoloxidase - marker of antioxidant protection), and Cu, transferrin (indirect marker of the plasma/tissue oxygen transfer), plasma Fe. Study group: 104 patients after coronary angiography; group of 78 coronary heart disease (mild to moderate CHD) patients treated conservatively.

Methods: APP were determined by immunoturbidimetry by biochemical analyzer ADVIA Siemens 1200 (antibodies DiaSys Germany), Cu and FE by complexometry. Patients were completely clinical and laboratory examined a classified according to major risk factors (DLP, diabetes, obesity, hyperuricemia, hypertension).

Results: **usCRP** – coronarographed patients: $4,33 \pm 0,37$ mg/l, CHD: $3,98 \pm 5,3$ mg/l (NS), specific atherosclerosis target limit for usCRP $< 3,0$ mg/l; **coeruloplasmin:** coronarographed $259,7 \pm 10,05$ mg/l, CHD $258 \pm 11,3$ mg/l (NS) v.s. healthy; **copper:** $13,6 \pm 0,5$ μ mol/l, CHD $21,5 \pm 0,7$ ($13,5-29,7$) μ mol/l; **transferrin:** $1,65 \pm 0,07$ g/l, CHD $2,16 \pm 0,82$ g/l; **iron:** $9,98 \pm 0,55$ μ mol/l, CHD $17,7 \pm 1,7$ ($10,0-27,0$) μ mol/l. Relative risk coronarographed (Rifai index TC, HDL-C, usCRP) is 3.0 (i.e moderate short-term risk).

Conclusion: usCRP concentrations in both groups of patients were predominantly in the fourth quintile of pathological values. Coeruloplasmin values which were just above the lower limit of the benchmarks, indicate the reduced function of antioxidant protection. Transferrin and plasma iron are kept well the lower limit of standards and indicate the predominance of hyporegenerative component and potential myocardial tissue hypoxia. While usCRP better reflects chronic inflammatory degenerative process, coeruloplasmin and transferrin both suggests rather depressed tissue antioxidant protection.

ANTIARRHYTHMIC THERAPY OF PATIENTS SUFFERING FROM RECIDIVES OF ATRIAL FIBRILLATION

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Introduction. Atrial fibrillation (AF) is a supraventricular tachyarrhythmia characterized by disorganized atrial electrical activity and progressive deterioration of atrial electromechanical function. Data from the Framingham heart study show that atrial fibrillation is associated with a higher risk of death. This is the reason it should be controlled carefully. Primary therapeutic goals include rate control, maintenance of sinus rhythm, and prevention of thromboembolism. To reach these aims is still problematic.

Aims of work. The study was devoted to gain data on antiarrhythmics used in management of patients suffering from recidives of atrial fibrillation (RAF).

Methods. We carried retrospective study in which we analysed 40 patients' health records who were treated in years 2004-08 due to RAF at Intensive Care Unit in Clinic of Internal Medicine I. in UHM. The present study ties into last year's study devoted to description of main causes associated with RAF. We focused attention to add some characteristics of RAF and to description of antiarrhythmics used in management of them.

Results. We find out that hospitalisation for RAF was most frequent in February, March and June, and it was lowest in August, April and May. Antiarrhythmics were totally used 260 times for treatment of AF. Antiarrhythmics from I.C group were used in 6.7%, 2nd group in 53.8%, from IIIrd group in 38.4%, and from IVth group in 1.1%. There was some small difference in used types of antiarrhythmics before and after hospitalisation only in group III. Before hospitalisation they were used in 37.6%, after hospitalisation in 39.2%.

Conclusion. The results show that RAF is still an important clinical problem despite more and more rational and sophisticated therapy.

DIABETIC NEPHROPATHY - DISEASE COURSE AND PROGRESSION IN DIALYSIS PATIENTS AT UNIVERSITY HOSPITAL MARTIN

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Chronic renal failure resulting from diabetic nephropathy was monitored from the records of nephrology ambulance and Dialysis center at University Hospital in Martin. From total number of patients were randomly evaluated 9 patients of Nephrology ambulance and 11 patients of dialysis program. Duration of diabetes is about 20 years in patients in outpatient care and 28 years in dialysis patients. The average age of entry into hemodialysis was 58 years (40-77 years).

Neuropathy as main complication of diabetes is present in 82% of dialysis patients versus 67% of non-dialysis patients. Also retinopathy is positive in 73% of dialysis patients in compare with 56% of non-dialysis patients. Other complications: hypertension is present in 91% of dialysis patients versus 67% of non-dialysis patients, dyslipidemia is present in 9% of dialysis patients in compare with 11% of non-dialysis patients, stroke is positive in 27% of dialysis patients in compare with 33% of non-dialysis patients, ischemic heart disease is present in 82% of dialysis patients versus 89% of non-dialysis patients, atherosclerosis of lower extremities is positive in 27% of dialysis patients in compare with 11% of non-dialysis patients. We studied some laboratory parameters like glucose (6,49 mmol/l in dialysis patients and 7,98 mmol/l in non-dialysis patients), glycated hemoglobin (7,03% in dialysis patients and 7,77% in non-dialysis patients), creatinine (469,18 μ mol/l in dialysis patients and 191,44 μ mol/l in non-dialysis patients), urea (24,08 mmol/l in dialysis patients and 11,5 mmol/l in non-dialysis patients), glomerular filtration (0,35 ml/s in dialysis patients and 0,88 ml/s in non-dialysis patients).

Conclusion: Paradoxically, even in patients not in dialysis program, the results of glycemetic control are worse than in patients already classified.

ANALYSIS OF SELECTED PARAMETERS IN RELATIONSHIP WITH PARTICULAR ASTHMATIC PHENOTYPE IN CHILDREN

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Introduction: Bronchial asthma (BA) is the most frequent chronic respiratory disease in children and develops as a consequence of the interplay among genes, intrinsic factors and various environmental triggers. Oxidative damage caused by aberrations in oxidant-antioxidant balance may play one of the essential roles in the development of asthma. Carbon monoxide in exhaled breathe (eCO) is one of the non-invasive markers. The antioxidant enzymes catalase (CAT) and glutathione transferase (GST) are essential components of cell defense against oxidative stress. We have studied the changes of eCO and the association among CAT, GSTT1 polymorphisms and BA. **Patients and methods:** Our study group consisted of 247 patients and our control group consisted of 83 children. All the children underwent the measurement of eCO, basic lung function testing and blood sampling for the measurement of specific IgE and genetic analysis. **Results:** Levels of eCO differed among various phenotypes of asthma. Asthmatics showed higher eCO than controls, and especially acute exacerbations were accompanied by a significant increase of eCO in comparison with clinically controlled stage. Atopic and non-atopic asthma showed elevated levels of eCO. BA patients had a higher prevalence of the GSTT1 null genotype than the control group. The CAT T/T homozygotes were more frequent in the asthma patients than among controls. **Conclusion:** Oxidative damage and changes in antioxidant defense mechanisms are included in BA and elimination of oxidative damage could be potentially an appropriate strategy for treatment of asthma.

This work was supported by VEGA 1/0071/11 and by project "Center of Experimental and Clinical Respirology" co-financed from EU sources and European Regional Development Fund.

HYPERGLYCEMIA AS A RISK FACTOR OF INTRAVENTRICULAR HEMORRHAGE IN VERY LOW BIRTH WEIGHT INFANTS

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Introduction: Neonatal hyperglycemia is a common problem in very low birth weight infants (VLBW) infants during first week of their life. Its increased frequency is being associated to a lower gestational age and birth weight as well as to severe clinical situations. Hyperglycemia is a risk factor for increased morbidity and mortality. One of frequently diseases is intraventricular hemorrhage (IVH).

Aim: The aim of our study was to asses corelation between hyperglycemia and increased risk of intraventricular hemorrhage in VLBW infants.

Methodes: Prospective analyse of clinical records of VLBW (BW<1500g) admitted in the year 2010 on Neonatal intensive care unit in Martin. Their laboratory, respiratory and nutrition parameters and ultrasound scans of the first 7 days of their lives were reviewed. There were excluded infants with inborn defects and infants died during the first 24 hours. Results were statistically analysed.

Results: During that period, 41 infants were admitted, 3 were excluded. Of those infants were 21 female and 20 male, 6 died. Average gestation week was 28,6 and average birth weight 1092 g. IVH was present in 3 cases. There was significant difference between group with IVH and without IVH in initial glycemia (11,13 mmol/l, SD±5,74 vs. 6,05mmol/l, SD±1,86, p<0,001) peak glycemia(11,13mmol/l, SD± vs. 6,05mmol/l, SD±1,86, p<0,001) average glycemia (9,7mmol/l, SD±2,01, vs. 5,47mmol/l, SD±4,94, p<0,0001).

Conclusion: Our analysis indicates that hyperglycemia is in VLBW infants common. Initial, average and highest glycemia in infants with IVH was significantly higher than in those without IVH. That suggests that prevention and treatment of hyperglycemia may improve the outcomes of VLBW infants.

THE INFLUENCE OF DIABETES MELLITUS TYPE 1 ON CALCIUM – PHOSPHATE METABOLISM IN CHILDHOOD

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Introduction: Diabetes mellitus type 1 is chronic metabolic disease affecting metabolism of carbohydrates, proteins, lipids and minerals. Lower concentration of vitamin D can be expected in patients with DM1 as a consequence of insufficient absorption from intestines or disorder of kidney's hydroxylation. Vitamin D affects the calcium phosphate and bone metabolism, growth and differentiation of cells.

Aim: To compare the differences in levels of calcium, phosphorus, magnesium and densitometry between diabetic patients with normal and decreased vitamin D level and to detect if diabetic nephropathy influences mentioned parameters.

Methods: Patients with DM 1 (n=60) at the age 9-19 had investigated values of vitamin D3 (Roche-Elescys2010), microalbuminuria (Advia1200, Siemens), Ca, P, Mg (Beckman Coulter AU940) and densitometry (Hologic Discovery bone densitometer). Nephropathy was determined by the value of microalbuminuria >300 mg/l. The vitamin D level under 20ng/ml was considered as decreased. The results were statistically evaluated by MS Excel 2007.

Results: Diabetic patients with nephropathy had significantly longer diabetes duration than patients without nephropathy (mean 7.606 years, SD-3,579 vs. 4.4 mean, SD-3,788, $p < 0.01$). Levels of Ca, P, Mg, vitamin D3 or Z score densitometry did not provide significant differences. Diabetic patients with vitamin D deficiency had significantly lower parameters of densitometry than patients with normal values of vitamin D3 (Z score -1.8 mean, SD-0,8 vs. -0.585 mean, SD-1,324, $p < 0.5$). Ca, P, Mg and duration of diabetes didn't provide significant differences.

Conclusion: We found a significant decrease in vitamin D level in 31% diabetic patients, what affected bone metabolism in lowering bone density regarding the age. The presence of incipient diabetic nephropathy did not influence the vitamin D, Ca, P and Mg levels.

PREVALENCE OF HYPOGLYCAEMIA IN HOSPITALIZED PATIENTS

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Hypoglycaemia is a severe and life-threatening condition. Chronic hypoglycaemia may lead to neurological damage and is also connected with higher cardiovascular mortality. However, there are only limited information about the incidence of hypoglycaemia in hospitalized patients. The aim of the study was to determine the prevalence of hypoglycaemia, it's most frequent causes and risk factors of it's developement. A retrospective study in hospitalized patients at the 1st clinic of internal medicine UNM and JLF UK, focusing on the periode 2007–2010. Hypoglycaemia was defined as blood glucose level $\leq 3,0$ mmol/l. Each case of hypoglycaemia from 17 872 hospitalizations in this period was identified. We studied the number of hypoglycaemic events, symptoms, presumable causes, presence and type of diabetes mellitus, it's treatment, duration, metabolic compensation, insulin admission, chronic complications of diabetes and presence of other conditions predisposing hypoglycaemia. Hypoglycaemia developed in 558 hospitalizations (3,12%), totally 1092 hypoglycaemic events were found. 214 patients had repetitive hypoglycaemic events, 23 events were maximum found in one patient. In 108 cases hypoglycaemia occured in patients without diabetes mellitus, 81 in patients with type 1 diabetes, 358 in type 2 diabetes and 11 in patients with other types of diabetes. 84% of diabetic patients were treated with insulin, 50,8% of them had intensive insulin therapy. In patients with type 2 diabetes 14% were treated with peroral agents alone, 56,2% with insulin alone and 24% using both agents. Insulin admission, intensive insulin therapy, tumors, nephropathy and hepatopathy were identified as the most frequent presumable causes of hypoglycaemia. We confirmed that hypoglycaemia is a frequent event in hospitalized patients with 3,12% incidence. In diabetic patients hypoglycaemia was caused especially by antidiabetic agents, in nondiabetic other causes as tumors, renal or liver disease play major role. Our results points to the necessity of glucose control not only in patients with diabetes mellitus, but also in patients with other diseases affecting glucose and insulin metabolism.

THE IMPACT OF INHALATION OF HYPERTONIC SALINE ON MUCOCILIARY CLEARANCE AND NASAL NITRIC OXIDE

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Introduction: Nitric oxide (NO) has an influence on airway physiology by mediation in ciliary activity, inflammation, host defense, bronchial tone, and pulmonary vascular resistance. However, the clinical relevance of the measurement of nasal NO (nNO) in different physiological and pathologic conditions remains to be established before it can be used as a diagnostic tool.

Aims: The aim of our study was to establish the relation between nNO and mucociliary clearance and the impact of inhalation of hypertonic saline on these markers.

Methods: We examined 43 subjects, non smokers, without allergy, with no history of chronic disease of upper or lower respiratory tract and at least 3 weeks after acute respiratory tract infection. nNO was measured in right (RnNO) and left (LnNO) nostril before and after inhalation of hypertonic saline (HS) using analyzer NIOX[®]. Mucociliary clearance (MCC) was measured before and after inhalation of HS by sacharin test.

Results: We found out that levels of nNO before inhalation of hypertonic saline (RnNO 806ppb, IQR-337,6; LnNO 854 ppb, IQR-295,8) were significantly lower than levels after inhalation (RnNO 841,8 ppb, IQR- 342,3; LnNO 897,4ppb, IQR-304,1) ($p < 0,05$, Wilcoxon T-test). There was found no significant difference between RnNO and LnNO before and after inhalation of saline. We found also significant difference ($p < 0,0001$, Wilcoxon T-test) in mucociliary clearance– MMC before inhalation (507 s, IQR 233), and after inhalation of aerosol (360 s, IQR 238). There was found no correlation between nNO and MCC.

Conclusion: An increase in osmolarity of the airway surface increases MCC and nNO, what can be useful in establishing further procedures for evaluation patients with cystic fibrosis and other specific respiratory diseases.

NURSING DIAGNOSIS INEFFECTIVE AIRWAY CLEARANCE IN A PATIENT WITH POLYTRAUMA

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Introduction: The importance and the need of nursing diagnoses validation studies in connection with nursing diagnosis research is getting more and more emphasized. The purpose of the thesis was to validate the nursing diagnosis Ineffective airway clearance.

Methods: For empirical data collection we used validation sheet containing defining characteristics of the nursing diagnosis Ineffective airway clearance and criteria for a nurse - expert. We examined, which of defining characteristics within given patient group were considered significant by nurses. We also used the method of retrospective analysis of medical records of patients with a focus on finding diagnostic components of selected nursing diagnosis. The obtained data are processed using descriptive statistics (arithmetic mean, standard deviation) and we identified weighted score for each defining characteristic.

Results: Based on results of our survey we found out that nurses – experts identified defining characteristic of dyspnoea as the most important defining characteristic of selected nursing diagnosis. By medical records analysis we found out that the most frequent defining characteristic was a defining characteristic of excessive sputum production. The most frequent related factor in the documentation was chest injury.

Discussion: After comparing results of our survey with results of foreign validation survey we can state a match in the significance of the four defining characteristics of the nursing diagnosis Ineffective airway clearance.

Conclusion: Research and clinical testing of nursing diagnoses in national context is increasing credibility of nursing terminology.

COPING WITH STRESS IN CHRONICALLY ILL PATIENTS

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The issue of chronic diseases related to their increasing incidence is still current. Chronic diseases affect different aspects of quality of life of the patients and their families. They impact the physical health, family, work and social relations. Also their life priorities and sense of life are changing, which is closely connected to the loss of ability to adapt readily to a difficult situation and actively work on the changed environment. The patients' coping with chronic illness is a complex and multifactorially conditioned process.

For examination of the coping strategies in patients with chronic disease we used the Brief COPE questionnaire, consisting of 28 items, divided into 14 coping strategies. Each coping strategy contains 2 items rated on Likert scale from 1 to 4. In the questionnaire there have been examined coping strategies aimed at the problem, strategies aimed to emotions and maladaptive strategies.

Based on the analysis of the data we can conclude that the most frequent used coping strategy by the patients in our group were strategies: acceptance ($x= 3.22$), active coping, instrumental support and self-distraction ($x= 3.15$), the least used strategies were: use of alcohol/drugs ($x= 1.09$) and behavioral disengagement ($x= 2.03$). We found differences in the use of coping strategies from the point of view of gender in the strategy: planning, from the point of view of length of chronic disease in the strategies: planning and self-blame, from the point of view of marital status of the patients in the strategies: ventilating of emotions and behavioral disengagement.

The results of our work as well as several domestic and overseas research show that patients with chronic illness use in the process of coping with it various coping strategies. The most frequently used strategies were strategies focused on the problem: acceptance, active coping, strategies focused on emotion: instrumental support, and from maladaptive strategies: self-distraction.

In the providing care of chronically ill patients it is necessary to know that even maladaptive coping strategies may work adaptive in the early stages of coping. Examination of the coping strategies in patients with chronic disease provides a platform for the implementation of nursing interventions, which are important in improving the quality of life, enables to detect the cause of not effective usage of coping strategies and to find out what contributes to the use of effective coping strategies.

WHITE COAT HYPERTENSION IN CHILDHOOD

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Introduction: The issue of white coat hypertension (WCH) is given particular attention in the foreign literature. WCH can be detected by using 24-hour ambulatory blood pressure monitoring (ABPM). Based on the detection of risk factors, we can implement prevention of WCH.

Methods: We realized the retrospective study. The main aim was to find out the frequency and risk factors of WCH. We analyzed records of 140 children with high blood pressure (BP).

Results: In the group of 140 children was confirmed the presence of WCH at 51 children (36,4%) - 13 girls (25,5 %), 38 boys(74,5 %). Systolic BP in cardiology clinic ranged above the 99th percentile, diastolic BP below the 90th percentile. The systolic BP recoded by ABPM was mostly below the 90th percentile, diastolic BP below the 50th percentile. The most patients with WCH were 16 – 18 years old (60,8 %) and in 50th-75th percentile of BMI (17,6 %). Patients prevailed negative family history of hypertension (54,9 %).

Discussion: Children with WCH in our study had mostly the same risk factors compared with published studies abroad.

Conclusion: Finding the frequency of WCH and its risk factors in children is significant, given that the prevailing view that WCH in children is predisposition in permanent hypertension.

COPING WITH STRESS IN PARENTS OF CHILDREN AFTER RENAL TRANSPLANTATION

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Introduction: The kidney transplantation is currently the best available treatment for children with chronic renal failure, but their life is associated with the lifelong dependence on the immunosuppressive therapy, necessity of compliance with the uncomfortable therapeutic regime, coping with the transplant rejection and sometimes confront with the returning to dialysis. These stressful situations have impact on family welfare. Therefore, it is important to assess parental stress and the most problematic events causing burden of the parents and determine the need for early psychological intervention.

Methodology: We used the valid and reliable questionnaire PIP- PEDIATRIC INVENTORY FOR PARENTS (Streisand et al., 2001). The questionnaire includes 42 items of problematic events, grouped into four factors – health care, communication, role function, emotional damage. Parents rated each item within its frequency and difficulty based on using five-point Likert scale. In addition we created a separate subscale named „After renal transplantation“, which includes 8 more items.

Results: We found significant differences between parents' gender and age in the incidence of stressful situations after renal transplantation. The differences between low and high educated women were found in coping with the stress situations. Greater parental stress was found in subscale „Communication“ of the divorced parents then in the parents living together.

Conclusion: The research found out that the parental age, marital status and education had an influence on the frequency of parents' anxiety.

LIFE QUALITY OF PARENTS AND CHILDREN WITH BRONCHIAL ASTHMA

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Introduction: Bronchial asthma is chronic inflammatory disease of the airways, which prevalence in childhood is still increasing. The aim of our research study was to assess, how the bronchial asthma influences the quality of life of children and their parents.

Methodology: For the collection of the empirical data we used the standardized and validated questionnaires on the life quality – Paediatric Asthma Quality of Life Questionnaire (PAQLQ), Paediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ) and Asthma Control Questionnaire (ACQ) to evaluate the asthma control.

Results: In the observed cohort of children (n = 72) we found that total ACQ score confirmed the partially controlled asthma. We found that the asthmatic children have good quality of life. Bronchial asthma had more significant influence on the activity than on the emotional feeling or on the incidence of the symptoms. The degree of asthma control significantly influences the quality of child's and parent's life.

Discussion: Using the relevant evaluating tools we can identify the severe and important impact of the disease on the daily life, what could not be observed through the lung function testing or clinical examination.

Conclusion: The aim of the complex management of the therapy is to achieve the most optimal degree of asthma control and though this to create the conditions for the higher life quality of the child and its parents.

PATIENT'S USE OF INTERNET FOR HEALTH-RELATED INFORMATION

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Introduction: Along with nearly every facet of contemporary life, access to health information has been revolutionized by advances in technology, particularly via the Internet. The Internet can be a powerful avenue by which patients can obtain information.

Aims: The thesis set as its aim to find out how much patients use Internet as a health-related information source and how those information influence their behaviour. We focused our attention on the qualitative and ethical aspects of health related web sites.

Methods: To solve the research problem we used questionnaire of our own design, which was distributed to adult patients of the Clinic of Reconstructive Surgery UNLP in Košice. In our study 177 were participated. Frequency and preference of searching Internet for health information were evaluated by frequency analysis, variance analysis. Content of Web sites were analysed using the SAM and E-health Code of Ethics.

Results: We found out that Internet was used for seeking health information by 58.76% of 177 respondents and the content was mostly disease related. That information, which was gathered via Internet affects behaviour in 68.27% cases.

Discussion: Differences based on age and socioeconomic status were consistent with general findings. Respondents are most often looking for information in a case when the disease has already been diagnosed. Also we are similarly identified some issues, that are well discussed about methods of searching (search engines) and about the qualification of authors, currency of information and others.

Conclusion: In patient education nurse has always played significant role and that status does not change even though with the onset of modern technology. It is needed to reflex mentioned aspects by nurse counselled self-education.

SOCIAL SUPPORT FOR SENIORS

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Introduction: Social support can be characterized as a help provided by other people to a person in a load position.

Aims: The aim of our work is to find out the total extent of social support at the seniors as well as the extent of social support in different parts, namely in the emotional, material, tender and social interaction ones among the seniors of different age, sex, education, marital status.

Methodology: For the purpose of getting the empirical data, we used a standardized questionnaire: *The Medical Outcomes Study Social Support Survey* (Shebourne, Steward, 1991, p. 705-714). The Cronbach Alpha index of reliability reaches a sufficient inner consistence (0,91). The questionnaire includes 18 questions which were divided into four subscales- material, emotional, tender and social interactions. The sample consisted of 60 seniors.

Results: The emotional and material subscales were found statistical differences in the elderly living at home and facilities. Another significant difference was found in elderly people with different marital status and the material support.

Discussion: Following the obtained results of our research, we can point out that the results correspond with the ones of other authors (Shebourne, Steward, 1991, p. 710; Thompson and coll. 2005, p. 925).

Conclusion: Social support is a very important part of social needs. It influences the seniors in their actual living situation they are in e.g. health, illness, bad financial conditions, and the loss of a close person.

Key words: social support, senior, emotional level, material level, tender level, social interaction level

THE INCIDENCE OF COMPLICATION AFTER INTRAVESICAL BCG TREATMENT IN PATIENTS WITH BLADER CANCER

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Introduction:Since the introduction of the intravesical treatment by BCG vaccine by Morales in 1976 it became an important part of superficial bladder cancer treatment. The aim of our study was to define the incidence of complications, the differences in their frequency and duration after particular intravesical BCG treatment cycles, as well as the impact of complications on quality of life.

Methodology: For empiric data harvesting we used a questionnaire on the incidence of complications after intravesical BCG treatment and the questionnaire named QLQ-BLS-24 focusing on quality of life of respondents with bladder cancer.

Results: Intravesical BCG therapy in duration of at least 1 year was completed exactly with 83 (92%) respondents from totally 90 (100%) respondents (n=90). The occurrence of complications did not seriously impact the quality of life respondents with bladder cancer.

Discussion:The complications after intravesical treatment by BCG vaccine might be decreased by the provision of more information to the patients and their education and the modification of the treatment schedule.

Conclusion: The target of modern nursing is to offer a superior human healthcare nursing based on scientific approach with the aim to achieve the best possible quality of life.

NURSES' COMPETENCES IN RESCUE SERVICE

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Introduction: In Slovakia, there are approximately 2000 medical rescuers working in rescue services, about 800 nurses including. Recently, the competences of rescue services have been much discussed within professional circles.

Aim: The thesis set as its aim to find out and determine the rate of nurses' and rescuers' consent with the range of their competences in rescue services, then to consider the rate of consent in relation to educational level and length of practical experience as well as to assess the rate of competences observation.

Methodology and file: We used a method of questionnaire in order to collect empirical data. The questionnaire was composed of 50 research items in 9 subscales. We evaluated the obtained data statistically by the means of descriptive statistics. The research sample consisted of 74 respondents, selected by random selection.

Results: As for the rate of consent in relation to educational level and length of practical experience, we determined a significant difference between both professions. Nurses, unlike rescuers, refuse to accept the range of their competences more and more frequently with growing practical experience. We found another significant difference in subscales UI., UII., UIII., UIV., which show that nurses, unlike rescuers, do not use to go beyond their competences.

Discussion and conclusion: The results of our thesis imply that nurses work in rescue services know the range of their competences, but do not identify themselves with these competences. They do not use to go beyond their competences, which, however, finally may not be beneficial to patients in current system of pre-hospital care.

COMMUNICATION SKILLS OF EMERGENCY NURSES

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Introduction: One of the current nursing tasks is to provide an urgent care to a person struck by sudden health damage or life-threatening. In emergency care it is crucial for a nurse to adopt an individual approach to the patient and communicate efficiently.

Methodology: The aim of our research study was to determine how the communication skills of the emergency nurses in OPP UNM are judged by patients. We have designed and implemented the set of communication workshops to improve communication skills of nurses. We have used HCCQ questionnaire to collect the data before and after the communication workshops completed by nurses.

Results: The communication skills of nurses were not judged to be sufficient in the first stage of research (before workshop implementation) from the perspective of the HCCQ questionnaire domains. After completion of workshops by the nurses in the second stage of research the evaluation exceeded 70% level of the maximum positive result in all the domains except *nonverbal immediacy* which was judged by 67,9%.

Discussion and conclusion: The level of professional communication of a nurse is considered to be one of the indicators of the quality of care provided from the perspective of patient. Our results confirm it is possible to improve the communication skills of emergency nurses by efficient education performed in the form of workshops designed. The findings of our research study indicate the need for continual life-long education of nurses in the field of communication.

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