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ICMS 2018 PROGRAM

Thursday 10 May

09:00 – 16:00	Registration
17:00 – 18:00	Opening Ceremony
19:00	The Gala – Networking/Charity Event

Friday 11 May

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11:00 – 11:15	Coffee Break
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ABSTRACTS

Clinically important hypoplasia of the fetal aortic isthmus and duct

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Medical faculty University of Nis, Serbia | Area **Anatomy**

Introduction There is more than one method for defining hypoplasia of blood vessels and in prenatal diagnostic it is very important to choose the one with less false positive/negative results. Prenatal diagnosed aortic hypoplasia can lead to development of coarctation.

Aim The aim of this study was to compare hypoplasia and clinically important hypoplasia of the aortic isthmus and the arterial duct in fetuses.

Methods The study was performed on 53 preparation of the fetal heart with the aorta (13-33 week of gestation). Preparations were photographed and by using ImageJ program diameters of the aortic isthmus and the arterial duct were measured. Hypoplasia was defined as a value $< \bar{X} \pm SD$, but clinically important hypoplasia of the arterial duct was defined via the Z-score regression equations. Statistical analysis was done in program IBM SPSS Statistic ver. 20.0.

Results There was statistically significant increase in diameter of arterial duct and the aortic isthmus in the 7th ($p < 0.05$). There were 10 hypoplastic aortic isthmuses and 7 hypoplastic arterial ducts defined by lunar months. There were only 3 clinically important hypoplastic arterial ducts and they were included in previously defined hypoplastic ducts. Among these cases, 2 of 3 had hypoplastic aortic isthmus. Between the diameters of aortic isthmus and arterial duct in different lunar months, positive correlations were noted.

Conclusion The Z-score regression equation is a method that exclude more than a half possible false positive results in comparison with hypoplasia defined by a mean and standard deviation.

Evaluation of the antinociceptive properties of newly synthesized hydrazide-hydrazone derivatives

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Medical University Sofia, Bulgaria | Area **Pharmacology**

Introduction We recently discovered that certain newly synthesized hydrazide-hydrazone derivatives demonstrate significant anticonvulsant activity in the MES test. There are similarities between the mechanisms of neuropathic pain and epileptogenesis, which is why the newer antiepileptic drugs show potential for pain treatment.

Aim The aim of this study is to examine the antinociceptive activity of p-chlorophenyl(compound 8a) and 2-furyl(compound 8b) substituted derivatives of 2-H chromene based hydrazide/hydrazone, via the hot plate and the formalin paw test in mice.

Methods Male ICR mice weighing 20–30g were used. The mice were injected intraperitoneally with compounds 8a and 8b, with a dose equal to ED₅₀ in the MES test (ED₅₀ 87.63 mg/kg and 12.51 mg/kg, respectively). The antinociceptive effects have been measured via the hot plate test and the formalin paw test. The experimental protocol was approved by the Bulgarian Food safety agency.

Results Both compounds(8a and 8b) have demonstrated significant anticonvulsive activity in the MES test. Compound 8b demonstrated analgesic activity during the hot plate test, by significantly increasing the latency time ($p < 0.05$ vs. controls). A similar effect was observed in the first phase of the formalin paw test. Compound 8a did not attenuate the nociceptive response in the early/acute phase of the formalin paw test in a statistically significant manner.

Conclusion Regardless of the significant anticonvulsive activity exhibited in the MES test, only 8b demonstrated a significant analgesic effect. Further studies are to elucidate the connection between the chemical structure of the investigated compounds and the observed effects. The differences could also be caused by different pharmacological mechanisms.

Hyperprolactinemia, Diagnostic and Therapeutic Approach

Lazaridou Efthymia-Eirini, P. Anagnostis

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Introduction Introduction: Prolactin is a hormone which is synthesized and secreted by lactotroph cells in the Anterior part of Pituitary gland. Its primary function is to enhance breast development and to provoke lactation during pregnancy. However, if we observe abnormal high levels of prolactin in the blood, the condition is known as Hyperprolactinemia and it is an endocrine disorder of the Hypothalamus-Pituitary axis.

Aim The Aim relative review is to present the Diagnostic Strategy of Investigation of Hyperprolactinemia and its Therapeutic Approach.

Methods We searched for English Language Publications until February 2018, under the following Terms: "Prolactin" OR "Luteotropic hormone" AND "Hyperprolactinemia" Or " High levels of Prolactin", " deases by Hyperprolactinemia", " Adenomas", "Macroprolactinemia", "hypothyroidism", " Acromegaly" Or "Acromegalia", "Diagnostic Tests" Or "Diagnostic Approach", "investigation of symptoms", " Therapeutic Approach" or " Therapy" or "Treatment Approach". Additionally, we included references from the reviewed articles in order to widen our search. On the topa manual search of key journals and abstracts from the maior annual meetings in the field of Endrocrinology was conducted. Moreover, we paid special attention to guidlines and original papers focusing on the Diagnosis and Therapy from Hyperprolactinemia.

Results As a result of this search, we finally synthesize a review, we collected, analyzed and re-synthesized information regarding: 1) Definition of Prolactin and Hyperprolactinemia. 2) Potential Etiologies of Hyperprolactinemia, 3) Diagnostic Tests 4) Analysis of Symptoms 5) Therapeutic Approach. However, we realised that this review shown us, that every type of disease which can be caused by hyperprolactinemia, has a treatment.

Conclusion As a conclusion, Depending on the condition and factors as the sex, the age the previous medical history and overall health, there is a variety of recommendable and different treatment options. But the best course of action is to observe symptoms firstly. Sometimes, surgery is needed at the time of diagnosis. In a lot of cases, drug therapy can control the symptoms.

Osteoprotegerine as an early marker of chronic diabetes complications.

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Introduction Type 1 diabetes is a chronic disease associated with the risk of macroangiopathy. Diabetes duration is the most influential factor. Recent studies showed higher concentration of OPG in T1D patients, especially those with diabetes complications, compared to healthy population.

Aim The aim of our study was to evaluate the utility of OPG as an early marker of late complications in the pediatric diabetic population.

Methods Our study included 78 T1D children (39 boys) with mean age $13,09 \pm 3,69$ years and at least 1 year of diabetes duration. Patients were divided into 3 groups: <5, from 6 to 10 and >10 years of diabetes duration. The concentration of OPG has been marked by ELISA test. Additional data: mean glycaemia, TDD (units/kg/day), basal/TDD (basal%), HbA1c, BMI, BMI z-score, BP, albumin to creatinine ratio (ACR), cholesterol, HDL, LDL and triglycerides were compared between the groups.

Results Mean OPG concentration in 3 groups of patients was $3,085 \pm 1,607$, $1,860 \pm 2,019$ and $2,738 \pm 1,864$ pmol/L, respectively. We observe negative correlation between OPG and HbA1c ($r = -0,26$), weight ($r = -0,386$) and height ($r = -0,345$) in the whole study group and positive correlation between OPG and cholesterol in children with diabetes duration <5 years ($r = 0,388$). Other parameters do not significantly correlate with serum OPG concentration.

Conclusion We did not observe differences in OPG concentrations in dependency of diabetes duration in children. In spite of significantly higher OPG in patients with T1D than in healthy population, it seems not reliable marker of chronic diabetic complications. In further studies it is worth to analyze more carefully correlation

Inhibitor effect of Butamirate Citrate on PTZ-induced convulsions

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Ege University School of Medicine, Turkey | Area **Experimental Neurology**

Introduction Butamirate has the possible effects on epileptic seizures, which is thought to perform central antitussive effect via medulla oblongata and nucleus tractus solitarius.

Aim In aim of our study, effects of butiramate on epileptic seizures have been investigated on electrophysiological and clinical basis.

Methods 48 Sprague-Dawley rats were divided randomly into two groups for EEG recordings and behavioral assesment then these two groups divided to four groups: 6 for control, 6 for saline injection, 6 for relatively-low dose butamirate (5 mg/kg) and 6 for relatively-high dose butamirate (10 mg/kg) for each. Evaluation of the behavioral analyses after giving 70 mg/kg pentylenetetrazol (PTZ) first myoclonic jerk time and racine convulsion scales were analyzed, then in different rats for EEG recordings 35 mg/kg PTZ were given and spike percentages were evaluated in same doses of butamirate.

Results In both 5 mg/kg and 10 mg/kg butamirate groups the FMJ onset times were statistically higher then the saline group, similarly both 5 and 10 mg/kg butamirate groups RCS scores were significantly lower than the saline group. In terms of spike

percentages, 5 and 10 mg/kg butamirate were significantly lower than the saline group.

Conclusion As a result in our study, we showed that 5 and 10 mg/kg doses of butamirate have anticonvulsant effects on PTZ induced rats.

Investigation the effect of NMNAT-1 on silenced osteosarcoma cell line

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Introduction Nicotinamide mononucleotide adenylyltransferases (NMNATs) are key enzymes in NAD⁺ biosynthesis. NMNAT-1 supplies the substrate for the nuclear NAD dependent enzymes like the PARP1. On the other hand NMNAT-1 itself may also modulate the activity of PARP-1 independently of NAD-production.

Aim We aimed to prepare a stable silenced osteosarcoma cell line with the brand new CRISPR/Cas9 system. Then investigate the absence of NMNAT-1 on the viability of cells, NAD⁺ levels, proliferation rate, the sensitivity of most commonly used DNA attacking anti-tumor agents.

Methods NMNAT-1 silencing was performed by CRISPR/Cas9 on U2OS osteosarcoma cell line. NMNAT-1-expression was analyzed with RT-qPCR and Western blot analysis. U2OS cell line was treated with different types of DNA targeted antitumor drugs. Cell viability was determined with Calcein-AM assay. Cell proliferation was determined with sulforadamine B assay. Apoptosis was investigated with high content screening, and necrosis was measured by LDH activity.

Results We successfully prepared NMNAT-1 knock out(KO) U2OS cell line. KO cell line showed increased sensitivity to H₂O₂ treatment and poly(ADP-ribosyl)ation was delayed. We found higher sensitivity to DNA attacking antitumor agents both in mono and in combined treatments. The absence of NMNAT-1 caused decreased total NAD⁺ level. Both the apoptosis and the necrosis were higher in the KO cell line.

Conclusion NMNAT-1 protein expression was successfully eliminated by CRISPR-Cas9 method in U2OS cells. and higher sensitivity to DNA-targeted anti-tumor treatments were found. Our results show that NMNAT-1 could be a new pathway to block PARP-1 mediated DNA repair, and could be a potential pharmacological target in the therapy of malignancies.

Menstruation: Its Presentation & Social Perspective in Bangladesh

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MAG Osmani Medical College, Bangladesh | Area **Gynaecology & Obstetrics**

Introduction Presentation and awareness about menstruation, considered a curse in Bangladesh, is of utmost importance because women are the ultimate sufferers without having proper knowledge of menstrual hygiene.

Aim The aim of the presentation is to discuss about the presentation and social perspective of menstruation in Bangladeshi women

- Methods** The research was cross sectional and we took convenient type of non-randomized samples of a group of 650 young and middle aged women.
- Results** The results reported that among 650 women, 390 were young aged between the age group 15-34 and 260 were middle aged between the age group 35-45. 58.33 % women were found taking painkillers for menstrual pain and 41.67% were found taking contraceptive pills for irregular menstruation. Obesity, lack of exercise, depot contraceptives, miscarriage, pelvic infections etc. were found to be the clinical causes behind irregular menstruation and severe menstrual cramps. Food allergies and gall bladder problem were present.
- Conclusion** Misconceptions about menstruation, family restriction and dominant attitudes of male are the basic risk factors prevailing in Bangladesh. Providing women with knowledge and management methods prior to menarche, privacy and a positive social environment around menstrual issues have the potential to benefit the womenfolk of Bangladesh.

Vitamin B12 deficiency - relations with schizophrenia and other mental disorders

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Medical University of Sofia, Bulgaria | Area **Pathophysiology**

- Introduction** VitaminB12 is responsible for many processes, which have influence on the brain and mental health. B12 is crucial for the CNS's function. B12-deficiency can cause temporary malfunctions, long-termed structural damages, which can lead to depression, paranoia, schizophrenia, etc.
- Aim** Our aim is to show that part of these scary diagnoses is led by B12 deficiency. Our goal is to cut down misdiagnosing such conditions.
- Methods** We have made a research about the essence of B12 deficiency, its influence on the mental disorders and how discovering this deficiency could help for the improvement of the healthcare. We are observing a patient with B12 deficiency and a mental disorder, and how the patient's status is changing during the therapy.
- Results** During our study we have ascertained that many of the symptoms often occur before a specified deficiency in the blood. The deficiency of vit.B12 rises the levels of homocysteine in the blood, but decreases the levels of folic acid. Our patient shows visible results after 2 months therapy with oral and intramuscular B12, combined with folic acid, vitamin B6, vitamin D, etc. Although this combination reduces some of the physical disorders, there are still negative psychic symptoms associated with schizophrenia. Given the time the patient was treated with neuroleptics, we assume that these symptoms require more time to be cleared. Many studies is showed that the bigger levels of Homocystein are a risk factor not just for atherosclerosis and cardiovascular diseases, but also for Schizophrenia and other mental disorders.
- Conclusion** Nowadays vitaminB12 deficiency is a very common condition which is neglected by the doctors, but leads often to scary diagnoses, most of them curable with the necessary dose of vitamin B12. The screening of vitamin B12 deficiency should be done as soon as possible, if there's doubt about mental disorders.

Calcium-binding proteins calretinin and calbindin in frog and turtle retina

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Medical University of Sofia, Bulgaria | Area **Physiology**

- Introduction** Calretinin (CR) and calbindin (CB) are thought to be involved in the intracellular calcium buffering and the neuronal excitability modulation. As the retina is a natural model of the brain, the retinal CR and CB distribution is widely investigated.
- Aim** Our aim was to comparatively study the distribution of Calretinin and Calbindin in a frog *Rana ridibunda* (mixed type retina) and in a turtle *Trachemys scripta elegans* (predominantly cone retina).
- Methods** Experiments were performed on frozen (-200 C) 12-14 µm retinal tissue sections of a frog and a turtle retinas. The indirect immunofluorescent method was applied.
- Results** The results obtained showed that both CR and CB were well represented in frog and turtle retinas, being localized in almost all layers. CR was absent in the photoreceptors. Synaptic patterns of CB and CR differed from each other. Double labeling experiments show that both proteins have colocalizations with tryptophan hydroxylase. Our results also show that CR and CB are involved in the processing of visual information in both on- and off-retinal channels, CR having preponderance to on- over off-channels.
- Conclusion** The rich CR- and CB- representation in both plexiform layers supposes their participation in the synaptic transmission. The two proteins are involved, most probably, in the release or the metabolization of some neurotransmitters.

Bubble study - diagnostic value in patients with cryptogenic stroke

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- Introduction** Around 40% of the strokes are with undetermined etiology and unfortunately more common among young adults. The term "cryptogenic stroke" (CS) has been extensively used to describe this subtype.
- Aim** The aim of our study is to present the so-called bubble study and its remorsefulness in determining the cause of the CS.
- Methods** The study was performed in Hiroshima University Hospital where the bubble study has been performed for approximately 8 years. Annually, around 20-30 people undergo transesophageal echocardiogram (TEE) in order a cardiogenic cause of stroke to be found. TEE is always combined with the bubble study in this clinical setting. We have analyzed the potential risks of the examination and the benefits which it gives in the diagnostic process.
- Results** The microbubbles, generated with the agitated saline are easily detectable on TEE, which makes it possible to recognize a patent foramen ovale (PFO) – the most common cause of paradox embolization. Compared to the major complications of TEE - esophageal injury by probe (0.03%), anaphylaxis due to local anesthesia, and aspiration pneumonia, there are no such complications due to the bubble study itself.
- Conclusion** The bubble study is one of the best examples for a procedure with no contradictions, low risk of complications and also high diagnostic value.

Effects of nicardipine on ECoG electrical activity of 6-OHDA rats

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- Introduction** In rodent models, cortical beta rhythms are excessively synchronized to basal ganglia spike discharge but it is not known if this is true in humans with PD. Basal ganglia spiking and higher frequency cortical activity have not been explored.
- Aim** The study of L-type calcium channel inhibitor Nicardipine on pathologically (6-OHDA) affected electrical neuronal activity in rats brain
- Methods** After infusion of 12mg/kg 6-hydroxy dopamine (6-OHDA) by stereotaxic frame guided infusion in situ in rats' brain, animals develop after 20 days Parkinsonian like symptoms. These symptoms are result of irreversible binding of 6-OHDA to the Dopamine receptors blocking their function and consequent cellular degeneration. Mitochondrial damage and oxidative stress plays important role in Parkinson's disease (PD). Mitochondria are very crucial part in the cell and have many cellular functions including the generation of ATP and intracellular calcium (Ca²⁺) homeostasis.
- Results** Parkinson's disease (PD) is marked by excessive synchronous activity in the beta (13–30 Hz) band throughout the cortico-basal ganglia network obtained by ECoG spectral analysis. Local field potentials (LFPs) recorded from the subthalamic nucleus (STN) of sham-treated animals (by infusion of buffered solution into caudate putamen of the brain). Implanted with stimulation electrodes for the treatment of Parkinson's disease (PD) demonstrate strong coherence with the cortical electroencephalogram (ECoG) over the β -frequency range (13–30 Hz). Nicardipine decrease amplitude of electrical spikes at right (6-OHDA damaged) hemisphere and facilitate blood vessel dilation and improvement of blood supply of the brain tissue.
- Conclusion** These results strongly suggest that synergetic effect and good neuroprotective effect is demonstrated in comparison of single medicine treatment on motor, biochemical and antioxidant parameters in early phase of Parkinson's disease.

DSC study of 6-hydroxydopamine-induced parkinson disease in rats

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- Introduction** Parkinson's disease (PD) is a neurodegenerative disorder causing degeneration of dopaminergic (DA) neurons. A new, based on DSC approach was developed for investigating 6-hydroxydopamine (6-OHDA) induced disorder of PD in rat brain. The 6-OHDA model resulted in specific DA depletions.
- Aim** The aim of the study was to evaluate the changes caused by 6-OHDA infused in rat brain right hemisphere in order to observe the Parkinson's effects.
- Methods** In current experiment 20 Wistar rats were used. Chemical model of PD allow us to divide rat's brain into two hemispheres. The right one was infused with 12mg/kg 6-OHDA and the left (Control) with PBS in the area of caudate putamen of the brain. 20 days after infusion we confirmed validity of the model by Apomorphine test. Animals with positive answer were selected - their brain was removed and divided into hemispheres with different weight. After the centrifugation of homogenated

brain the supernatant's examination by DSC show thermal changes in the proteins of the affected and healthy hemisphere.

Results The DSC measurements performed on supernatants of brain tissue homogenates revealed large differences between the heat capacity profiles of the healthy hemisphere and the 6-OHDA-treated hemisphere. The heat capacity profiles of the supernatants from healthy animals displayed well expressed exothermic transitions peaking in the range 35-45°C, thus preceding in temperature the endothermic denaturational transitions. The experiment proved that there were significant differences between left and right hemispheres due to the neurodegenerative processes in the latter hemisphere.

Conclusion The inductor 6-hydroxydopamine applied to the right hemisphere striatum brings about big differences between right and left hemispheres manifested in the appearance of new transitions in the right hemisphere, which are clearly visible in the DSC

Perivascular epithelioid cell tumor of the liver - imaging findings

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University of Ljubljana, Slovenia | Area **Radiology**

Introduction Perivascular epithelioid cell tumor (PEComa) of the liver is a rare mesenchymal neoplasm of uncertain histogenesis. Because of the rarity of these tumors and non-specific radiological features its diagnosis is difficult and ultimately depends on histological examination of the tumour.

Aim The aim of this report is to present our case of PEComa of the liver and to review the previous literature on the radiological aspects of these tumors.

Methods Ultrasound, magnetic resonance imaging and ultrasound guided histologic puncture, performed by experienced radiologist, were used for the diagnosis of the liver mass. A search of EMBASE, CINAHL and PubMed was performed for articles related to this topic, published between January 2000 and March 2018, which confirmed that PEComa of the liver is a rare but increasingly recognized tumor. Imaging findings are often unspecific and definitive pre-operative diagnosis on the basis of imaging diagnostic is not possible.

Results We report the case of 24-year old female patient with liver mass, which was incidentally detected during ultrasonography due the unspecific abdominal symptoms. Pattern of enhancement at contrast enhanced ultrasound was indicative for diagnosis of FNH, but growth of the lesion was the indication for MRI examination. The pattern of enhancement at MRI was not specific for FNH or any other benign lesion and ultrasound guided histologic puncture was indicated. The liver mass was finally diagnosed as PEComa after biopsy and was successfully treated with surgery. The radiological follow-up showed no evidence of recurrence or metastatic disease.

Conclusion Definitive diagnosis of hepatic PEComa depends on pathologic findings. PEComas of the liver can display characteristics of both benign and malignant tumors and surgical resection is currently the treatment of choice. Prognosis following resection is good and long-term follow-up is advised.

Ultrastructural changes of the cardiomyocytes in spontaneously hypertensive rats

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Medical University of Sofia, Bulgaria | Area **Anatomy**

- Introduction** The development of myocardial hypertrophy is related to hypertrophy and hyperplasia of cardiomyocytes, and with variations in the organisation of subcellular components. The stated changes progress with correlation between the stage of hypertrophy and the observed cellular and subcellular alterations.
- Aim** The aim of the study was to observe and describe the ultrastructural changes in cardiomyocytes during the development of myocardial hypertrophy in spontaneously hypertensive rats.
- Methods** For the purpose of this study, we used hearts from male spontaneously hypertensive rats, distributed in two age groups: young (1-month-old) and adult (6-months-old), each group containing three animals. The hearts were fixed in 2.5% glutaraldehyde. Transmission electron microscopy was conducted on ultrathin sections from the heart of each animal.
- Results** We noted significant changes in the ultrastructure of hypertrophied cells of in adult SHR: the nuclei had highly convoluted membranes and an increased number of nucleoli; the mitochondria were swollen with an evidence of fragmentation of the cristae in some of them; the organisation of the myofibrils was altered. The changes occurred in the final stages of the development of hypertrophy.
- Conclusion** Adult spontaneously hypertensive rats exhibit notable reorganisation of the cellular and subcellular structure: hypertrophy of the cells and intensive protein synthesis with alteration of the number of the ultrastructural elements, as well as signs of initial degeneration.

Experimental evaluation of PLA NanoMatrix 3D scaffold for tissue engineering

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Sumy State University, Ukraine | Area **Biomaterials for Medical Application**

- Introduction** Scaffold type and construction are crucial limitation for tissue engineering technology. Nanofibrous structures that mimic natural extracellular matrix are widely studied as the best solution with good regeneration potential.
- Aim** The aim of our research was in vitro and in vivo assessment of new nanofibrous NanoMatrix3D (NM3D) electrospun scaffolds made of Poly(lactic acid) (PLA) as a candidate for tissue engineering scaffold.
- Methods** Scaffolds were prepared from polylactide solution using NM3D®-electrospinning technology. In vitro experiment included SEM, mass density determination, static and dynamic degradation tests in SBF solution. Toxicity of material in cell culture was assessed with FDA/PI staining followed by fluorescent microscope visualization and Resazurin reduction assay. General toxicity and tissue reaction were evaluated in 4, 8 and 12 weeks after subcutaneous, intramuscular and intraperitoneal implantation of material to 60 laboratory rats. Cell-loaded scaffolds were applied to full-thickness skin wound of 24 rats (12 – for scaffolds with

ADSCs, and 12 – for DFBs). Healing progress was evaluated on 7th and 14th postoperative days.

Results PLA NM3D® electrospun scaffolds have porous structure (pore size 25-300 µm) made of chaotically orientated nanofibers, and relatively low mass density (150-190g/m²). Scaffolds have satisfactory degradation rate as they lost from 42,7% to 56,2% initial weight after static and dynamic tests respectively, and they most completely degrade and are replaced by newly-formed connective tissue at the end of in vivo experiment (12 weeks). FDA/PI staining and Resazurin reduction assay proved cells viability and proliferation. Histological analysis of skin defect filled with cell-loaded PLA scaffold demonstrate collagen fibers formation and vessels ingrowth mainly in peripheral zones of the scaffold.

Conclusion PLA NM3D® electrospun scaffolds have structure similar to extracellular matrix and provide conditions for cell migration, adhesion and proliferation. They are biodegradable, biocompatible, nontoxic materials and could be used as basis for tissue-engineering construction as they support connective tissue formation and vessels ingrowth in the injured site.

Skin mechanosensitivity time course in pelvic pain model in rats

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University of Belgrade, Serbia | Area **Physiology**

Introduction Pelvic pain is prevalent urological disease in man characterized by variety of symptoms which can wax and wane. The major pathophysiological substrate is nonbacterial inflammation of the prostate. A number of attempts to mimic this pain syndrome have been tried.

Aim The aim of this study was to determine the time course of skin mechanosensitivity alterations in male rats during experimental non-bacterial pelvic pain syndrome development.

Methods We used adult male Wistar rats. Upon adaptation and acclimatization period, rats were assigned to groups: experimental - aseptic application of 3.0% λ-carrageenan in the prostatic gland and control - application of saline. Pelvic skin mechanosensitivity was assessed by von Frey aesthesiometer at different time points (-2, -1, +2, +3 and +7 days, where 0= treatment day).

Results There were no significant differences between the control and experimental group in skin mechanosensitivity during both basal measurements (-2 and -1 days, $p>0.05$). However, marked differences between the groups were noted in days upon the treatment. Skin mechanosensitivity was significantly greater in the experimental rats at +2, +3 and +7 days upon treatment comparing to the control matches ($p<0.01$). Skin mechanosensitivity in post-treatment days were equal to basal values in control rats, but significantly higher in the experimental rats ($p>0.01$).

Conclusion Results of study showed that the pelvic skin mechanosensitivity increase in experimental conditions is constantly present upon syndrome initiation, lasting at least 7 days, what enables time window for further studies of this phenomena.

Analysis of the changes in nephrons in spontaneously hypertensive rats

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Medical University of Sofia, Bulgaria | Area **Anatomy**

- Introduction** Untreated hypertension is causing nephrosclerosis which is associated with progressive loss of functional nephrons and chronic renal failure.
- Aim** The aim of our study was to analyze and compare the changes in the areas of the renal corpuscles and glomerular capillary tufts of the superficial and juxtamedullary nephrons traced among male spontaneously hypertensive rats (SHR).
- Methods** For the purpose of our study we used 9 male spontaneously hypertensive rats, distributed in three age groups: 4-, 6- and 12-month-old. After routine procedures, serial coronal sections from the kidneys were cut and stained routinely with haematoxylin and eosin. The histological analysis was performed on five slides from the kidney of each animal.
- Results** We observed an initial increase in areas of the renal corpuscles and glomeruli - result of a compensatory glomerular hypertrophy, which was followed by decrease in the late stages of glomerulosclerosis. The 4- and the 6-month-old groups of SHR, showed an increase of the values for both parameters in both types of nephrons. While comparing the 6-month-old with the 12-month-old SHR, we observed the parameter glomerular area decreased in both types of nephrons, while the area of the renal corpuscles increased in superficial, but decreased in juxtamedullary nephrons. Our results show that juxtamedullary nephrons were more affected than superficial nephrons.
- Conclusion** Hypertensive nephrosclerosis is linked to morphological and morphometric changes in nephrons. The changes in the inner cortex are more pronounced compared to the changes in the outer cortex. Hypertensive nephrosclerosis is a leading factor for a declining renal function.

Anatomical features of os lunatum

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Medical University of Sofia, Bulgaria | Area **Anatomy**

- Introduction** Os lunatum is located in the proximal row of the carpal bones, between ossa scaphoideum and triquetrum. Pathology is most common in the dominant wrist of men, where it appears to be due to repeated stress caused by physical load.
- Aim** The aim of this study was to review the possible variations of os lunatum and the surrounding bones which could cause avascular necrosis, hamatolunate impingement syndrome, etc.
- Methods** In the present study, we used autopsy material from 40 upper limbs of both male and female formol-carbol fixed cadavers. Anatomical dissections of the upper limbs were conducted at the Department of Anatomy, Histology and Embryology of the Medical University of Sofia.
- Results** We concluded that in 30% of our specimens, os lunatum was from type 1 (it had one facette which connected to os capitatum). In the remaining 70%, the bone was from type 2 (it had two facettes which connected both with os capitatum and os hamatum).

Conclusion Pathological conditions associated with os lunatum are related to its anatomical features, as well as the age and sex of the individual.

Types of acromion process based on its morphology

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Medical University of Sofia, Bulgaria | Area **Anatomy**

Introduction The acromion is one of the two processes of the scapula. It plays a role in the field of orthopaedics, by having a correlation with some diseases. The morphology of this process has a significant role in upper limb pathology.

Aim The aim of the present study was to present the different types of acromion process based on its morphology, by having connections with some orthopaedic diseases.

Methods The acromion is one of the two processes which belong to the scapula. It plays a key role in the field of orthopaedics and traumatology, by having a correlation with some diseases such as subacromial impingement syndrome and others. The morphology of this process may play a significant role in upper limb pathology.

Results Our study showed that Type 2 (curved) is the most commonly observed – around 80 % of the fixed materials; Type 1 (flat) was seen in 11% and Type 3 (hooked) – in 9%. People with Type 3 (hooked) acromion process tend to suffer more from the subacromial impingement syndrome.

Conclusion Our study showed that Type 2 (curved) is the most commonly observed – around 80 % of the fixed materials; Type 1 (flat) was seen in 11% and Type 3 (hooked) – in 9%. People with Type 3 (hooked) acromion process tend to suffer more from the subacromial impingement syndrome.

Aerobic capacity and spirometric parameters in athletes and nonathletes

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Introduction Physical fitness is ability of organism to increase level of metabolic processes due to increased level of metabolic needs . Aerobic capacity is measured by maximum level of oxygen consumption. Pulmonary capacity has evaluation importance for sport and health of population.

Aim To investigate if there are differences in aerobic capacity and spirometric parameters between athletes and nonathletes, and also differences in these parameters between anaerobic and aerobic athletes

Methods Number of participants was 45 males, aged 18-35 years, divided into 2 groups: athletes and nonathletes. Athletes were divided by sport type in aerobic and anaerobic group of athletes. Testing was consisted of anthropometric measuring, spirometry and measuring of aerobic capacity on ergobicycle with mask, by principle of ramp test.

Results Value of VO₂max in group of athletes (55.46 ml/kg/min) was significantly greater than in group of nonathletes (37.78 ml/kg/min). VO₂max showed significant difference in both aerobic (58.88 ml/kg/min) and anaerobic (52.04 ml/kg/min)

athletes in relation to nonathletes (38.78 ml/kg/min). Spirometric parameters (FVC, FEV1) were significantly greater in group of nonathletes (5.481L, 4.951L) than in group of athletes(4.874L, 4.635L). We found significant difference in FVC between group of nonathletes (5.481 L,) and anaerobic athletes (4.807l), and in Tiffeneau index between group of anaerobic athletes(97.29%) and nonathletes(90.82%). P value was ($p < 0.05$).

Conclusion Values of anthropometric parameters are greater in group of nonathletes. Differences in body weight and body mass caused greater values of FVC and FEV1 in group of nonathletes. Values of aerobic capacity are increasing with training. The greatest values of aerobic capacity are shown by aerobic athletes.

In vivo hepatoprotective activity of *Thymus mugodzharcicus* essential oil

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Introduction In the absence of reliable hepatoprotectives, a large number of natural medicinal preparations are used for the treatment of liver diseases. Before we investigated the antioxidant activity of materials from endemic plants of Kazakhstan and recommended them to further research.

Aim In this study the hepatoprotective effect of the *Thymus mugodzharcicus* essential oil (TMEO) was investigated against the carbon tetrachloride (CCl₄)-induced acute hepatotoxicity in male rats

Methods Forty adult male rats were randomly divided into 4 groups of 10 animals each. Group I served as the normal healthy control, group II rats were intoxicated with CCl₄ i.p. (1 ml/kg body weight CCl₄/olive oil 1:1), group III rats received TMEO orally (50 mg/kg/day for 7 days) and CCl₄ i.p. and group IV rats received Silymarin orally (50 mg/kg/day for 7 days) and CCl₄ i.p. Biochemical parameters included aspartate transaminase, alanine transaminase, alkaline phosphatase, total bilirubin and lipid peroxidation marker (malondialdehyde) were determined in serum. Histopathological changes in the liver were assessed using hematoxylin and eosin staining.

Results Pre-treatment with TMEO resulted in decreased enzyme markers, bilirubin levels, and lipid peroxidation marker compared with CCl₄ group. Histological findings revealed that the hepatic cells, central vein, and portal triad are less damaged in TMEO administrated rats, compare with CCl₄ alone induced rats. Comparing biochemical and histological analyzes of Groups III and IV, TMEO showed more expressed hepatoprotective activity.

Conclusion The essential oil of *Thymus mugodzharcicus* showed hepatoprotective activity in CCl₄ induced acute liver damages. The data can be used to develop new hepatoprotective drugs based on *Thymus mugodzharcicus* essential oil.

Reversible ischemic stroke of the left claustrum

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Medical University of Sofia, Bulgaria | Area **Anatomy**

- Introduction** The claustrum is a subcortical brain structure found in both hemispheres in the region of the insula. It includes a dorsal part (claustrum proper or insular claustrum) and ventral part (endopiriform nucleus) – bordered by the external and extreme capsule.
- Aim** The claustrum possesses complex reciprocal connections with the cortex, striatum, dorsal thalamic nuclei and hippocampus. Reports of patients with unilateral lesion of the claustrum are extremely rare in the clinical practice.
- Methods** Herein, we present an ischemic stroke restricted to the left claustrum in a 55-year-old female with anamnesis of intensive dizziness, ataxic gait, sensation of 'vacuity' in the head, decreased hearing and abnormal gustatory sensations.
- Results** MRI was performed and showed an ischemic stroke restricted to the left claustrum with no other lesions. Following 4 weeks of therapy the patient recovered fully and duplex sonography showed preserved circulation in the affected areas.
- Conclusion** The present case report underlines the complexity of clinical symptomatology of the claustrum.

Leptin-induced pSTAT3 changes in MPA of normal and obese rats

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- Introduction** One of the major leptin receptor signaling pathways involves phosphorylation of signal transducer and activator of transcription 3 (pSTAT3). The failure of elevated leptin levels to suppress feeding in common forms of obesity defines a state of leptin resistance.
- Aim** The goal of this study is to examine leptin-mediated pSTAT3 in the medial preoptic area of the anterior hypothalamus (MPA) in rats with normal weight and diet-induced obesity.
- Methods** Male Wistar rats were provided with either standard rodent chow (SC) ad libitum or a cafeteria diet (CAF) in addition to ad libitum SC. We used the Lee index for assessing obesity in rats. Blood serum was separated by centrifugation and measurement of leptin was done with an ELISA. Rats were injected i.p. with leptin and anesthetized 45 min later. Free-floating tissue sections were blocked in goat serum and then incubated with the pSTAT3 antibody. Sections were incubated with biotinylated anti-mouse antibody, followed by avidin-biotin-complex labeling. Results are presented as the mean $\hat{\pm}$ SEM and analyzed with one-way analysis of variance.
- Results** We demonstrate that feeding rats with cafeteria diet for a period of 9 weeks results in a significant increase in body weight, Lee index and serum leptin concentration compared with SC-fed rats. After the dietary period, SC- and CAF-fed rats received intraperitoneally recombinant leptin (0.5 mg/kg) and brain sections were subjected to pSTAT3 immunohistochemistry. In contrast to SC-fed rats, CAF-fed animals had a significant reduction in leptin-induced pSTAT3 staining in the MPA ($p < 0.05$). In

addition, the intensity of the immunohistochemical reaction was less pronounced in the CAF group.

Conclusion These data suggest the development of leptin resistance at the level of STAT3 activation in MPA of rats with diet-induced obesity.

Statins improve survival of animals with acute renal injury

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Introduction Acute renal injury (ARI) results in a 19–83% mortality rate with a constant rise in the incidence of this pathology. As a rational way of ARI pathogenetic treatment the use of statins was examined due to their pleiotropic effects.

Aim To compare the effects of different statins (atorvastatin, lovastatin, simvastatin) on the animals' survival rate under the conditions of ethylene glycol-, gentamicin-, glycerol- and ischemic ARIs.

Methods In vivo studies were carried out on 115 nonlinear mature white laboratory rats and 45 mice. Statins were administrated 3–7 days prior to ARI simulation (20 mg/kg) by gavage. Reference drug lipoflavon (296 mg/kg) was injected intraperitoneally. Myoglobinuric ARI was simulated by an intramuscular injection of 50% solution of glycerol (10 ml/kg), toxic ARIs – by an intramuscular injection of gentamicin solution (80 mg/ml) and by a subcutaneous administration to mice of ethylene glycol (10 ml/kg). Renal ischemia was simulated under general anesthesia by imposing a clamp on a renal pedicle for 75 min with subsequent reperfusion for 24 h.

Results An average survival rate under the conditions of the statins' administration accounted for 55.6% in ethylene glycol ARI, 100% – in myoglobinuric ARI, 93.8% – in gentamicin-induced ARI and for 90.6% – in ischemic ARI. Among the studied drugs the highest survival rate for all models of ARI was observed in the simvastatin group. The more pronounced protective effect of simvastatin in comparison with atorvastatin, lovastatin and lipoflavon, is based on its significant lipid-lowering activity and rapid absorption due to its highest lipophilicity among studied statins. The renoprotective action of statins might be caused by their pathogenic affection on the ARI.

Conclusion Improved survival rate of animals with different models of experimental ARI (ethylene glycol, gentamicin, glycerol, ischemic) shows evidences of the renoprotective properties of statins.

Alterations in brain creatine concentrations under long-term social isolation

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Tbilisi State University, Georgia | Area **Biochemistry**

Introduction Long-term social isolation can be the inducer of mental stress conditions, which have negative impact on energy metabolism of cell. One of the main buffering and transferring systems for maintaining energetic balance is creatine kinase/ creatine/ creatine phosphate shuttle.

Aim	The main goal of the study was to determine alterations in creatine concentration and observing its synthesizing and transporting systems in brain under long-term isolation to fulfill understanding of influence of such conditions on living organism.
Methods	The experiments were conducted on 60 adult male laboratory rats divided into two groups. Group 1 – control group – were kept in common cage, while group 2 – stressed rats were maintained in individual cages for 30 days. Intracellular Cr and ATP contents were measured by colorometrical assay kits. Creatine and ATP concentrations were calculated according to the standard curves. PCr determination assay depends on enzymatic conversion of PCr, by which NADP ⁺ is reduced. Reduced NADPH is then measured spectrophotometrically at 570 nm. CK concentration was measured by ELISA assay kit and the optical density was read at 450 nm.
Results	The Cr content of rat brain was measured and the results showed that under long-term isolation Cr concentration was increased for about 45%, while PCr was decreased for about 46%. Estimations showed that after 30 days of isolation, the amount of ATP was decreased in S-group individuals compared to the C-group, thus displaying down-regulation of energy metabolism under stress. The amount of the enzymes involved in the Cr synthesizing pathway dropped, the content of the Cr transporter also decreased.
Conclusion	To summarize the results, while the Cr concentration under stress conditions increases, the amount of enzymes taking part in its synthesis drops, which could be a sign of down-regulation of endogenous production of creatine. 30-day social isolation stimulates formation of acute stress that leads to the down-regulation of energy metabolism.

Eating disorders among young adults with type 1 diabetes mellitus

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Introduction	Eating disorders (EDs) are common and serious problem in young adults. When associated with type 1 diabetes (T1D), which is an independent risk factor of EDs, are even more dangerous. Manipulation with insulin doses may lead to acute diabetic complications.
Aim	The aim of this study was to characterize clinical manifestation of eating disorders in the population of young adults with T1D. We assessed symptoms, behavioral attributes and parameters of diabetic control preceding EDs development. We described 3 cases of young girls with type 1 diabetes also diagnosed with EDs.
Methods	We present 3 clinical cases of the girls in the age of 15 (case 1 and 3) and 16 (case 2), with T1D duration of 1 year, 9 and 12 years, respectively. They were followed at the Pediatric Diabetes Clinical Unit between 2015 and 2018 and, according to the EDs diagnosis, also at Psychiatric Clinical Unit. Two of them met the criteria for anorexia nervosa and one was diagnosed with other group of eating disorders.
Results	We observed intentional reduction of insulin doses as a method for reducing weight in two cases. Contrarily, in the third case intrusive thoughts regarding glycemic control were present, leading to obsessive-compulsive behaviours considering insulin management. BMI markedly decreased in all of the patients: from 18,5 to 13,4kg/m ² and from 17,2 to 15,2kg/m ² (both <3rd percentile) and from 20,6 to 16,5kg/m ² (3rd-15th percentile). The course of diabetes relapsed during the EDs

development in 2 cases. We observed increase in HbA1c concentration: from 6,6% to 7,6% and from 6,6% to 8,7%. In the 3rd case, diabetes was perfectly controlled.

Conclusion As coexisting T1D and EDs worsen the course of both diseases, multidisciplinary approach is necessary to ensure early diagnosis and effective treatment. Both inadequate means of losing weight and too strict glycemic control should call for medical attention. Education programs may help to prevent EDs in T1D.

Risk for non-alcoholic fatty liver disease in type 1 diabetes

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Introduction The prevalence of obesity and the metabolic syndrome, which are established risk factors for non-alcoholic fatty liver disease (NAFLD), is increasing worldwide, affecting even type 1 diabetes (T1D) population.

Aim Thus, we aim to assess the risk profile and prevalence of NAFLD in patients with T1D.

Methods A total of 71 subjects with T1D, of mean age 42.1 ± 14.0 years, mean BMI 23.9 ± 4.2 kg/m² and mean duration of diabetes 17.2 ± 3.8 years were enrolled in a cross-sectional study. Anthropometric indexes – weight, height and waist circumference were measured and body mass index (BMI) was calculated. Glycated hemoglobin (HbA1c), triglycerides and gamma-glutamyl transferase were assessed. Fatty liver index (FLI) was calculated in all participants. NAFLD was diagnosed by abdominal ultrasound, which was performed in 35 patients.

Results The prevalence of NAFLD is 43% in the studied cohort. According to FLI value 37% of the participants are at very low risk, 38% - at low risk, 11% - at low to moderate risk, 4% - at moderate risk, and 10% - at high risk for NAFLD. FLI correlates positively with BMI ($r=0.76$, $p<0.0001$) and HbA1c ($r=0.24$, $p=0.046$). No correlation between FLI and age and diabetes duration is observed.

Conclusion Our results demonstrate a high prevalence of NAFLD in subjects with T1D and a substantial proportion of this population is at high risk for the disease based on estimated FLI, the main risk factors being BMI and HbA1c.

Obesity, adipokines and oxidative stress: effect body weight reduction

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Introduction Increased oxidative stress is one of the main characteristic of obesity and it is known to be related with comorbidities [1]. With weight reduction there were increase in the antioxidant defense system and reduction of oxidative markers [2].

Aim Aim of the study was to investigate the correlation between anthropometric parameters, adiponectin and leptin with parameters of oxidative stress, and to determine the effect of weight reduction (TT) and changes in the level of adipokines on the parameters of oxidative stress.

- Methods** This study included 60 obese women with a body mass index (BMI) of 36.46 ± 5.32 , waist circumference (WC) of 103.18 ± 14.42 and waist/hip ratio (WC/HC) of 0.89 ± 0.09 . After a low-calorie diet was applied, over a six-month period, weight reduction was greater than 5%. In all subjects, before and after the weight reduction, levels of leptin, adiponectin, xanthine oxidase (XO), superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT) were determined.
- Results** The average weight loss was 8.64 ± 1.99 kg or $8.55 \pm 1.97\%$ ($p < 0.001$), resulting in a statistically significant reduction in anthropometric parameters with a statistically significant reduction in the level of leptin and increase in the level of adiponectin ($p < 0.001$). Achieved TT reduction resulted in a statistically significant increase in the parameters of antioxidant protection and the decline in XO values ($p < 0.001$). Significant correlation between the anthropometric parameters and the parameters of oxidative stress was not established. Leptin statistically significant negative correlates with GPx, SOD and CAT. The correlation of adipokines with anthropometric parameters was positive.
- Conclusion** Achieved weight reduction led to statistically significant changes in the parameters of oxidative stress in terms of reduction of the oxidative stress levels. There was positive correlation between adipokines and antioxidant protection parameters, with statistically significantly influence of leptin.

Connection between epistaxis and hypertension with initial measures of treatment

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- Introduction** Epistaxis is common symptom of diverse conditions which may present as mild recurrent bleeds of severe life threatening rhinological emergency [1]. It is possible that hypertension causes arteriosclerotic nasal vascular changes that predispose hypertensives to increased susceptibility to epistaxis [2].
- Aim** The main goal of our work is it to evaluate the relationship between epistaxis and hypertension, recidives and control of epistaxis in correlation whit blood pressure.
- Methods** In retrospective clinical study conducted at the ORL Clinic, KC Nis, the analysis of medical records included 108 patients with an average of 53 ± 12 , average systolic pressure 147 ± 2.9 , diastolic pressure 80 ± 16 . For the purpose of treatment, anterior and posterior nasal packing, tamponade balloon catheter and transarterial embolization in the ECA basin were applied. Epistaxis is classified as grade 1 (serious) and grade 2 (severe). Patients with systolic blood pressure greater than 160 mmHg received antihypertensive therapy.
- Results** A statistically significant difference existed in the SP values at the reception, which was significantly higher in the grade I group ($t=1.716$; $p=0.001$). Initial measures of treatment with more than two anterior nasal packing is significantly more common in subjects of grade II group ($\chi^2=28.074$; $p<0.001$), as well as treatment posterior nasal packing after 1-2 anterior nasal packing ($\chi^2=36.878$; $p<0.001$). Tamponade balloon catheter was statistically significantly more prevalent in the grade 2 group ($\chi^2=10.573$; $p=0.001$), as well as transarterial embolization in the ECA basin ($\chi^2=5.646$; $p=0.017$).
- Conclusion** The achieved decrease value of blood pressure has caused the lowering incidence of spontaneous epistaxis and because of that the quality of life of our patients is

better. Serious spontaneous epistaxis is probably consequence of combination few local and system causing factor or diseases.

Dilated cardiomyopathy in a patient with Systemic lupus erythematosus

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Introduction Dilated cardiomyopathy (DCM) is characterized by ventricular chamber enlargement with impaired systolic contractile function. Systemic lupus erythematosus (SLE) most commonly involves the musculoskeletal, mucocutaneous, renal, and immune systems. Myocyte damage in DCM result from genetic, inflammatory, toxic, and metabolic causes.

Aim We present you a 21 year old woman with previously known lupus nephritis with an onset of heart failure symptoms due to DCM. Myocarditis of immunological or infectious genesis may result in DCM and should be in the differential diagnosis. Endomyocardial biopsy or cardiac MRI should be considered.

Methods The patient was a 21 years old female with known lupus nephropathy. Diagnosed with mesangial proliferative glomerulonephritis after kidney biopsy. The patient's history included cough without expectoration in the night-time, lightly presented dyspnea and leg swelling, hereof she was transferred to The Department of Cardiology, UMHAT "Tsaritsa Yoana ISUL" . Chest x-ray showed dilated heart chambers. Echocardiography confirmed it and showed left atrium and ventricle enlargement. The ejection fraction was 15, 8 %. Blood test results showed normal Troponin I values and no signs of infection. ECG showed rhythmic heart with P wave morphology of enlarged atria. Coronary angiography was normal.

Results On admission the patient was taking: Prednisolone 30mg/day, Ivabradine 5mg BID, Carvedilol 6.25 BID ½ tablet , Ramipril 2.5 mg QD. She has undergone pulse corticosteroid therapy, cyclosporin A for 12 months and Azathioprine for a month. After the onset of the heart failure symptoms and because of the DCM with systole dysfunction the patient needed to have therapy changes so Carvedilol is substituted for Bisoprolol 5mg QD and a diuretic is added, Torsemide 5mg QD. Myocarditis is suspected. The patient was discharged with a symptomatic improvement although the severity of the condition hasn't changed.

Conclusion Clinical manifestation of heart involvement is in up to 50% of the patients with SLE. Myocarditis is found in 40-70% of patients with lupus during autopsy. Etiology of myocarditis in SLE may be infection, autoimmune or medication induced (hydroxychloroquine). In 9-16% in cases with newly diagnosed DCM myocarditis is found.

Acute hepatitis caused by Epstein-Barr virus: a case report

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University of Antwerp, Belgium | Area **Gastroenterology**

Introduction Epstein-Barr virus causes infectious mononucleosis, a flu-like syndrome with pharyngitis and lymphadenopathy. Hepatomegaly and disturbed liver enzymes are common, but acute cholestatic hepatitis is very rare. This hepatitis is usually self-limited, but progression to potentially fatal liver failure is described.

Aim	A 37-year old male presented at the emergency room because of high fever, generalized itch and icterus since three days. His urine had become darker and his stool more pale. Four days earlier he suffered from flu-like symptoms like general malaise, myalgia, nausea and fatigue.
Methods	Blood tests showed thrombocytopenia, neutropenia with atypical lymphocytes, raised CRP and raised liver enzymes. Hepatitis B surface antigen and hepatitis A IgM were both negative. Epstein-Barr virus serologies turned out positive for IgG and IgM, confirming the diagnosis.
Results	Treatment with supportive therapy consisting of fluids and rest lead to complete recovery.
Conclusion	Viral hepatitis is mostly caused by one of the five hepatitis viruses. However, other causatives must be taken into perspective. Infectious mononucleosis, caused by Epstein-Barr virus, can rarely deteriorate into acute hepatitis which is mostly self-limiting, but possibly very severe. It is important to consider Epstein-Barr virus in acute hepatitis.

The use of antihypertensive medications in patients with type 2 diabetes

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Introduction	T2DM is mass non-communicable disease. In addition to genetic predisposition, inadequate lifestyle leads to excessive accumulation of visceral fat tissue and the development of insulin resistance, leading to metabolic syndrome. Arterial hypertension is twice as common in diabetic patients.
Aim	To determine the incidence of arterial hypertension among patients with T2DM, as well as the presence of antihypertensive drugs in its treatment in these patients.
Methods	A cross-sectional study was conducted at the Clinic of endocrinology, diabetes and metabolic disorders of the Clinical Center of Vojvodina in Novi Sad, and included 85 people with T2DM who were hospitalized during 2017, at the Diabetic day hospital. The examination included a review of the available medical documentation.
Results	Patients with arterial hypertension are statistically significant more often females, of older age, have longer duration of diabetes, elevated values of systolic and diastolic blood pressure, BMI, waist circumference, triglycerides, ACR, higher incidence of diabetic nephropathy, diabetes polyneuropathy and microangiopathy, and statistically significant lower values of HDL cholesterol compared to patients without arterial hypertension.
Conclusion	More than three-quarters of patients with T2DM have diagnosed arterial hypertension, and they most often use ACE inhibitors, beta blockers, diuretics, calcium channel blockers, and rarely, with the same frequency, ARBs and other drugs.

Ankylosing spondylitis in an elderly patient with Crohn's disease

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Introduction -

Aim Ankylosing spondylitis is a rheumatological disease leading to inflammation of the joints in the axial skeleton. Formation of marginal syndesmophytes leads to rigidity and development of a so called 'bamboo spine'. It is strongly related to HLA-B27. Co-existence of inflammatory bowel disease is found to be prominent in spondyloarthritis.

Methods A 81-year old man, diagnosed with Crohn's disease in 2005, was referred to our rheumatology department because of persisting back pain, from which he suffered for over 40 years. Since his previous profession concerned physical labour, no one had thought of an inflammatory origin for the back problems. The man reported mild to severe back pain which became worse during the evening. Furthermore, he endured morning stiffness for several hours. He self-managed his pain with non-steroid anti-inflammatory drugs, yet with no complete relief. Clinically, he couldn't bend the lumbar spine at all. After these findings ankylosing spondylitis was suspected.

Results Spondyloarthritis is a common disease in the general population, with a prevalence around 1.6 %. It is a frequent mistake to misjudge the origin of chronic back pain, especially if a mechanical cause seems obvious. In a patient complaining of pain and loss of movement, worse in the morning, and besides suffering from an inflammatory bowel disease, it is important to be aware of the possibility of spondyloarthritis.

Conclusion -

Culture-negative endocarditis in a kidney transplant patient: a case report

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Introduction Endocarditis is a serious complication in patients receiving immunosuppressive therapy.

Aim Clinical presentation of endocarditis can be vague and misleading, but swift diagnosis is mandatory to prevent congestive heart failure, mostly due to valvular damage, or systemic complications such as sepsis or systemic embolization.

Methods A 28-year old female, submitted to renal transplant at the age of 15 after kidney failure due to chronic damage from cystinosis, presented herself with fever, chills and thoracic pain. Blood results showed neutrophilia and raised CRP. During early admission parapneumonic pleuritis and/or pericarditis were suspected. Cardiac ultrasound showed a bicuspid aortic valve with signs of vegetation, PET-CT scan confirmed diagnosis of endocarditis. However blood cultures and serology for atypical pathogens remained negative. Empirical amoxicillin was started for 6 weeks.

Results Literature categorizes three main possibilities for culture-negativity: 1) sterilization due to previous antibiotic treatment; 2) fastidious microorganisms such as HACEK bacteria, defective streptococci, Propionibacterium acnes, Candida sp.; 3) intra-

cellular bacteria that cannot be routinely cultured, like Bartonella or Tropheryma whippelii. Causes of true non-infectious endocarditis, also called non-bacterial thrombotic endocarditis (NBTE) are mostly limited to systemic inflammatory diseases.

Conclusion -

Second-line treatment of advanced adenocarcinoma bronchi: Erlotinib vs. Docetaxel/Cisplatin

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Introduction Adenocarcinoma bronchi is treated with chemotherapy (platinum-based medicine with with one of the cytotoxic medicines third generation). However, standard chemotherapy has reached plateau. According to that, new field of therapy is tyrosine-kinase inhibitors (TKI) of epidermal growth factor receptors (EGFR).

Aim The main purpose was to examine the influence of erlotinib as a second-line treatment on improving the symptoms of illness, length of survival and appearance of adverse effects in comparison with chemotherapy docetaxel/cisplatin, in patients with advanced adenocarcinoma in IIIB stadium.

Methods The research involved 73 patients treated on Institute for pulmonary diseases of Vojvodina in Sremska Kamenica, in period from 2011. to 2016. Patients were divided in two groups depending on the second-line treatment they were treated. In the first group there was 37 patients treated with erlotinib and in the second one was 37 patients treated with Docetaxel/Cisplatin.

Results Acquired data correlated with higher improvement of symptoms in patients treated with erlotinib, and statistically significant value of milder adverse effects lower gradus caused by erlotinib versus chemotherapy docetaxel/cisplatin. Nor one, or the other examined treatment had statistically significant correlation with longer survival affected by adenocarcinoma bronchi.

Conclusion During this research it is found that symptoms of adenocarcinoma bronchi were significantly improved after use of erlotinib and that adverse effects were milder and rarer. Also, it's found that neither erlotinib or docetaxel/cisplatin have significant influence on length of survival in affected by adenocarcinoma bronchi.

Cognitive Impairment in Heart Failure Patients

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Introduction Heart failure is a major health problem in developed countries, affecting up to 2% of the adults. It is associated not only to increased mortality and morbidity and reduced quality of life but also to complications affecting central nervous system (CNS).

Aim The aim of this study is to evaluate the correlation between CHF and cognitive functions. A main aim is to identify the risk of cognitive functions decline among HF patients and groups with higher risk, which need closer observation.

- Methods** Between November 2017 and March 2018 40 patients with HF (NYHA class 3 and 4) were examined in Clinic of Cardiology of 'Hospital Losenets' Sofia. To assess cognitive functions, heart failure level and left ventricle ejection fraction(LVEF) in use came instruments like Doppler echocardiography, Mini-Mental State Examination and Zung Self-Rating Depression Scale. Patients with history of ischemic stroke, anemia or CNS diseases were excluded from the group. Patients were examined 24 hours before hospital discharge to eliminate acute conditions as a factor.
- Results** The average MMSE score among 40 patients (mean age 67, 45% male) was 25. 57% of the tested patients had MMSE score, suggesting cognitive impairment. MCI was 2.13 times more often among patients with EF<50%, than patients with EF>50%. Results of the present study indicate that cognitive impairment in patients with chronic heart failure is independently associated with both age and decreased LVEF. Correlation analysis ($r=0.383$; $p=0.01$) showed a significant correlation between low LVEF and MMSE score, suggesting cognitive impairment. The variables were entered into an age adjusted summary model. Both age($\beta=-0.3$) and LVEF($\beta=0.27$) were associated with low MMSE score.
- Conclusion** Results of the present study indicate that cognitive impairment in patients with CHF is independently associated with both older age and decreased LVEF. Complex management of main symptoms, associated conditions, such as Mild Cognitive Impairment(MCI), and further research is needed in order to preserve patients' quality of life.

The assessment of the 640G in patients with T1DM.

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- Introduction** Medtronic MiniMed 640G system is the newest technology commercially available in the treatment of patients with T1D. The system features automatic suspension of basal insulin delivery in response to prediction of hypoglycemia, based on continuous glucose monitoring (CGM) data.
- Aim** The aim of our study was to assess the impact of the system on metabolic control in pediatric patients with T1DM.
- Methods** 17 patients (10 males), mean age 7.8 +/- 3.97 yrs, mean T1D duration 1.91 +/- 2.66 yrs, mean HbA1c value 8,01+/-2,42%; 64+/-3 mmol/mol were included into the study. Before applying the 640G system all patients were treated with classic insulin pump. HbA1c value (%; mmol/mol), mean blood glucose (MBG) (mg/dl) +/- standard deviation (SD), incidence of hypoglycemic episodes (blood glucose <70mg/dl), insulin dose (U/kg/d) and basal insulin rate (% of daily dose) were compared between the two-week time periods before and after application of the 640G system. Data was collected retrospectively.
- Results** There was no statistically significant difference between HbA1c 8,01 vs. 7,36 %; 64 vs. 57 mmol/mol ($p=0,3794$), MBG 139,5 vs. 136,5 mg/dl ($p=0.6525$), MBG SD 66,24 vs. 58,88 ($p=0,1817$), incidence of hypoglycemic episodes 341 vs. 254 ($p=0.1369$) and basal insulin rate 30,29 vs. 29,76 % of daily dose ($p=0.8837$) between the analyzed time periods. However, we observed significant correlation between the number of total pump suspends and MBG (95% CI from -0.8317 to -0.1449), $r=-0.5848$, $p=0.0137$, HbA1c value (95% CI from -0.9065 to -0.37), $r=-$

0.7389, P=0.0015 and basal insulin rate (95% CI from -0.7862 to -0.01388), r=-0.4912, P=0.0452.

Conclusion In our study higher concentration of HbA1c, higher MBG values and basal insulin rate were associated with lower risk of hypoglycemia and fewer MiniMed 640G pump suspends. Further research is needed to asses if the system improves long term metabolic control and quality of life.

Extraintestinal manifestations in patients with Inflammatory bowel disease

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Introduction Extraintestinal manifestations (EM) of Inflammatory bowel disease (IBD) can appear before or after diagnosis of IBD. D•M may impact the quality of life and can require specific treatment. The joints, skin, eyes and blood are most frequently affected.

Aim The aim of this study is to determine the frequency and types of EM in patients with IBD in a single referent center.

Methods This retrospective study includes 346 patients with IBD (185 man and 161 women) that had been hospitalized in the clinic of gastroenterology in University Hospital "Tsaritsa Yoanna-ISUL" in the period January 2013 - September 2016, and are divided in two groups - Crohn's disease (CD) and ulcerative colitis (UC). The first group with CD is comprised of 150 patients (74 of which women, average age 41,9 years old). The second group with UC comprised 196 patients (87 of which women, average age 46 years old).

Results 104 (30,06%) of the patients with IBD had manifested EM (39 patients with CD - 26%, with average 1,79 EM per patient and 65 with UC - 33,2%, with average of 1,38 EM per patient). 4,05% of the patients with IBD manifested EM of the skin (5,3% of patients with CD, 3% of patients with UC). 1,7% had ocular EM (CD - 2,7%, UC - 1%). EM of the joints - 7,8% (CD - 6,7%, UC- 8,7%). Manifestation of anemia 13,9% (CD - 14,7%, UC- 13,2%). Thrombosis - 5,5% (CD - 5,3%, UC - 5,6%). Hepatobiliary - 9,25 % (БК - 8%, УК - 10,2%). Oral EM - 1,7 % (CD - 4%, UC- 0%). Other EM - 1,45% (CD - 0 %, UC - 2,5%).

Conclusion EM are common in patients with IBD and are a proof that IBD is a systemic disease. It is important that doctors who care for patients with IBD to look out for EM. Early screenings are crucial for preventing morbidity and improving quality of life in patients with IBD .

DFP & HIF-1 alpha: The New Frontier of Skin Rejuvenation

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Introduction Similarly to what happens in a chronic wound, aging leads to imperfections and disorders in the regenerative capacity of the skin. The protein HIF-1alpha has been identified as fundamental in the healing processes of chronic wounds and regenerative processes.

- Aim** Not only hypoxia, also a decreased cytoplasmic iron-concentration is able to modulate the HIF-1alpha pathway. This study aims to analyze the effects of iron-chelation treatment on skin cells, in order to determine a controlled up-regulation of the HIF-1alpha pathway.
- Methods** The effects of iron-chelation treatment on skin cells (fibroblasts) were analyzed in vitro. After cultivating fibroblasts on cell-culture plates, each individual well was analyzed qualitatively and quantitatively. Different cell lines were treated with various concentrations of DFP, in order to chelate cytoplasmic iron, and subsequently analyzed. The metabolic activity, cell proliferation, production of collagen I and fibronectin were quantified. Live/Dead and B-Actin stainings were also performed. Parallel to this, a clinical study with 33 patients was performed. After six weeks of treatment, effects induced by deferiprone were successfully analyzed.
- Results** In vitro administration of iron-chelating therapy on fibroblasts resulted in a sensitive activation of the anti-aging mechanisms involved in the aging processes of the skin. Regarding the clinical study, the treatment with deferiprone has significantly improved skin rejuvenation. These results allowed us to determine a close correlation between iron-chelating treatment, HIF-1 alpha pathway and the hypothesized effect of skin rejuvenation.
- Conclusion** The iron-chelating treatment based on deferiprone is able to actively support the biological processes that are depleted during aging. This experimental project aims to open a new frontier in the partially unexplored area of regenerative medicine.

Anesthetic Management of Medically Complex Patients

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- Introduction** The majority of patients seeking medical and dental care respond normally to local anesthetics containing certain vasoconstrictors, as epinephrine and levonordefrin. However, patients with genetic and chronic systemic diseases can be susceptible to local anesthetics and should be closely monitored.
- Aim** The aim of the study is to investigate the response of patients suffering from cardiovascular diseases, hypertension, asthma, and diabetes mellitus to local anesthetics with/without vasoconstrictor in comparison to healthy patients.
- Methods** This is a study of patients who received local anesthesia of lignocaine with epinephrine during oral surgery. Patients were distributed in two different groups; the first included healthy patients without any chronic diseases who received local anesthesia with epinephrine and the second patients suffering from cardiovascular disorders, hypertension, asthma, thyroid diseases or diabetes mellitus; in the latter the anesthetic did not contain a vasoconstrictor. The patients were monitored before, during and after the oral surgery and their physiological changes to the vasoconstrictor were closely monitored, collected and compared after their follow up appointment.
- Results** There were significant differences in the reaction to anesthetics containing the vasoconstrictor epinephrine between the two groups. While the statistical analysis of the results showed that the use of vasoconstrictors in anesthesia had no complications in healthy patients, it revealed variations in cases of systemic diseases. Specifically, since local anesthesia without a vasoconstrictor produced vasodilation locally, addition of a vasoconstrictor agent after the first injection

produced increased cardiovascular alterations, while some of the diabetic patients also experienced changes in their blood glucose levels.

Conclusion The administrated dosage of local anesthesia with or without vasoconstrictor should be minimized in cases of systemic diseases. Physicians should understand the patient's medical condition and deliver safe medication and anesthesia during oral surgery.

How good at interpretation of ECG are polish medical students?

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Introduction The electrocardiography (ECG) examination is one of the most frequently performed diagnostic tests. Correct interpretation of the ECG, particularly in life-threatening scenarios (LTS) may influence decisions on appropriate actions and consequently have impact on the lives and health of patients.

Aim To evaluate ECG interpretation skills among study population, and analyze factors determining their score.

Methods ECG interpretation skills were assessed by self-prepared questionnaire including questions about demographic data and 20 ECG problems with 17 cases. 6 of the cases were LTS. Three questions evaluated basic knowledge on rhythm, heart rate and axis. The survey was conducted via Internet. Study population consists of 551 medical, nursing and emergency medicine students.

Results The overall score among Polish medical students was higher than nursing and emergency medicine students (46% vs. 22% vs. 37%; $p=0.001$ in both). English division medical students scored almost similarly. Polish medical students scored better in LTS than the nursing students (37% vs. 23%; $p=0.001$), but they achieved similar results to emergency medicine students (37% vs. 38%; $p=0.79$). On analysis among Polish medical students: 4th-6th year students scored higher than the 1st-3rd year students. 72% of medical students claimed to have self-educated themselves on ECG interpretations. This group had significantly better results than students, who studied ECG only during classes.

Conclusion Unsatisfactory level of ECG interpreting skills noted among medical students and thus quality and quantity of ECG training should be improved. Various factors influence ECG interpretation knowledge among students.

Skin candidosis in Novi Sad during five-year period (2012-2016)

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Introduction *Candida* spp. belongs to saprophytic fungi and frequently cause skin and skin adnexa infections due to insufficient local defense mechanisms response. In case of systemic immunosuppression, superficial candidosis can lead to candidaemia.

Aim To determine prevalence of skin candidosis in comparison to: total number of examined patients, lesions clinically suspicious of fungal skin disease and all proven fungal skin infections in Clinic for Skin and Venereal diseases of the Clinical Center of Vojvodina.

- Methods** This retrospective study involved analysis of data from Clinic for Skin and Venereal diseases mycological laboratory protocols in the period from January 1th, 2012 to December 31th, 2016 on the results of mycologically treated samples after isolation in nutrient medium and identification of the fungus with a light microscope, but also about sex, age and localization of the lesion in case of a confirmed candidosis.
- Results** Fungal skin infections have been confirmed in 3% of all examined patients. The most commonly isolated fungus is *Microsporum* spp., while *Candida* spp. is the second most common. Skin candidosis constitute 1% of the total pathology in dermatovenerology practice; have been confirmed in 6% of all lesions clinically suspected of dermatomycosis and represent 28% of all fungal skin infections. 2/3 of patients with skin candidosis are female. These infections are most commonly localized on finger nails.
- Conclusion** Significant prevalence of skin candidosis, both in all examined patients and compared to all fungal skin infections highlights the importance of adequate diagnosis and therapy of local forms as a prevention of possible complications.

Some Immunological Indicator in viral Meningitis

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- Introduction** The problem of viral meningitis is widespread and is caused by their constant registration all over the world.
- Aim** To substantiate the performance of immune status evaluation tests for the objectification condition of the patients with viral meningitis.
- Methods** We observed patients with secondary viral meningitis that developed as a result of complications of parotitis, varicella, various unidentified etiologic factors, that appeared with an apparent clinic of acute respiratory viral infection. The first level immunological tests were used (determination of the amount of CD3, CD4, CD8, CD20 lymphocytes and calculation of the immunoregulatory index in the peripheral blood), conventional clinical-neurological, clinical laboratory and instrumental methods of examination.
- Results** Dynamics of peripheral blood immunocompetent cells differed in moderate and severe forms of viral meningitis. At the moderate form in the acute period, the number of CD-3 cells was 44.95 ± 0.71 increasing to the stage of early convalescence (with control 56.2 ± 0.54). In severe form, the indices were 40.65 ± 0.58 . The number of CD-4 cells in the moderate and severe forms was 16.77 ± 0.56 and 17.04 ± 0.6 (control 38.00 ± 0.39). The dynamics of CD-8 cells was 15.00 ± 0.48 and 15.85 ± 0.23 (control 26.14 ± 0.35). Immunoregulatory index according to the severity was 1.12 ± 0.14 and 1.08 ± 0.02 (with control 1.46 ± 0.03). The number of CD-20 cells was 15.18 ± 0.49 and 14.42 ± 0.28 (with control 14.79 ± 0.38).
- Conclusion** This dynamics indicates that there is a moderate inhibition of the immune response in viral meningitis. It differs for moderate and severe forms of the disease and characterizes the stage of the infectious process development.

Evaluation of the apical seal after post space preparation

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Introduction Very often endodontically treated teeth need to be restored by post and core because of huge crown destruction. Post- space preparation sometimes might affect the sealing ability of gutta-percha and might cause apical micro-leakage.

Aim The purpose of this study is to evaluate the quality of apical sealing after post space preparation.

Methods 27 extracted single rooted teeth were used. The coronal part was removed and the root length was standardized to 15mm. The canals were prepared with Revo-S, irrigated and filled. The teeth were divided into 2 groups depending of post space preparation speed and 1 control group: Gr. 1 (n=9) - 2800 rpm; Gr. 2 (n=10) - 4700 rpm; Control group (n=8) - without preparation. The external root surface was covered with two layers nail varnish except the apical 2 mm. The teeth were placed in 2% methylene blue, and then washed. The teeth were cut longitudinally to visualized dye penetration.

Results The results show that the apical penetration has highest average value in Group 2 (4700 rpm) - 1.10 mm. The difference in the apical penetration levels between Group 2 (1.10 mm) and Group 3 (0.25mm) is significant, while the average value of Group 1 (2800 rpm) does not differ statistically from the other two groups.

Conclusion The post space preparation itself, as well as the higher speed of drill increases the risk of damage the apical seal.

Diabetic Foot Ulcer Relapse due to Non-Diagnosed Osteomyelitis

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Introduction Osteomyelitis is estimated to affect 15% of patients with diabetic foot ulcers. The likelihood of infection increases up to 20% if the ulcer exposes a joint/bone. The infection that occurs can be not initially diagnosed, leading to long-term complications.

Aim The purpose of this case study is to raise awareness towards osteomyelitis underdiagnosis in everyday clinical context.

Methods This is a case report on a patient who is treated in the diabetic foot outpatient clinic of Tzaneio general hospital. We investigated clinical records of the patient including imaging and laboratory assessment. The patient is a 57-year-old woman with Type II Diabetes Mellitus (diagnosed 20 years ago), diabetic retinopathy and hypothyroidism. She receives treatment for her hypothyroidism as well as an insulin mix for glucose regulation.

Results A 57-year-old insulin-treated diabetic woman presented with a third metatarsal diabetic ulcer, possibly due to peripheral neuropathy and anatomical malformations. Her HbA1c was found 10.9. The ulcer was discharged, and cultures were ordered. Radiological foot imaging and lower limb angiography was normal. After the treatment the ulcer was almost extinguished. Two months later the

patient was admitted to the hospital with extensive severely inflamed ulcer (PEDIS Score 3) and treated with antibiotics according to the protocols. In the meantime, extensive osteomyelitis was detected in the imaging test. After treatment the patient improved. She is still assessed on a regular basis.

Conclusion Osteomyelitis should be suspected on recurrent diabetic ulcers cases, even if initial imaging findings are negative. Differential diagnosis and reassessment are considered necessary to maximize the effectiveness of the treatment, the patient's quality of life and help establish trust between the doctor and the patient.

Thyroid function in patients with gestational diabetes mellitus

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Introduction Hormonal changes and metabolic needs during pregnancy result in profound changes in biochemical parameters of thyroid function. Mild thyroid dysfunction of mothers in the first trimester, which does not threaten during the pregnancy, can damage the psychomotor development of the child.

Aim The aim of this study is to analyse thyroid function in pregnant women with GDM, as well as the presence of TPO Ab and concentration of thyroid hormones.

Methods This study included 50 pregnant women in third trimester of pregnancy registered in Center for endocrinology CC Kragujevac with GDM, according to positive 3h OGTT with 100g Glucose (ADA Criteria). Blood samples were collected for fT4, TSH and TPO Ab and measured by RIA method.

Results We studied 50 pregnant women with the diagnosis of GDM. The mean age of patients was $31,26 \pm 4,4$ years. The prevalence of risk factors was: positive family history for thyroid disorders 20%, smoking 36%, obesity 26%, hypertension 16%, autoimmune diseases 2%. Previous hypothyreosis had 5 patients, previous hyperthyreosis 2 patients, positive TPO Ab was found in 7 patients. It was found 3 patients with newly diagnosed hypothyreosis. Average TSH concentration was $1,56 \pm 0,55$ mIU/L, average fT4 concentration was $8,72 \pm 2,73$ ng/dL, average TPO Ab was 1567. Average dose of L-thyroxine used in the treatment of hypothyreosis was 125 mcg, and increased during pregnancy for 25 mcg.

Conclusion Our study showed that patients with GDM have higher prevalence of thyroid disorders than nondiabetic women. Recommendation for the upper limit for TSH 2.5 mIU/L in the first, and 3.0 mIU/L in the second and third trimester.

Reproductive Health and Cystic Fibrosis

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Introduction With the increasing survival in cystic fibrosis (CF) patients, an increasing number of them face decision making about becoming parents. Their general condition and the CF therapy medications influence the normal pregnancy and the successful birth of a healthy baby.

Aim Despite their normal sexuality, 95% of males with CF are infertile due to congenital aplasia of vas deferens, while female CF patients can conceive naturally. All CF patients should use protection to avoid sexual transmitted diseases. The aim of our study is to investigate the reproductive health of Bulgarian CF patients.

- Methods** Patients with Cystic Fibrosis at reproductive age at The CF center in Sofia, who became parents, were observed before, during and after the pregnancy. Special attention was paid to the influence of the nutritional status, vital parameters of the lung function, the presence of gestational diabetes and used drugs for CF therapy over the outcome of the pregnancy.
- Results** As of January 2018 there are 199 alive patients with CF in Bulgaria, 84 of them (42%) are adults (37 females and 47 males). Only 2 males have their own child - one with artificial insemination of the partner and the other by natural conception. From the female patients 21% (8 patients) have given birth - two had two separate successful pregnancies. Only 2 were diagnosed after giving birth, the rest 6 were diagnosed before the conception, some of them even in their infancy. 7 out of 8 mothers are with chronic *Pseudomonas aeruginosa*, and one of them has also CF-related diabetes. All children are healthy.
- Conclusion** For an adult with CF, determined to have an offspring, besides the good knowledge and control of the disease, the follow up with a multidisciplinary team, familiar with the possible therapeutic approaches and expected complications, is important. Unfortunately nowadays a specialized center for adult CF patient care does not exist.

D-dimer levels for short or long-term outcomes in cryptogenic stroke

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- Introduction** Plasma D-dimer, which is a byproduct of fibrin degradation, provides useful information in several clinical settings, such as predicting venous thrombosis, cardioembolic stroke and cancer status.
- Aim** In the present study, we investigated the associations between plasma D-dimer levels at admission, clinical characteristics and mortality at discharge in cryptogenic stroke patients. We also investigated whether D-dimer levels can predict long-term outcomes in those patients, including those with and without right-to-left shunt (RLS).
- Methods** Acute cryptogenic stroke patients (n=295, 72±13 years old) were consecutively enrolled and retrospectively analyzed. Plasma D-dimer levels at admission were evaluated. Assessment for RLS were performed using saline contrast-transcranial Doppler ultrasonography or contrast-transesophageal echocardiography. Survivors (at discharge) underwent follow-up.
- Results** D-dimer levels correlated with National Institutes of Health Stroke Scale (NIHSS) score (r=0.391, P<0.001) and were associated with mortality after adjusting for age, sex and initial NIHSS score. 266 patients were evaluated to assess RLS and 62 patients (23.3%) exhibited such. According to the median D-dimer levels (0.7mcg/ml), patients were divided into a low (n=136) and a high (n=130) D-dimer group. Patients in the second group were older, frequently female, with lower BMI, higher cancer prevalence and neurological severity. High D-dimer levels were associated with recurrent stroke and all-cause mortality in RLS patients (P=0.021), rather than those without RLS (P=0.335).

Conclusion Increased D-dimer levels at admission were associated with mortality at discharge in cryptogenic stroke patients. In addition, high D-dimer levels were also associated with long-term outcomes in cryptogenic stroke patients with RLS.

Prognostic factors in patients with gastrointestinal non-Hodgkin lymphoma

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Introduction Gastrointestinal non-Hodgkin lymphomas are the most frequent form of all extranodal lymphomas. The most significant risk factors which have influence on their occurrence are age, gender, immunosuppression, autoimmune and immunodeficient conditions, microorganisms, exposition to toxic chemicals, lifestyle and genetic factors.

Aim Determination of significance and influence of basic prognostic factors in survival of patients with diffuse large B-cell lymphoma of gastrointestinal tract.

Methods The survey included 97 patients treated against non-Hodgkin lymphoma of gastrointestinal tract in the period 2001-2013 on Institute of Hematology, Clinical Center of Serbia in Belgrade. We analyzed clinical characteristics in these patients (sex, age, course of the disease, clinical stadiums by Ann Arbor classification, stadiums by Lugano classification, ECOG performance status, international prognostic index, thrombocyte blood count, serum levels of lactat-dehydrogenase and C reactive protein, and presence and frequency of "B" symptoms) which are compared with the lenght of survival time. Used statistical methods were univariate and multivariate analysis.

Results There was significant difference in relation between five year overall survival and Ann Arbor stadium ≥ 2 , ECOG performance status ≥ 2 , international prognostic index ≥ 2 , high levels of thrombocytes and C reactive protein, hypoalbuminemia and newly defined inflammatory stage-modified international prognostic index ($p < 0,05$).

Conclusion Patients with non-Hodgkin lymphoma of gastrointestinal tract have ECOG performance status, international prognostic index, thrombocytosis, high levels of C reactive protein and hypoalbuminemia as main predictors of overall survival. We have defined new inflammatory stage-modified international prognostic index as the best prognostic factor.

Depression, anxiety, stress and Pet therapy

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Introduction Animal- assisted therapy, by Boris Levinson is a type of therapy that involves animals as a form of treatment. Previous studies have indicated that AAT has beneficial effects on neuropsychiatric symptoms in various psychiatric disorders.

Aim The main aim of our research is to demonstrate the benefits of animal assisted therapy. To conclude that animals may be used in therapy dealing with depression, anxiety and stress.

- Methods** The participants in this study were 111 elderly people, half with pet and half without. We worked with target groups and control groups, using the mixed experimental design. Each old person was evaluated before and after the AAT intervention using objective psychological method: DASS-21. The DASS is a 21-item self report instrument, designed to measure the three related negative emotional states of depression, anxiety and tension/stress.
- Results** The collected data were statistically analyzed, tabulated and graphically presented using the software package Microsoft Office and SPSS Statistics 17.0. The statistical analysis was carried out using χ^2 test, with a p value of <0.05 indicating significance. In summary we can report the following result which could be valuable in the field of psychological science.
- Conclusion** In summary we can report the following result which could be valuable in the field of psychological science. We can conclude that the following hypotheses proved to be true: depression, anxiety and stress, that is the distress factors, are lower at old persons having pet than at those without pets.

Perceived stigma and traditional management of epilepsy in Ethiopia

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- Introduction** Epilepsy is one of the most stigmatized disease in Ethiopia. The traditional management approach is also in line with the backward thinking of the origin of the illness. Some of the options include holy water, prayers and match smokes
- Aim** The aim of this study is to determine the magnitude of perceived stigma among people living with epilepsy and identify the believed ways of traditional management. The results of this study will influence the government and other stakeholders to educate the community.
- Methods** The study is an institution bases, cross-sectional study that will be conducted at Amanuel mental specialized hospital. Patients will be selected by a systematic random sampling method from the list of patients in the order of their registry before the enter the outpatient departments for their scheduled visits. Data will be collected using a prepared questionnaire that is partially adopted from the WHO's family interview schedule.
- Results** Prevalence of perceived stigma is 83%. Traditional management is 94%.
- Conclusion** Stigma among people living with epilepsy is very high. And most of the population believes in traditional management. The most common of which was holy water.

Comparison of endoscopic and microscopic transsphenoidal pituitary surgery

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- Introduction** Pituitary adenomas (PA) are a group of benign tumors with diverse biological behavior including different hormonal secretion, cavernous sinus invasion and considerable rates of relapse.
- Aim** The aim of the study was to evaluate the benefits of the endoscopic endonasal transsphenoidal (EET) approach for managing hormonal producing pituitary

adenomas (PA) in terms of achieving clinical remission in comparison to the microscopic endonasal transsphenoidal (MET) approach.

Methods During the period 2014 to 2017 a series of 128 patients with PA were operated on via MET (n=62) and EET (n=66) approach. Endocrinological, neuro-ophthalmic and MRI examinations were assessed preoperatively and postoperatively at 3rd and 12th month. The statistical analysis was performed using SPSS for Windows, Version 23.0. (SPSS Inc., Chicago, USA).

Results Thirty-two patients were diagnosed with growth-homon secreting adenomas (GH), 25 with adrenocorticotrophic hormone secreting adenomas (ACTH), 17 with prolactin-secreting adenomas (Prl) and 54 with non-secreting pituitary adenomas. The endoscopic group had higher levels of remission compared to the microscopic group (81.8% vs. 70.9%), however no significant difference was observed ($p=0.128$). PA with invasiveness to the cavernous sinus from the endoscopic group had significantly better remission rates opposed to the microscopic group ($p<0.05$). Macroadenomas not exceeding 40mm in diameter had higher remission rates in the endoscopic group ($p<0.05$). Examination of postoperative complications showed similar incidence of postoperative diabetes insipidus and CSF leak ($p>0.05$).

Conclusion The use of endoscopic endonasal transsphenoidal approach provides several advantages compared to conventional microsurgery, incl. better illumination, better surgical radicalism and lower rate of complications. A long-term follow-up is still needed for further evaluation of our results.

Hair, Dressings, and Drains: What is the Evidence?

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Introduction One of the most important stages of any surgical procedure is the post-operative period. Even the most meticulously performed techniques can be overshadowed by a complication.

Aim In our study, we examined the role of hair-sparing techniques, subgaleal drainage, and extensive dressing postulates and whether they are as effective as once claimed regarding both post-operative complications and patient satisfaction namely wound infection and subgaleal/epidural hematomas.

Methods For this study, we examined a 4 year period of operative records regarding hair-sparing techniques, namely 2014-2017. For the application of drains and wound dressings the years 2016 and 2017 were compared. There were two groups of patients: one group with a subgaleal drainage system and a wound dressing and a second group in which no drain was applied and the wound dressing was removed on the second post-operative day. The aforementioned techniques were compared on the basis of post-operative subgaleal/epidural hematoma and wound infection occurrence rates.

Results In 2014, 25 hair-sparing operations were performed with a 0.9% infection rate. For 2015, 114 hair-sparing operations yielded 1.26% wound infections. In 2016 we had 1.02% infected wounds and in 2017 - 0.75%. The patient group with applied drainages and dressings had 1.10% post-op hematomas and 1.10% wound infections in 2016, compared to 1.44% and 0.96% respectively when these methods were not applied. Similarly, in 2017, 1.07% post-op hematomas and 1.07% infections were compared with 0.95% and 0.47% respectively for surgeons using and foregoing these techniques respectively.

Conclusion In conclusion, we found that hair-sparing techniques did not increase the occurrence of post-op wound infections. Furthermore, drainage placement and extensive dressings also had no statistically significant differences between the groups. We concluded that for the patient, hair-sparing techniques, drainage avoidance, and early dressing removal did not increase complication rate.

Treatment strategy of vertebral fractures in patient with ankylosing spondylitis

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Introduction Ankylosing spondylitis (AS) is an immune-mediated inflammatory disease presenting with chronic inflammation of the spinal joints. Osteoporosis combined with vertebral fusion is common in AS patients and leads to compromised spine. Therefore fractures are frequent due to minimal trauma.

Aim The aim of this study is to share our experience and surgical approach to such patients ,as well as define the optimal surgical treatment for traumatic thoracolumbar spine fractures ,occurring as a complication in patients with late Ankylosing Spondylitis.

Methods We analyzed 48 years-old patient with history of AS that suffered Th12-L1 fractures and underwent surgery in our clinic. Based on the literature review we did, posterior pedicle screw fixation followed by neural decompression was recommended in AS patients with traumatic thoracolumbar fractures. Transpedicular fixation with 8 screws and one connector was performed in order to stabilize the severely damaged spinal cord. Four levels were fixated, as two of the screws were inserted in the fractured Th12 vertebral body.

Results Postoperatively the neurological function of the patient improved significantly. The fracture union and segmental stability of the engaged vertebrae were radiologically confirmed at day 1 after the operation and at the 3-month follow-up. Procedure-related complications were not observed.

Conclusion The optimal surgical treatment of thoracolumbar fractures in AS patients is delicate , as the condition is very rare and the treatment is associated with high risk of complications. Posterior instrumentation is a satisfying method for surgical treatment of traumatic thoracolumbar fractures in patients with AS.

Case report of pyogenic spondylodiscitis in 2 patients with Diabetes Mellitus

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Introduction Spondylodiscitis is a disease mainly present secondary in older patients. It is difficult to diagnose and often too late due to prevalence of lower back pain. Indication for surgical treatment is spinal instability for which transpedicular screw stabilization is used.

Aim The aim of this abstract is to present 2 rare interesting cases of patients with Diabetes Mellitus, complicated by Pyogenic Spondylodiscitis, to help in the differentiating of this condition from other lower back pain syndromes and to highlight the surgical treatment.

- Methods** Reviews of 2 cases of patients with spondylodiscitis, treated in the Neurosurgery clinic of the Regional Hospital "Saint Anna". Clinically patients had Diabetes Mellitus type 2, Hypertensive heart disease, vertebral syndrome, back pain irradiating to the epigastrium, hypaesthesia of the affected segments of the spinal cord and lower paraparesis. Laboratory examination, CT and MRI (preferred), examination of the vertebral column were used for preoperative diagnostics, which showed a spondylodiscitis on level Th8-Th9 with a pathological fracture and paravertebral tumor formation in the mediastinum and right thoracic cavity, as also a penetration from this formation in the spinal canal.
- Results** Through a posterior approach, a fixation of the transpedicular screws stabilization system to the spinal column was performed, followed by laminectomy. Evacuation of the pus collection and decompression of the dural sac followed. That way spinal instability was resolved.
- Conclusion** Surgical treatment of spondylodiscitis plays an important role, when conservative treatment is not available. The Transpedicular screws fixation allows early mobilization, rehabilitation and better recovery with excellent results. Lower back pain, Diabetes mellitus and laboratory data for infection are serious alarming symptoms, which should include spondylodiscitis in the differential diagnosis.

Craniopharyngiomas in paediatric patients - benign tumors or a chronic disease

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- Introduction** Craniopharyngiomas are rare neoplasms of the sellar region. Local growth often leads to intracranial hypertension, chiasmal and pituitary compression. Despite being benign, the high recurrence rate and the impact on the patients' health often makes the diagnosis a lifelong one.
- Aim** We present paediatric cases of craniopharyngiomas followed up in order to reveal the rate of post-operative improvement of the symptoms and the chronic long-term complications of the neoplasia on the survivors' quality of life.
- Methods** The current study is a retrospective single-centre analysis of the paediatric craniopharyngioma cases from 2002 to 2015 at the Department of Neurosurgery, St. Ivan Rilski Hospital, Sofia. The tumor locations and the surgical approaches of choice were analysed, as well as the neurological, ophthalmological, endocrinological and demographic characteristics at diagnosis, postoperatively and at the last follow-up.
- Results** 19 patients aged 4-18 (mean age 8.16 yrs) at diagnosis met the inclusion criteria, 13 of them female and 6 male. The most common complaints were disturbances of visual acuity and visual fields (73.7%, n=14), hydrocephalus (52.6%, n=10), diabetes insipidus (21%, n=4). Gross total resection was achieved in 47,3% (n=9) of the patients. Recurrences were observed in 31.56% (n=6) and the perioperative mortality is 5.26% (n=1). Non-significant improvement of the vision was observed in 10.52% (n=2). Postoperative complications include nasoliquorrhea and a subdural hematoma, each in 5.26% (n=1) of the patients.
- Conclusion** Despite the low number of patients and the single-centre design, the current analysis shows the high rates of long-term negative effects craniopharyngiomas have on the quality of life of patients and the lifelong need for multidisciplinary care and monitoring.

Importance of procalcitonin and c-reactive protein in early detection of dehiscence of colorectal anastomoses in patients operated on due to rectal cancer

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Introduction The most serious complications in colorectal surgery are the complications on anastomoses because they are life-threatening. One of the most serious complications which can be fatal are dehiscences of anastomoses.

Aim Testing sensitivity, specificity and diagnostic accuracy by determination of C-reactive protein and procalcitonin in detection of dehiscences of colorectal anastomoses.

Methods The study was carried out as a clinical prospective study. The study included 100 patients operated on due to rectal cancer within elective programme by a radical dissection with creation of stapler colorectal anastomoses. In all patients, on the second and fourth postoperative day, the values of C-reactive protein and procalcitonin in the serum were tested regardless of the appearance of the clinical manifestations of anastomosis dehiscence.

Results Dehiscence rate in our study was 13%. The values of procalcitonin and C-reactive protein were significantly statistically higher on the second and fourth postoperative day in patients with dehiscence of colorectal anastomoses.

Conclusion Procalcitonin and C-reactive protein are reliable parameters in early detection and diagnostics of dehiscences of colorectal anastomoses.

Ultradistal Bypass - Alternative to Amputation in Cases with CLI

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Introduction Patients with PAD Stages III and IV require surgical treatment - angioplasty, atherectomy, vascular bypass and amputation. Ultradistal bypasses present an alternative to amputation in cases with CLI. The procedure is proven to increase the odds of long-term limb salvage

Aim The aim of our study was to review the ultradistal bypass surgery in patients with PAD (peripheral artery disease) stages III and IV (by Fontaine), characterized with rest pain and with necrosis and/or gangrene respectively, requiring surgical intervention. In cases with critical limb ischemia (CLI) – even amputation.

Methods A search in the medical databases was performed and six articles published in the past 20 years were selected – five retrospective analyses and one review. Four clinical cases reviewed as well – the conduit of choice was the GSV used in reversed position. The inflow vessel was the superficial femoral artery (50%), the common femoral artery (25%) and the anterior tibial artery (25%). The distal anastomosis was to the anterior tibial artery (25%), the dorsalis pedis artery (25%), the peroneal and posterior tibial artery (25%) and the medial plantar artery (25%).

Results According to the aforementioned literature, ultradistal bypass surgery with GSV as a conduit has the best long-term survival rate and limb salvage in appropriately chosen patients. Of the 4 discussed patients (2 females and 2 males), all had

undergone previous endovascular attempts for revascularization (PTA and stent) and two had had bypass surgery. All patients had arterial hypertension, one had diabetes and another - end-stage renal disease. All presented with signs consistent with CLI. Outflow was reestablished and primary patency rates were satisfactory – major amputation was avoided. Conservative therapy included clopidogrel, ASC and pentoxifyllin.

Conclusion Our study showed that ultradistal bypass is a viable alternative to amputation in patients with CLI.

Cerebral revascularization using intra-extracranial bypass techniques. Indications and results

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Introduction Cerebral revascularization is a highly elective technique, aiming to preserve cerebral blood flow in cases where either a major brain vessel has to be replaced or the cerebral blood flow (CBF) has to be augmented in patients suffering of chronic brain ischemia. These are demanding techniques, requiring careful patient selection and meticulous microsurgical skills. Herewith we present our experience with patient selections, surgical technique and postoperative management.

Aim Indications and results of cerebral revascularization using intra-extracranial bypass techniques.

Methods During the year January 2017-February 2018 three cases of intra-extracranial (IC-EC) bypass were done. Review of the clinical indications, radiological data and postoperative results was done. Review of the literature was done

Results Two cases of complex intracranial aneurysm, requiring high flow IC-EC bypass techniques were done. In one of them was used arterial artery graft, and in the other -saphenous vein graft. Both cases had had no neurological worsening after the operation with obliteration of the aneurysms and preservation of the blood flow. In one patient with chronic brain ischemia a low flow superficial temporal artery to middle cerebral artery bypass was done. The postoperative course was uneventful. All cases were followed up with conventional angiography and CT angiography for bypass patency.

Conclusion Intra-extracranial bypass is a complex technique, requiring a team effort and detailed preoperative planning. In selected patients the technique provides a good treatment option where either a major brain vessels has to be sacrificed or CBF has to be increased. According to us, interdisciplinary management is an appropriate way to carefully select the right procedure for the correct patient.

Inflammatory markers and complications following surgery for colorectal carcinoma

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- Introduction** There is evidence that certain inflammatory markers can serve as indicators for postoperative complications in patients undergoing surgery for colorectal carcinoma. Their values and interrelationships are being investigated as predictors of adverse effects after surgery and length of ICU stay.
- Aim** Our aim is to investigate the association of CRP, procalcitonin, MMP-9, TNF- α , IL-6 values with the incidence of postoperative complications following elective surgery for colorectal carcinoma.
- Methods** A total of 30 patients set to undergo elective surgery for CRC had their perioperative CRP, IL-6, MMP-9, TNF- α , PCT levels measured the day before the operation and on POD0, POD4, POD7. All occurring postoperative complications were recorded and assessed, as was the ICU and hospital stay. Statistical analysis of the obtained results and formulation of conclusions were conducted.
- Results** Higher levels of inflammatory markers correlate with higher incidence of postoperative infectious complications, longer ICU stay and overall hospital stay. CRP and IL-6 values were the most predictive. Patients with higher postoperative levels of these markers were more prone to complications during POD2-7.
- Conclusion** Measurement of the aforementioned markers in the first few days after elective colorectal surgery can assist in identifying those at risk of adverse events. Their values could facilitate medical interventions and risk stratification. As a future project the effects of ERAS on the levels of the markers will be examined.

Effects of lifestyle on postoperative recovery in colorectal cancer patients

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- Introduction** Cigarette smoking, alcohol consumption and activity level in colorectal cancer patients are strongly suspected to have an effect on postoperative recovery. Chewing gum and early oral feeding after surgery are investigated for having a positive effect on patient recovery.
- Aim** The aim of the study was to find a link between personal behaviour, like cigarette smoking, alcohol consumption and activity level and postoperative recovery. Furthermore, it was attempted to connect early oral feeding and chewing gum after surgery with patient recovery.
- Methods** 25 colorectal cancer patients were asked about their preoperative smoking status, diet, alcohol consumption and activity level. After surgical treatment the day on which they started physical activity, drinking, eating and the consumption of alcohol, tobacco was noted. Furthermore, the time of the first passage of flatus and stools was recorded. All occurring complications, as well as the length of the postoperative ICU stay, and the length of the overall hospital stay were documented.
- Results** Patients with high alcohol consumption and smokers had a higher complication rate, a longer ICU stay and a longer overall hospital stay. Highly active patients had fewer complications and a shorter ICU stay and a shorter overall hospital stay.

Chewing gum, early oral feeding and early resumption of physical activity led to a shorter hospital stay and fewer complications.

Conclusion Encouraging patients to stop alcohol and tobacco consumption as well as increase physical activity before surgery could help to reduce the medical, social and financial burden colorectal cancer places on society. Early mobilization, early oral feeding and chewing gums are simple means to achieve faster recovery after surgery.

Nerve transfers for restoring elbow flexion

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Introduction Traumatic injury of plexus brachialis leads to impaired function of the upper limb. Until recently, tendon transfers have been the mainstay of treatment. The principles of nerve to nerve transfer have now been applied to peripheral nerve injuries.

Aim The following discussion will center on neurotization to restore elbow flexion in patients with Erb's palsy.

Methods This is a short study showing 16 cases of patients with plexus brachialis palsy (9 children between 1,5 and 2,5 years of age and 7 adults 25-50 years old). We describe our technique as a nerve transfer of fascicles from ulnar nerve to the motor branch of biceps muscle (Oberlin procedure) and additional nerve transfer from median nerve to the motor branch of brachialis muscle (modified Oberlin).

Results Children have shown M3-M4 flexion in elbow joint 10-12 months and adults M3-M4 in 1, 5 year postoperatively.

Conclusion Oberlin and modified Oberlin procedure are proven techniques for restoring elbow flexion in young children with obstetrical palsy and in adults with traumatic injury to the plexus brachialis. Great results were achieved and this shows us the promising future of nerve transfers for re-innervation of paralyzed muscles.

A radiographic 3D Analysis of Posterior Ventriculostomies from Frazier Point.

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Introduction Frazier Point is a common landmark for posterior ventriculostomy. Medical literature lists several different entry and target points for this procedure. The accuracy of the catheter trajectory is paramount to the success of the procedure.

Aim The comparison and quantification of known Frazier point in providing optimal trajectory through the lateral ventricles, alongside the comparison of known target points.

Methods 54 patients with Computer Tomography Arteriography were included in the study. Scans were aligned to Frankfurt Plane and midline landmarks. Cases with visible mass shift effect, unsymmetrical ventricles and Evans Index greater than 0.3 were excluded from the study, leaving 30 cases. 8 entry points and 5 target points were marked in Slicer 3D Software. Definitions for entry and target points were derived from neurosurgical literature. Trajectories connecting each entry with each target point) were drawn on 3D model generated from scans. Each trajectory was

analyzed entry into the lateral ventricle to the coronal plane going through both interventricular foramina.

Results The total of 1200 trajectories were drawn, out of which 41 (3.42%) were graded as optimal and 1159 (96.6%) were graded as non-optimal. The majority of optimal trajectories were targeted at point 4 cm above the contralateral endocanthion. For this target, the number of optimal was highest in entry located 7 cm above inion, 3 cm laterally (14; 47%). Other trajectories with the same target were optimal in 11 or fewer cases per trajectory. (range 0-14; 0%-37%). Remaining target points had either 0 optimal grades or in one case 6 (20%) when entry located 7 cm above inion, 3 cm laterally was paired with the target of 2 cm above nasion.

Conclusion Out of analyzed trajectories, the most optimal is the use of point located 7 cm above inion, 3 cm laterally as the primary entry point and a point located 4 cm above contralateral endocanthion as the target point, when performing Frazier point ventriculostomy.

Assessment of patients awareness during general anesthesia

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Introduction A potential complication during general anesthesia is the presence of consciousness in patients. Causes of intraoperative awareness can be: equipment failure, drug abuse, too light anesthesia. The consequence of intraoperative awareness is usually the posttraumatic stress disorder.

Aim The aim of our study was to assess the awareness of patients during general anesthesia.

Methods The study included thirty eight patients who subjected various surgical procedures. A standard protocol for general anesthesia was used for all patients. Anesthetics that were used: Propofol, Nesdonal, N20 and Sevoran. Muscle relaxants that were used: Atraurium, Suxamethonium and Pancuronium. After the wakeup, an examination of patients was performed. The modified Brice and Bauer questionnaires were used for testing, which patients completed 6h after surgery, 24h after surgery and at the day when they were dismissed from the hospital.

Results Out of thirty eight patients, nineteen patients were subjected cesarean section, one patient was subjected plastic and reconstructive surgery, six patients were subjected vascular surgery, four patients were subjected chest surgery, four patients were subjected abdominal surgery, two patients were subjected urological surgery and two patients werre subjected orthopedic surgery. According to the results of the survey, no patient was aware of the operation, and eleven patients had pleasant dreams.

Conclusion Patients were completely satisfied with anesthesia. Although a too light anesthesia was used for cesarean section compared to other surgical interventions, the percentage of awareness was 0%.

3D-preoperative planning and design, patient specific surgical guides and instrumentation

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- Introduction** All patients survived fractures of the tibias and suffer afterwards postraumatic deformity. 3D preoperative plan was prepared based on CT scan full leg X-Ray. We have design patient specific surgery guides, wich applied succesfully on the tibia at 2 patients.
- Aim** Preoperative plan transfer in case of osteotomies based on CT scan and development of patient specific surgical guides. Analyzing the accuracy of the obtained correction. Whether CT scan data can be used for correction planning of angular and rotational deformity in 3 planes.
- Methods** 3 patients, males (22-41 years), with tibial fractures with posttraumatic deformity (diversity of tibial plateau and tibial stem). Entire 3D models based CT scan of right and left tibia was done for planning the angular and rotational deformities correction. Preoperative plan, which is based upon radiographic CT scan and full leg standing information in one case, is transferred in OR employing surgical guides. The planned level of the osteotomy was relayed to the surgery by virtue of a patient specific guide developed from the CT images with CAD. Triple and planar osteotomies were performed on tibia in the subjects.
- Results** All osteotomies could be planned based on the information provided on the preoperative plan and 3D models. In all cases, the guides were fitted to the bone through a standard exposure. All osteotomies healed completely without complications. The mean deviation between the planned wedge angle and the executed wedge angle was 0° (-1 to 1, SD 0.71) in the coronal plane and 0.3° (-0.9 to 3, SD 1.14) in the sagittal plane.
- Conclusion** We found that 3D preoperative planning is crucial in defining the necessary correction, especially in cases where triple planar and derotative corrections are required. It is concluded that this is a valuable concept from the standpoint of preoperative software based planning, surgical application and geometrical accuracy of outcome.

Different strategies in tongue reconstruction after glossectomy

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Hiroshima University School of Medicine, Japan | Area **Pathology**

- Introduction** Partial or total glossectomy is the main treatment for the squamous cell carcinoma of the tongue, which is the most common oral carcinoma. Both procedures affect the patients' quality of life, causing dysphagia, difficulties in respiration and speech.
- Aim** The aim of our study was to compare the outcomes of the different approaches of tongue reconstructions. We also analyzed the postoperative prognosis of patients after glossectomy with and without reconstructive surgery.
- Methods** We evaluated Bulgarian and Japanese patients having undergone glossectomy. The annual number diagnosed malignant tumors of the tongue in Bulgaria and Japan is 146 and over 1252 respectively. The most common approach among

Japanese is using autotransplanted muscle flaps during the tongue resection with the cooperation of head and neck and plastic surgeons.

Results The usage of muscle flaps greatly improves the patients' QOL compared to not undergoing the procedure. The most commonly used ones in Japanese are anterolateral thigh perforator flap, abdominal and pectoral flap. The choice of the muscle tissue is determined by the amount of volume needed. Abdominal flaps are used when more volume is required. There is no significant difference in the quality of life (QOL) score in chewing, swallowing, speech and postoperative pain among the patients reconstructed with ALT, SIF and RFFF. There is also no difference in the amount of postoperative infections among patients with and without reconstructions.

Conclusion Muscle flaps in the tongue reconstruction enable patients in reaching an acceptable level of QOL. The best surgical approach is based on the collaboration of specialists in choosing the most appropriate autotransplant.

Evaluation of postoperative pain after use of Ketonal and Novalgetol

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Introduction Pain is one of the following symptoms after surgery. Using appropriate analgesics can reduce the negative psychological and physical effects of pain in postoperative recovery.

Aim The aim of this study was to evaluate the effectiveness of Ketonal and Novalgetol in the prevention of postoperative pain.

Methods The study included 52 patients, divided into two groups, each of 26. The first group consisted of patients undergoing bone surgery, and the second group of patients underwent visceral surgery. Both groups used Ketonal (ketorprofen) and Novalgetol (noramniophenazone) in standard doses. After surgery, patients rated the level of pain based on the numerical scale (1-10), the number indicated the pain level they felt, and then again 1 hour after intravenous use of analgesics.

Results I group, 13 patients received Novalgetol and 13 Ketonal. Before using analgesic, highest number of patients rated pain with 8(30.7%), and 1h after Novalgetol was injected, patients rated pain with 3(53.8%). Before using Ketonal, patients rated pain with 7(30.7%), and 1 hour after injection patients rated pain with 2(38.4%). II group, 13 patients received Novalgetol and 13 Ketonal. Before using analgesic, highest number of patients rated pain with 7(38.4%), and 1h after Novalgetol was injected, patients rated pain with 2(30.7%). Without Ketonal, highest number of patients rated pain with 6(53.8%), and 1 hour after injection patients rated pain with 2(53.8%).

Conclusion After reviewing all rated levels of pain and injected analgesics, conclusion was that most of patients after bone surgery had highest level of pain (>7). According with this study Ketonal proved to be a more efficient analgesic than Novalgetol in both patient groups.

Etiological factors in pathogenesis of onychocryptosis.

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Astana Medical University, Kazakhstan | Area **Surgery**

Introduction Onychocryptosis is the ingrowth of the nail plate into the tissue around the nail, with concomitant inflammation and granulation. Onychocryptosis is the most common pathology in podiatry. There are some factors, but leading factor is trauma of toenails.

Aim Identify the risk factors in progression of onychocryptosis.

Methods There was a retrospective research among 381 patients, who got diagnostics and divided into several groups by risk factors.

Results Female half predominates over the male, 240 (63%) and 141 (37%) respectively. There were 2 groups of patients dividing into group 1 (age 15-40 years old) - 301 patients, group 2 (age 41-70 years old) - 80 patients. From the research it was obtained that from the group 1 were 172 (57,2%) patients, most of them were office workers and they had problems with tight type of shoes, also 97 (32,2%) patients got poor-quality pedicure, and 32 (10,6%) patients had comorbid conditions such as fungal disease, diabetes mellitus, orthopedics disorders etc. On the group 2 there were 71 (88,7%) patients with problems of comorbid conditions and 9 (11,3%) patients with trauma of toenails.

Conclusion The main risk factor among people is trauma. Trauma depends on social factors such as fashion that necessitates wear sharp type of shoes, and women prefer to make pedicure in nail salons, but it increases the risk of onychocryptosis. The main causes among elder people are comorbid conditions.

Wedge resection and Bartlett's method in onychocryptosis treatment

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Introduction Onychocryptosis is a common inflammatory nail disorder, caused by penetration of the nail plate into the tissue around the nail. Despite having various surgical techniques, there is still a high incidence of recurrences and complications after procedures.

Aim To evaluate the effectiveness of surgical treatment in patients with onychocryptosis by methods of wedge resection and Bartlett's method.

Methods In the present randomized controlled trial, conducted in the period between June, 2015 and June, 2017, 381 consent patients that suffered ingrown toenail were included in this study. They were randomly divided into 2 groups in the order of their joining to the study. The Group-1 190 patients were treated by wedge resection, whereas the Group-2 191 patients were treated by Bartlett's method.

Results Among 190 patients which had wedge resection (Group-1), 49 (25,78%) of them had recurrence in the next one year period, 12 (6,31%) with complication. 169 patients (88,94%) were satisfied with a result. Mean recovery time was 8 ($\pm 3,2$) days. Among 191 patients from Group-2, 18 (9,42%) of them had recurrence rate, 40 (20,94%) patients had complications. 148 patients (77,48%) were satisfied with a result. Recovery time was 11 ($\pm 2,2$) days.

Conclusion Wedge resection has less recovery time. Bartlett's method is effective in preventing recurrence, but it has increased risk of postoperative infection. It is more wisely to use wedge resection method for initial cases. For subsequent recurring cases, it's recommended to perform Bartlett's method.

Rare combination between familial multiple lipomatosis and extragastrointestinal stromal tumor

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Introduction Gastrointestinal stromal tumor (GIST) is a relatively common tumor arising in the gastrointestinal tract. Rarely they are located in the mesentery, retroperitoneal space or pancreas (EGIST). Even rarer is a combination between GIST and familial lipomatosis (FML).

Aim We report a case of a patient with two rare diseases - FML and EGIST, misinterpreted macroscopically as a pancreatic cystadenocarcinoma. The radical resection of EGIST is the treatment of choice and therapy with Imatinib was performed because of the revealed high-risk tumor variant

Methods An abdominal computed tomography (CT) was performed and magnetic resonance (MRI) as well. Including standard laboratory testing to establish amendments.

Results A 63 years old patient who presented with symptoms of intense fatigue, abdominal pain, nausea without vomiting, constipation and fever up to 37.5. The patient reported that he had multiple, widespread palpable formations all over his body for years. Furthermore, some of them date from early childhood. The CT demonstrated a soft tissue heterogeneous formation, located under the diaphragm, between the stomach and spleen. The laboratory evaluation showed clinically significant changes in the hemoglobin and white blood count. Along with those results, the patient was tested for CEA and C19-9 tumor markers and they turned out negative.

Conclusion The morphology and immunohistochemical features of this tumor have received increasing attention in recent years. Multiple lipomas and lipomatosis are very rare with a reported prevalence of approximately 0.2% in one large autopsy series. The synchronous presence of those conditions makes the case interesting and valuable for the clinical practice

Diagnostic role of TR-MRA in patients with vascular malformations

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Introduction Vascular malformations (VMs) represent abnormalities that often appear as cosmetic flaws, but could cause hemodynamic instability and heart failure. Time-resolved magnetic resonance angiography (TR-MRA) is a method of choice regarding VMs evaluation, being a radiation free alternative to conventional angiography.

Aim To discuss the role of TR-MRA, regarding assessment of the VM type, mapping and treatment planning, as an alternative to conventional angiography.

- Methods** Medical data and images of 28 patients with proven VMs or vascular tumors of different age groups were retrospectively analyzed (12 male and 16 female patients; age range 0-65 years; mean age, 17.7 year/. Two of the patients were excluded from the study, due to low quality of the acquired images. In the 26 remaining ones, the diagnosis was either confirmed postoperatively (in 11), using conventional angiography (in 9), or based on the lack of evolution during the follow-up period (in 6).
- Results** Study group included patients with various types of VMs, as 12 patients presented with low-flow VMs, some of which showed features of combined vascular malformations - lymphatic-venous in 2 patients, and capillary-venous in one of them. 4 patients presented with lesions that were proven to be vascular tumors. 10 patients were diagnosed with high-flow VMs, three of which - with an AV fistula. TR-MRA was accurate in all surgically treated and confirmed with conventional angiography patients. The number and type of feeding vessels were properly defined, as well as the composition of the malformation and its relations to the surrounding tissues.
- Conclusion** MRI, combined with TR-MRA is a method of choice when diagnosing and evaluating VMs. Using the proper MR protocols could provide sufficient information about the type, size and localization of the lesion. Thus, it offers the adequate amount of imaging data needed for future treatment procedures.

Abdomen compartment syndrome - contemporary issues

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- Introduction** This cohort study is focused on abdominal compartment syndrome(ACS) cases for a 3-year period in 2nd Department of Surgery, University Hospital "Alexandrovska", Sofia, Bulgaria.
- Aim** ACS is most often encountered during the early postoperative period. For the present study we observed ACS in patients with the following conditions: ileus, pancreatitis, retroperitoneal tumor formations, hernia, patients having undergone relaparotomy. We observed the diagnostics and management using different techniques, comparing outcome, taking into account the underlying conditions.
- Methods** The diagnosis comprised two main methods - direct and accurate measurements of intraabdominal pressure (IAP) obtained via a cannula placed percutaneously into the peritoneum; indirect measurement - transfemorally placed inferior vena cava lines, nasogastric tubes or Folley catheter (measurement of the bladder pressure).
- The treatment required urgent decompressive laparotomy which reduced IAP and had an immediate effect upon organ function. For a period of 3 years, 11 cases of the syndrome were diagnosed in male and female patients between 40 and 70 years of age, with different underlying diagnosis: ileus – 2, hernia – 2, pancreatitis – 3, retroperitoneal tumors – 2 and 2 cases after relaparotomy.
- Results** 3 out of 11 cases had lethal outcome – 2 patients with pancreatitis and 1 after relaparotomy. The others: • 3 cases (ileus, patient undergone relaparotomy) were treated by relaparotomy, débarrassage of the bowels, drainage and primarily closure with "Ventrofill"; • 5 cases - laparostomy for 72 hours and secondary closure after a complex treatment of the symptoms. A retrospective analysis of the cases treated was made in terms of ethiological factors, clinical features, diagnostic methods, treatment and prognosis.

Conclusion ACS is a highly lethal complication, requiring early identification and immediate treatment. Future research on prevention and treatment should be a must, with emphasis on ACS developing in patients with pancreatitis, where we observed the highest mortality rate.

Complications of Ludwig's angina

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Introduction Complications of Ludwig's angina include edema of glottis, which can cause death by asphyxia, cavernous sinus thrombosis, meningitis, cerebral abscess and suppurative encephalitis. The spread of the infection may cause internal jugular vein thrombosis, carotid artery rupture.

Aim Analysis of complications in patients with Ludwig's angina.

Methods Analysis of 30 patients who suffered from Ludwig's angina, who were hospitalized in the Oral and Maxillo-facial Surgery department of IMSP IMU Chisinau between the 2016 and 2017 years. Patients were clinically and paraclinically investigated. Literature analysis of 45 books and 8 articles.

Results The edema of glottis was present in 80% of patients with Ludwig's angina. In 50% of cases, it spread to the parapharyngeal spaces. Mediastinitis occurred in two patients and septicemia in 7 patients. Complications such as cavernous sinus thrombosis, meningitis, cerebral abscess, suppurative encephalitis, internal jugular vein thrombosis, carotid artery rupture or vocal fold paralysis, osteomyelitis and spinal cord erosions, described in specialty literature were not found.

Conclusion 1. The complications of Ludwig's angina can be disastrous. 2. The infection can spread into necrotizing fasciitis, septicemia and lead to death. 3. One hundred percent of patients die in case of untreated pathology.

Pilocytic astrocytoma of the optic nerve in children: An atypical case presenting with optical glioma imaging features

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Introduction Decreased visual acuity, eyelid swelling and proptosis in a child can be the presenting sign of optic path glioma (OPG). OPG along with hypothalamic account for 3-5% of pediatric intracranial tumors. On the contrary, pilocytic astrocytoma represent the most common glial neoplasm in children

Aim This case report describes an astrocytoma with an atypical radiographic presentation.

Methods A 9-year-old girl presented in the emergency department with acute impairment of visual acuity, right eyelid swelling and minor proptosis. Fundoscopy demonstrated papilledema. Preoperative brain MRI revealed a mass located in the posterior right optic nerve close to the optic chiasm, which was considered as an optic nerve glioma. Surgery was conducted in order to excise the mass and cytopathological assessment was ordered. The patient was transferred to the pediatric intensive care unit (ICU). An ophthalmological consultation was arranged.

Results In day-2 after the operation the lumbar drain was removed. It was impossible to awake the patient due to fever. In day-3 the patient was disconnected from mechanical life support and left the ICU. Infection was treated according to guidelines. Seven days after the operation the patient was able to walk. On day-9 the patient presented no fever. In day-15 she was able to leave the hospital. Brain MRI and ophthalmological reassessment were arranged in a three months interval. The patient has been referred to pediatric oncology department for further treatment. Pathology reports indicated pilocytic astrocytoma instead of glioma.

Conclusion All in all, papilledema and enlarged optic nerve are imaging diagnostic signs of optic glioma. The present report of pilocytic astrocytoma, which was unassociated with neurofibromatosis or tuberous sclerosis, is recorded to illustrate its special diagnostic features stressing the absence of the typical radiographic features of this entity.

Surgical treatment of liver echinococcosis by minimally invasive method

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Introduction Every year in the surgical departments of the Republic of Kazakhstan, 2,3 thousand operations are carried out against echinococcosis. According to M. Aminjanova (1999), the annual costs for the treatment of echinococcosis are estimated at more than 1.8 million dollars.

Aim Improvement of the results of surgical treatment of patients with echinococcosis baking.

Methods Surgical intervention is performed by means of ultrasound under preliminary local anesthesia. During the ultrasound examination, the trajectory of the tool is determined, which can be even and "broken". The PAIR-PD technique is used (puncture, aspiration, injection, reaspiration, percutaneous drainage). For drainage, the stylet-catheter method is used. As soon as the liver echinococcus enters the cyst cavity, the stylet is removed and the drainage system is fixed to the skin. Curved drainage catheters are used in a diameter of 12-18 Fr. Through the catheter, the contents of the cysts are exhausted. The cavity is then repeatedly washed with NaCl solution (30%).

Results There were no postoperative complications. During the first postoperative period, one patient developed a biliary fistula. A month later the fistula closed. The average length of stay in the hospital was 5 ± 2.1 days. Patients had no complications. After performing the operation, patients can self-serve themselves after 40 minutes. Five patients were discharged from the hospital and received a course of regular system ultrasound. The catheters were removed after a 30-35 day of echinococcectomy. The medication is albendazole, the dose is 10-13 mg / kg / day.

Conclusion Minimally invasive interventions before the traditional technique of surgical treatment include such advantages as minor injuries, early recovery of the patient, fewer postoperative complications, and a shorter duration of hospitalization. And a low invasive method of treatment is significantly effective for patients with concomitant diseases.

Laparoscopic Kasai Portoenterostomy for Biliary Atresia

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- Introduction** Biliary atresia is characterized by obliteration or discontinuity of the extrahepatic biliary system, resulting in obstruction to the bile flow. The optimal therapy is the portoenterostomy, a porto-enteric anastomosis in Roux-en-Y after surgical dissection to locate remainders of biliary tracts.
- Aim** The aim is to present a 2 months old female, with no relevant background, who at 15 days of age presented with generalized jaundice. She was initially treated with phototherapy without a clinical improvement; hiporexia and irritability ensued, which led to her hospitalization for further study.
- Methods** The patient was admitted with acholic stools, generalized jaundice and with a palpable liver 3cm below the costal margin. Her labs showed a total bilirubin of 9.07mg/dl with a DB of 7.6mg/dl and an alkaline phosphatase of 753u/l. The MRI reported no evidence of dilation of intra or extrahepatic biliary ducts, with a normal-sized liver. As her condition worsened, the patient was programmed for an elective Laparoscopic Kasai Portoenterostomy with the diagnosis of Cholestatic Syndrome.
- Results** During the procedure, dissection of the gallbladder, the common bile duct and the common hepatic duct evidenced they were atresic. These findings were consistent with a type III atresia. The surgeon performed a transumbilical extraction of the proximal jejunum, with a terminal-lateral jejunojejunal anastomosis at 30cm of the Treitz angle; finally, he proceeded with a porto-enteric anastomosis with PDS 5-0 intracorporeal stitches. The patient had a post-operative favorable outcome, being discharged from the pediatric ICU 48 hours later with a decrease in total bilirubin (6.7 mg/dl) and presenting green-stained stool, which demonstrated bile flow.
- Conclusion** Biliary atresia represents the most common neonatal surgically-treatable cause of cholestasis: if not corrected, it invariably results in secondary biliary cirrhosis. Early diagnosis and treatment are fundamental in improving the patient's prognosis. Today it is possible to perform Kasai's Portoenterostomy laparoscopically, which has presented a benefit in post-operative outcomes.

Clinical and epidemiologic approach to burning mouth syndrome

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- Introduction** "Burning mouth" syndrome (BMS) is still relevant and interesting nosological form in the group of diseases of the oral cavity, therefore it requires a comprehensive study [1-7].
- Aim** The aim implied the studying clinical and epidemiological features of BMS, such as morbidity trends and risk factors, on the regional level (in patients presenting to the Department of operative dentistry and the Dental clinic in Nizhny Novgorod State Medical Academy in the period from 2013 to 2016).
- Methods** The admission routine data were analyzed in the retrospective epidemiologic study. We investigated multi-year and annual dynamics of morbidity. The information on the patients with BMS (237 dental medical charts) was obtained from 2013-2017 in Nizhny Novgorod Dental academic clinic (Russia). Probability

values less than 0.05 was considered to be statistically significant. The BMS prediction was performed using logistic regression. Akaike's information criterion was used for model reduction. For the variables in the final model 95% profile log-likelihood confidence intervals were calculated. Statistical analysis: Epilnfo 3.1.6 and R studio open-source software [8].

Results The average age of patient was 57 years. Women were a predominant group (91.1%). The average multi-year prevalence rate equaled 7,9 (95% CI 6,0-9,9) per 1000 patients. The dynamics had upwards trend. Monthly distribution of cases showed maximum in spring-autumn. The best fitted regression model contained patient's sex, age and labour status as independent variables. For example, the difference in BMS log odds for females vs males was 4.8, $p=0.003$. The significant age effect was characterized by OR 1.05; $p=0.001$. We observed a reasonable difference in log odds in all the three labour groups. The regression equation was also constructed.

Conclusion The detection rate of BMS significantly grew up. It may be associated with increase in stressful situations, oncological vigilance of doctors, the beginning of in-depth studies on the regional level. To improve the quality of life of patients with BMS we need evidence confirmed in epidemiological studies of appropriate design.

Factors affecting academic performance of JUMC medical students

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Introduction Medical students' ability to absorb knowledge and use it during exams is one of the most important factors that have significant impact on students' performance and getting into good residency program. Awareness of factors that can affect students' performance could improve overall medical knowledge and refine accuracy of medical diagnosis and treatment.

Aim The aim of this study is to estimate and recognize factors that can impact on students' results and exams scores.

Methods This study was performed among 4th year medical students ($n=148$) from Jagiellonian University Medical College during December 2017. Study enrolled 58 (39,2%) women, 58 (39,2%) men and 32 (21,6%) people who did not define their gender. All participants took a test that consisted of 100 questions and concerned following medical areas: Internal Medicine, Obstetrics and Gynecology, Pediatrics, General Surgery, Anatomy and Pathology (only previously discussed topics). The test was created by two 5th year medical students. After exam, every participant was asked to voluntarily fill a survey and answer questions involving i.a sleep duration, frequency of being well-rested, physical activity, supplements consumption, methods of learning, self-assessment of academic performance, family and learning environment.

Results The average student score was significantly higher among students who feel well rested (59,5 vs 53,74). Lack of use of dietary supplements (51,18 vs 55,92) and not attending lectures (51,84 vs 56,2) significantly lowers students' score. Other factors were not statistically significant.

Conclusion A good night's sleep is important for students' performance. Feeling fresh seems to be more significant factor than objectively measured amount of sleep. Taking

dietary supplements and attending lectures appears to increase academic performance of medical students.

Molecular detection of zoonotic *Anaplasma phagocytophilum* in ticks

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Introduction *Anaplasma phagocytophilum*, a gram-negative and intracellular bacteria, causes human granulocytic anaplasmosis and transmitted by ixodid ticks.

Aim The aim of this study was to determine *A. phagocytophilum* in ixodid ticks.

Methods A total of 2241 engorged ixodid ticks collected from Black Sea region of Turkey divided into 310 pools and a nested PCR assay was performed to determine the samples infected with *A. phagocytophilum*. Maximum likelihood estimation (MLE) with 95 % confidence intervals (CI) of infection prevalence per 1.000 ticks was also calculated.

Results Eight tick pools and six tick species were found to be infected with *A. phagocytophilum*. The overall MLE of the infection rate was 3.61 % (CI 1.61-6.71). The MLE of the infection rates were calculated as 95.5 % (CI: 5.61-359) in *Haemaphysalis concinna*, 41.8 % (CI 2.41-173) in *Hae. sulcata*, 41.7 % (CI 2.41-171) in *Hyalomma excavatum*, 14 % (CI 0.71-60.5) in *Rhipicephalus sanguineus*, 4.71 % (CI 1.11-12.2) in *R. turanicus*, and 2.21 % (CI 0.11-9.51) in *R. bursa*.

Conclusion The data can help to make risk maps for tick-borne pathogens in the region and we suggest further molecular studies using unfed ticks.

Assessment the risk of diabetic foot among patients with diabetes

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Introduction Foot ulcers are a major complication of diabetes with high morbidity, mortality and cost. Prevention of foot ulcers in patients with diabetes is extremely important to help reduce this burden.

Aim To evaluate the risk of diabetic foot in patients from one specialized clinical center.

Methods 520 patients with diabetes (259 males and 261 females), of mean age 65.26 ± 14.21 years, mean BMI 30.22 ± 6.81 and mean duration of the disease 15.09 ± 9.31 years were enrolled. All participants were recruited at the Department of Diabetology which is a tertiary center of diabetes care. Medical history was collected and physical examination with detailed feet examination was performed. Risk category was defined according to IWGDF classification based on the presence of the following major risk factors: peripheral neuropathy, foot deformity, peripheral vascular disease, previous foot ulceration and history of amputation.

Results According to the presence of the major risk factors patients were allocated to four risk categories - risk category 0 – 66 (12.69%), risk category 1 – 294 (56.54%), risk category 2 – 123 (23.65%) and risk category 3 – 37 (7.12%).

Conclusion The most prevalent risk category among the patients from a specialized clinical center is risk category 1, the most prevalent risk factor among these patients being diabetic polyneuropathy.

Are Medical Students receiving enough training on Sexual Medicine?

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Introduction Nowadays, a decrease is present in stigmata regarding the discussion of sexual attitude. Conversely, medical graduates appear to be insufficiently trained during University related to topics such as Sexual-Transmitted-Infections, sexual violence, AIDS, sexual preference and psychopathologies related to sexual attitudes.

Aim The goal of this study was to obtain medical students' opinions upon the training they receive during their medical education programs and to suggest a management plan for a better educational outcome.

Methods A survey was conducted among medical students over the past few months, from July of 2017 till February 2018, in an effort to observe whether undergraduate medical students are receiving proper education in order to face and treat sexual health issues. This survey was published in various groups of certain social websites and it included 22 questions, of which 13 questions could be answered by the participants with a satisfaction scale. This Survey was conducted anonymously.

Results The survey was answered by 296 medical students. Of these, 94.9% agreed with the importance of medical professionals taking a sexual history. However, on the question "I feel comfortable discussing sexual health problems with patients of opposite sex" 28.7% answered with neither agree or disagree and 34.1% answered that they find taking a sexual history hard. Unfortunately, 48.3% of the participants found that they were not properly trained during their medical school.

Conclusion Medical schools worldwide seem to lack sexual health training hours within their syllabus. This limits future doctors in providing good medical care in sexual health matters. Additionally, this results in a lack of confidence, but also a lack of interest, since it was not sufficiently covered in their education.

Forensic methodology of handling deadly incidents of illegal passing immigrants

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Introduction Due to its position, the laboratory of forensic sciences of DUTH receives the attempts for trespassing the country's borders. The death of these immigrants comes as a result of drowning and hypothermia or other less common reasons.

Aim The aim of this study is to cite the number of people who lose their lives while trying to illegally cross the Greek borders and the forensic methods regarding the cause of death and the identification/recognition of the illegal immigrants.

- Methods** In a period extending from 2000 to 2017, 359 people lost their lives while trying to illegally enter the country. The majority of them were young males. The most common cause of death is drowning in the Evros river, which is followed by hypothermia in the second place. The used methods are the attempt of recognition of decomposing bodies, the recognition and identification of special characteristics (anatomical dysplasias, tattoos etc), as well as the denotative recognition of the deceased through their personal items. The DNA testing is crucial to the final identification.
- Results** For 177 cases the cause of death was specified as drowning. 72 deaths were due to hypothermia (since 2008 is the second most common cause of death). In recent times, some deaths were ascribed to pathological causes or to road and rail accidents. Out of all, 103 bodies were identified. In several cases, the cause stayed unspecified due to extensive post mortem injuries and advanced decay.
- Conclusion** The data are sent to the authorities and in collaboration with international networks, the body's repatriation is attempted. Otherwise, the bodies are buried into specific places for future identification. These numbers refer only to the Greek side of the borders while there is a similar number to the Turkish side.

A cross sectional study in automotive repair workshops in Turkey

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- Introduction** Prevention of injuries from occupational accidents is a priority public health issue (1). There are limited studies from automotive repair sector regarding workplace health and safety (2).
- Aim** The aim of the study is to assess the frequency and the nature of workplace accidents, work-related health problems and associated factors.
- Methods** In this cross-sectional study, 178 workers from 170 automotive repair workshops participated in the study. The data were collected at the workplaces via structured survey. Chi-square and Mann Whitney U tests were used for statistical analyses. A p value < 0.05 was considered statistically significant.
- Results** Mean age of workers was 34.27(sd=10.8)(age range:13-63). Majority of workers had primary school education(74.7%). Average daily working hours was 10.4(sd=1.4); 87.6% of them were permanent workers(n=156).45% of workers(n=80) had an accident during last 12 months. Workers reported joint and muscle problems as the most common work related health problems (27.5% n=49). There was an association between time pressure/overwork and frequency of injuries(p=0.03). Those non-registered to social security organization reported more injuries than that of registered workers(respectively 58.0% and 39.8%; p=0.02).Workers who reported accidents were younger than those who did not(p=0.004).
- Conclusion** Young age, excessive work load, time pressure and uninsured employment were important risk factors at automotive repair workshops. Accident prevention measures should be directed towards these factors (3).

Heart rate and arterial hypertension as mortality predictor in acute myocardial infarction with ST-elevation

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Introduction Acute myocardial infarction with ST-elevation is a form of acute coronary syndrome, characterized by permanent damage of cardiac tissue, and high mortality. According to the numerous epidemiological studies, arterial blood pressure and heart-rate are often increased level, especially during the first hours of pain due to domination of sympathetic response.

Aim The aim of this study, was to investigate the incidence of higher heart rate levels, greater than 80 beats per minute, and arterial hypertension, in patients with anterior wall STEMI, and their influence on mortality.

Methods Research included 140 patients with diagnosis of STEMI of the anterior wall, treated in Coronary Unit, University Clinical Center Kragujevac, from January 2001 to June 2006. Heart rate was calculated as the mean value of baseline and heart rate in the first 30 minutes after admission, recorded on continual electrocardiogram monitoring. Data for history of hypertension were collected and blood pressure levels were measured in a lying position after 5 minutes of rest, and classified according to the VII JNC recommendations as confirmation of hypertension. Collected data were analyzed in SPSS 13.0 for Windows.

Results Heart rate greater than 80 bpm influences the hospital mortality. Systolic blood pressure levels were higher in the survivors, while for the diastolic there was no difference in survivors and fatal. History of hypertension was singled out as a significant predictor of mortality without difference between the respondents with heart rate greater and lower than 80 bpm in the survivors and fatal.

Conclusion We concluded that increased heart rate and hypertension at admission are significant predictors of mortality in patients with anterior wall STEMI.

Childhood abuse as a risk factor for substance use disorder

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Introduction Drug and alcohol dependence is an important sociomedical problem. This research investigates the possible impact of adverse childhood experiences, mainly emotional, physical and sexual abuse and emotional and physical neglect, on the development of substance use disorder.

Aim To identify the presence of different forms of childhood abuse/neglect in persons dependent on drugs and alcohol and in healthy volunteers, and to investigate differences in their frequency and intensity; to measure the levels of different types of symptomatic distress arising from traumatic experiences and compare them between groups.

Methods The research was conducted using the Childhood Trauma Questionnaire, the Trauma Symptom Checklist - Alternative, and a general questionnaire. The sample was divided into three groups of 30 examinees: "A" (persons dependent on alcohol), "O" (persons dependent on opiates) - these examinees were patients with an established diagnosis of dependence according to ICD-10 criteria, hospitalized at

the Clinical Center of Vojvodina. A control group of healthy volunteers without the diagnosis of dependence ("C") consisted of medical students. After analyzing the questionnaires, the acquired data was compared between groups using the Analysis of variance, Post Hoc tests and Pearson's correlations analysis.

Results There are significant differences ($p < 0,05$) in presence and intensity of all forms of childhood abuse and neglect between persons dependent on psychoactive substances and healthy volunteers, except for physical abuse between groups A and C, and sexual abuse between groups O and C. These patients reported experiences of abuse/neglect more often than the control group (A=80%; O=86,67%; C=16,67%), as well as experiences of two or more associated forms of violence (A=60%; O=66,67%; C=0%). The levels of all types of symptomatic distress are significantly higher ($p < 0,05$) among persons dependent on psychoactive substances and positively correlate with intensity of abuse.

Conclusion Childhood abuse and neglect are highly prevalent among persons dependent on drugs and alcohol, and they could play an important role in the development of these dependencies.

The heptavalent botulism antitoxin usage: case report

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Introduction 113 cases of botulism with 133 victims and 11 deaths were registered in Ukraine during 2017. 80 victims used home-cooking food; the rest used food that was purchased in the enterprises of trade, from unauthorized trades and of unknown origin.

Aim to study the effectiveness of Heptavalent Botulism Antitoxin (HBAT) that was approved in 2010 by CDC on an investigational basis, and was licensed for commercial marketing by the FDA in 2013.

Methods A 22-years-old female was admitted to Kharkiv Regional Infectious Diseases Hospital with preliminary diagnosis- acute pancreatitis. One day before disease she ate dried fish. Examinations showed anxiety, tachypnea, dry mucous membranes, diplopia, horizontal nystagmus, full symmetrical paralytic mydriasis and other neurological signs. The patient remained alert and afebrile. CBC, kidney and liver functional tests and ECG were normal. Within 4 hours she developed respiratory failure and required intubation and ventilation. A nasogastric feeding tube was inserted. Her condition continued to worsen and developed acute flaccid symmetrical paralysis. Psychomotor excitement was associated with chronic psychoneurological disease requiring high dose of sibazon.

Results One vial (20 mL) of HBAT was administered to a patient as an intravenous infusion within 24 hours from the disease onset. The patient required ten days of mechanical ventilation and 20 days of intensive care support. Blood, stool and gastric washings cultures were negative. C.botulinum A-toxin was proven in gastric lavage fluid. Pneumonia was diagnosed and proved radiographically on the 7th day of the disease. After course of antibacterial treatment infiltration regressed to 22nd day. The patient's motor function gradually improved to 28th day. One month after the onset of symptoms, she was discharged from the hospital.

Conclusion Heptavalent Botulism Antitoxin that was used in Ukraine for the first time proved its efficacy treating severe food-borne botulism.

Gamification of learning: Histology learning app with real-time student's progress tracking and an element of competition

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Introduction Finding methods of effective learning is important, if students are to become well prepared for their profession. The advancement of computer technologies has created new capabilities to support learning, among others, by possibility of adding some elements of games, like leaderboards and immediate feedback to motivate students and facilitate studying.

Aim The purpose of the study was to assess student's interest in solutions based on gamification, during their preparation for the histology practical exam.

Methods The 1st year medical students of the Jagiellonian University were allowed to participate in the study. Students applied by registration on the online platform created by the authors. After registration, each student had to recognize 13 microscopic slides (initial test) by manually entering proper description under the pictures. Correctness of students responses was assessed by the authors, and the results were posted immediately in the students individual pages. The proper self-learning module based on recognizing images of histological slides, by selecting the appropriate description from the drop-down list. Then, the correct and the student's answers were displayed. Date, time and correctness of each answer were saved in the database. For more gaming character there were also information about the place of the user in three rankings: the most active students, longest learning time and students with highest correct answer ratio.

Results The study involved 76.5% (n=218) of students approaching the exam. Median number of responses in application was 555,5. The average usage time of the application for a single user was about 2 hour and 15 minutes. There was a correlation between the results of the initial test and further learning. Quarter of students who received best results spent less time (5368 vs 8777 seconds, p=.04) and displayed fewer pictures (552 vs 720, p<.03) than quarter of students who received lowest results, but their correct answers ratio was significantly higher (74% vs 56%, p<.001).

Conclusion The application was highly popular among students and can be a valuable complement for traditional teaching methods. The real-time feedback about students progress could have impact on their learning patterns, which could lead to better optimization of studying.

Improvement of etiological diagnostics of cerebral toxoplasmosis in hiv-infected persons

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Introduction Cerebral toxoplasmosis is a main cause of mortality in HIV-infected individuals. Since the neurological manifestations of different etiologies are nonspecific, accurate and rapid etiological diagnosis is crucial for conducting etiotropic therapy.

Aim	To study the diagnostic capabilities of VectoToxo-IgG-avidity (enzyme immunoassay kit for the determination of avidity index of IgG against <i>Toxoplasma gondii</i> in the blood serum) using the CSF as a test specimen.
Methods	Thirty patients (16 men and 14 women) with neuroinfections of stage 4 HIV-infection were examined. Thirteen of them (5 men and 8 women) aged 25-49 years with MRI changes typical for cerebral toxoplasmosis were selected. Each patient underwent general clinical examination, diagnostic lumbar puncture, CSF bacterioscopy for the presence of <i>M.tuberculosis</i> and <i>Cryptococcus neoformans</i> , blood serum ELISA for antibodies to HSV, VZV, EBV, CMV, and CSF-PCR for DNA of these pathogens and <i>T.gondii</i> . Simultaneous accounting of the analysis results of blood serum and CSF, taken simultaneously, allowed comparing concentrations of IgG, both in the blood, and intrathecal.
Results	Specific IgG to <i>T.gondii</i> in serum was detected in 12 patients (92%), one was seronegative. In all patients with a positive result, specific G-class immunoglobulins persisted in sufficiently high concentrations with avidity greater than 50%. However, in the analysis of CSF only 7 patients were identified with IgG to <i>T. gondii</i> . They also had a positive result in blood serum, which indicates the impossibility of an isolated process in the central nervous system. In 6 patients, IgG to <i>T. gondii</i> was detected only in serum. Based on the results of the extended examination, they were not diagnosed with cerebral toxoplasmosis.
Conclusion	Our studies of samples of CSF and blood serum in HIV-infected individuals with neuroinfection showed that the diagnostic capabilities of the immunoassay test system allow detection of IgG to <i>T. gondii</i> not only in blood serum but also in the CSF.

How do we learn - an overview

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Introduction	The capability to learn is important for every individual, as it is the prerequisite for adaption to life. In medical databases many articles and abstract focus on the biological structures and requirements of learning.
Aim	Certain groups, like students, provide information on that topic, as they need to learn copious amounts of material in little time. Studies on that topic are based on difference in academic performance linked to differing learning strategies.
Methods	I used the databank „Pubmed“ (keywords regarding learning functioned as filter). In addition the „method of loci“ was reviewed.
Results	Around 75% of students prefer one learning method (33% visual, 26% auditory, 14% kinesthetic). Students stayed persistent with their choice when facing difficulties. Only 25% used combination of techniques, though research demonstrated that cognitively engaging with the material in multitude of ways results in better understanding and retention. Predominant learning approaches are demographic independent. Characteristic for high performing students: mixed learning styles, good time management, balancing physical activity, motivation, support, deep learning approach, e-learning and regular ward visits. Female students were more interested in learning in groups, males preferred learning from the book alone.
Conclusion	It was found that most medical students preferred one learning method, independent from gender, age and education. It might be more efficient to learn

new methods, such as „method of loci“, whose good performance is neurological reasoned (hippocampus). Combining learning styles is key - and to stay motivated.

A Review: The Metabolic and Endocrinological Effects of High Fructose Corn Syrup

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Introduction High-fructose corn syrup (HFCS) is also called like glucose-fructose, iso-glucose and glucose-fructose syrup. It is a sweetener made from corn starch that has been processed by glucose isomerase to convert some of its glucose into fructose. High-fructose corn syrup was marketed in the early 1970s for the first time. High-fructose corn syrup is composed of 76% carbohydrates and 24% water, containing no fat, no protein, and no essential nutrients in significant amounts.

Aim This study is aimed at to understand the relation between high-fructose corn syrup consumption and metabolic disorders.

Methods A detailed article research was done on PubMed on high-fructose corn syrup (HFCS). Especially, last five years' studies were taken into account. However Food and Drug Administration has declared high-fructose corn syrup as a safe ingredient, recent studies declare that there may be a relation between consumption of HFCS and metabolic syndrome.

Results It was found that over consuming sweetened beverages that contain HFCS could be related to the obesity epidemic. High-fructose corn syrup contains added chemicals and toxins that are damaging to the human-body, such as chest pain, nausea, fatigue etc. The digestion, absorption, and metabolism of fructose differ from those of glucose. Hepatic metabolism of fructose favors de novo lipogenesis. HFCS is absorbed more rapidly than regular sugar and that it doesn't stimulate insulin or leptin production.

Conclusion High-fructose corn syrup (HFCS) is a sweetener derived from cornstarch. The enzymes, alpha-amylase and gluco-amylase, used in HFCS processing have been genetically modified to improve their heat stability for the production of HFCS. Researchers also found that fructose and glucose metabolism are very different. Studies show that HFCS may be related with cancer, fatty liver, dyslipidemia, diabetes, high blood pressure, cardiovascular diseases, increased mercury intake etc. Nonetheless, more studies should be done in order to understand well the all effects of HFCS on the human body.

Rights and Responsibilities of Tuberculosis Patients, and the Global Fund

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The Islamia University of Bahawalpur, Pakistan | Area **Patient centered approach in tuberculosis treatment**

Introduction WHO Stop TB Strategy supports patient-centered approach to access high-quality TB treatment on equality basis. Globally, Tuberculosis patients have developed The Patients' Charter for Tuberculosis Care (the Charter) which hold them equally responsible for their treatment as healthcare providers.

Aim	Implementation of the Charter is an important criterion to achieve patient-centered approach and receive financial support from the Global Fund. Our study aims to explore the knowledge of tuberculosis (TB) patients about their rights and responsibilities at the Chest Disease Unit of the Bahawal Victoria Hospital, Bahawalpur, Pakistan.
Methods	This was a qualitative study. The data from purposefully selected TB patients was collected by in-depth interviews. Eligibility criteria included confirmed diagnosis of TB and enrollment in the TB program. A pilot tested interview protocol was based upon the objectives of the study, and was used uniformly in each interview to maintain the consistency. The sample size was limited by applying the saturation criteria. All interviews were audio taped and transcribed verbatim. Inductive thematic content analysis was applied to analyze the data and draw conclusions.
Results	Out of the total 16 patients, four were female, and seven were illiterate. Eight patients were known cases of multi-drug resistant TB. Analysis of the data yielded seven themes; tuberculosis care services, moral support and stigmatization, dignity and privacy, complaints, fear of losing job, information sharing and compliance to the treatment plan, and contribution to eradicate TB. First five represented the rights section while latter two were related to the responsibilities section of the Charter.
Conclusion	Discriminatory access to TB care services and the right to privacy were two major concerns identified. However, the respondents recognized their responsibilities as a TB patient. To ensure uninterrupted investment from the Global Fund, there is a need to implement fair TB care policies which support human rights-based approach.

Passive Smoking in India and Ukraine-A comparison.

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Introduction	Passive smoking is a serious health concern, known to be a cause of deadly diseases such as bronchiolitis, Pneumonia, Lung cancer, asthma, immunodeficiency and in children it is known to cause low body weight and sudden infant death syndrome.
Aim	To investigate and identify the major cause of respiratory diseases among the age group of ten and forty years in India and Ukraine.
Methods	We surveyed 284 patients who visited the Doctor for diseases associated with the respiratory system, in India and Ukraine between August 2017 & January 2018 we provided questionnaire which had twelve multiple choice questions.
Results	Totally 284 people were surveyed in both the countries, there were about fifty percent agreed being a smoker, 68% and 88% in India asserted that they have a friend or colleague who smokes, 28% percent of the surveyed belonged to 10-18 age group, of which 78% noted their parents who smoke as well. Most of the patients surveyed had been infected with diseases such as asthma, Chronic Bronchitis, Lung Cancer, Tuberculosis, Pneumonia & others.
Conclusion	It was understood that not just active smoking but passive smoking also was a major cause of respiratory system related illness. Both Ukraine and India were equally affected by Passive smoking, as evident in the survey.

Adolescent friendships and unhealthy eating behaviors of obese adolescents

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- Introduction** Childhood obesity has reached epidemic proportions and become one of the most important public health issues globally. One of the significant determinants of childhood obesity-related behaviors such as poor dietary habits relates to the role of friends and peers.
- Aim** The aim of this study was to explore the role of interaction within the social network of friends on unhealthy eating behaviors of overweight and obese adolescents.
- Methods** This qualitative study was conducted in 2016–2017 in Mashhad and Isfahan, two big cities of Iran. Ten parents and 52 overweight and obese adolescents were selected through purposeful sampling. To obtain perceptions and experiences regarding the role of adolescent friendships on unhealthy eating behaviors, in-depth semi-structured interviews and focus group discussions were conducted. Data were analyzed based on phenomenological and descriptive design.
- Results** Six themes which contributed to following unhealthy dietary habits when adolescents are in the friend networks were identified: "Eating in the peer networks as a usual way for social interaction", "Friend and peer pressure", "High availability and accessibility to unhealthy foods", "Lack of nutritional knowledge", "Neglectful parenting style" and "Passive interaction in the friendship networks".
- Conclusion** Our findings indicate that peer pressure and support along with inappropriate parenting style are necessary to affect adolescent eating behaviors when they are in the social networks of friends but not sufficient. Being a confident, self-determined and decisive adolescent might reduce the impact of friends to follow unhealthy-dietary-habits in youth.

Cellular prion in the kidneys of different age rats

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- Introduction** Prion diseases are neurodegenerations. The cellular prion (PrPC) is a membrane protein. It is a substrate for the formation of pathological prion. The study of the physiological role of PrPC in cellular processes is important for understanding the pathogenesis mechanism.
- Aim** Aim of the study was to determine the localization and level of PrPC in kidney tissue of different age rats.
- Methods** Research was carried out using the males of laboratory rats. The animals aged one, six and thirty months were decapitated, and the kidney tissue was selected. The immunohistochemical analysis, dot blot and western blot analysis were carried out.
- Results** The PrPC was found in the convoluted and straight nephrons tubules and in vascular glomeruli. PrPC total level decreased by 44 % in the six months animals and decreased by 14 % in the thirty months animals' tissue. Di-, mono- and nonglycosylated forms levels were 23.84, 20.22 and 17.14 standard units, respectively, in the one month rats' kidneys. Increasing of its level by ~ 40% was

determined in the six months rats. But in old animals the PrPC expression decreased by about twice. The degree of glycosylation affects the ability of the PrPC to be transformed into a pathogenic form.

Conclusion The PrPC was localized in the convoluted and straight nephrons tubules and in vascular glomeruli of different age animals. The PrPC molecular glycoforms level increased in the six months animals and it decreased in the thirty months animals.

Prediabetes and type 2 diabetes risk factors prevalence

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Introduction Diabetes mellitus is one of the most common metabolic diseases characterized by chronic hyperglycemia, and other metabolic disorders, due to the lack of insulin. These disorders, particularly in the initial stages of the disease, are often undiagnosed and untreated.

Aim To determine the frequency of undiagnosed pre-diabetes and undiagnosed type 2 diabetes in adults, using a simple screening test.

Methods The study was conducted as a descriptive cross-sectional study, in November 2016 in Novi Sad, among the visitors of the public manifestation "World Diabetes Day" and the Institute of Public Health of Vojvodina. The research included 147 people of both sexes. The survey instrument was a 7 questions questionnaire, with a score ≥ 5 indicating the risk of developing type 2 diabetes.

Results Of the total number of people (147 participants), 100 participants (68.0%) had a score of ≥ 5 pointing to the existence of the risk of developing type 2 diabetes, while 47 participants (31.9%) had a score < 5 . It was found that males had a statistically significant higher risk ($\chi^2=13.693$; $p=0.000$) for developing diabetes, compared to females. Participants with a family history of type 2 diabetes had a significantly higher risk ($\chi^2=15.442$; $p=0.000$) and had a total score of ≥ 5 , compared to their counterparts without diabetes in families. All participants ($N=25$; 100.0%) with high blood pressure had a test score ≥ 5 .

Conclusion Patients included make an ideal target group for prevention programs due to their high prevalence of risk factors for type 2 diabetes.

The Importance of Non-Melanoma Skin Cancers as a Major Public Health problem: The rapid rise in incidence, despite the fact of advantageous and attainable preventative measures.

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Introduction Non-melanoma skin cancers (NMSCs) are a broad category referring to all types of skin cancers that are not melanoma, with two of the most common types being basal cell carcinoma (BCC) accounting for about 80% of cases, and squamous cell carcinoma (SCC) accounting for about 20%. It is a group of cancers that can grow into and destroy nearby tissue. It can also metastasize to other parts of the body, but this is rare for most NMSCs. NMSCs are the most common malignancy among the Caucasian population. According to the World Health Organization (WHO) the

incidence of NMSCs has been increasing over the past decades with the worldwide incidence estimated to rise by 3-10%. Currently, between 2 and 3 million NMSCs occur globally each year meaning, one in every three cancers diagnosed is a skin cancer and, according to Skin Cancer Foundation Statistics, one in every five Americans will develop skin cancer in their lifetime. Rising incidence rates are probably caused by a combination of increased exposure to ultraviolet (UV) radiation or sunlight, increased outdoor activities, increased longevity, changes in clothing style, ozone depletion, genetics, and overall decreased awareness and importance of NMSCs.

- Aim** The aim of this abstract is to stress the importance of the benefits of skin cancer preventative measures and awareness, taking into consideration the growing epidemic of NMSCs.
- Methods** Our research was based on exploration of data obtained from official public medical records, journals, and systematic review of literature concerning public health and NMSCs. We also reviewed the aggregated identified data of the National Cancer Institute and PDQ® (Physician data query).
- Results** The research of statistical materials about NMSCs and the proven studies of the benefits of preventative measures shows a decrease in the incidence of NMSCs. One very important factor that must be added to the list of reasons for increased incidence and for the growing epidemic of NMSCs must be due to a lack of prevention education and awareness.
- Conclusion** Increasing skin cancer awareness and education concerning preventative measures can help decrease the worldwide incidence of NMSCs and give importance to the growing epidemic of them.

Natural product hits isolation from peperomia species

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University of Buea, Cameroon | Area **Biochemistry**

- Introduction** Natural product hits isolation from peperomia species
- Aim** This study investigated the antiplasmodial activity of crude extracts, fractions and pure isolates of *P. vulcanica* and *P. fernandopoioana* (Piperaceae). Toxicity and interaction between the most active natural products were also assessed.
- Methods** Bioassay-guided approach was used to identify and further investigate the most active components against chloroquine-sensitive and resistant *P. falciparum* strains. Test substances were prepared from the two plants and screened on four strains of *P. falciparum* (chloroquine-sensitive 3D7, multidrug resistant W2mef and Dd2, and a field isolate (SHF4)).
- Results** The crude extracts showed moderate activity (IC₅₀ from 7.05 – 22.59 µg/mL). Eight of 16 compounds isolated from the hexane and methylene chloride extracts of *P. vulcanica* showed high activity (IC₅₀ from 0.89 - 3.23 µg/mL against W2mef). Four of the most active compounds tested in two different combinations showed synergism and two of them showed no signs of acute toxicity. Four fully characterized isolates: 5-Demethyltangeretin (1), Stigmasterol (2), Matairesinol dimethyl ether (3) and Peperovulcanone A (4) showed high to moderate activity (IC₅₀s ranging from 1.14 – 22.29 µg/mL).
- Conclusion** These findings support the use of *P. vulcanica* in traditional medicine for the treatment of malaria and the plant material should be further evaluated towards development into a phytomedicine. Further exploration of the hits in combination with standard antimalarials may yield new efficacious antimalarial treatments.

Morphology of lung aging

Besedina Anna

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- Introduction** Reduction of physical activity in older people contributes to the progression of involutional lung rearrangement, which further reduces the effectiveness of external respiration. This shows the need for a deep study of age-related changes in the structural organization of lungs.
- Aim** The aim of present work was to study morphological changes of lungs in persons of older age.
- Methods** The autopsy material of 4 persons of age 78-83 years who did not suffer from the disease of the respiratory system and whose death had no signs of congestive heart failure. The material was taken from the basal areas of the III-V segments of right lung.
- Results** Aging of the respiratory system at the level of parenchyma of the lungs is manifested by degenerative changes in the connective tissue. The obtained results testify to the significant morphological changes of the lung tissue in persons of the senile age. Especially expressed structural abnormalities at the level of the alveoli, in particular, the thinning and ruptures of interalveolar fibres, the accumulation of dusty inclusions in the main substance of interalveolar partitions and in macrophages, the increase in the number of fibroblasts and collagen fibers in the interalveolar connective tissue.
- Conclusion** Morphological changes in the vessel walls are characterized by soaking of its eosinophilic plasma proteins, destruction and loosening of the structural elements of the vessel wall, presence of dusty inclusions in the cytoplasm of macrophages located around the vessels, the increase in the number of fibroblasts in perivascular connective tissue.

MICA associations with oral squamous cell carcinoma

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- Introduction** MICA gene encodes membrane bound protein for the NKG2D receptor expressed on the cell surface of NK, $\gamma\delta$ T and CD8+ $\alpha\beta$ T cells. MICA/NKG2D interaction enables the host immune system to attack virus infected and tumor cells.
- Aim** The aim of our study was to analyze the associations of MICA polymorphism with the risk of development of oral squamous cell carcinoma (OSCC).
- Methods** 27 patients with histologically proven OSCC and fifteen healthy controls were enrolled retrospectively (Table 1). All patients were diagnosed in Medical University, University Hospital Alexandrovska, Medical University, Faculty of Dental Medicine, University Hospital Alexandrovska, University Hospital SofiaMed - Sofia, Bulgaria. Genomic DNA was extracted from blood samples using automated system iPrep. MICA genotyping was performed by PCR-SSO kit (LABType SSO MICA, OneLambda) and PCR-SBT. Results were analysed by HLA Fusion software.

Allele frequencies were analysed by the program Arlequin. Cross group comparisons were done by Chi-Square and Fisher's exact test.

Results Our results showed statistically significant protective association for MICA*12:01 allele ($P < 0.05$, OR=0.07), encoding a full length protein. Interestingly this allele had a higher frequency in the healthy Bulgarian population compared to other European populations. With the highest frequency in patients with OSCC was observed MICA*008 allele, encoding truncated protein. However the difference with the control group was with a borderline significance ($P = 0.053$).

Conclusion The associations observed from the preliminary data in the Bulgarian population support the model that alleles encoding truncated, ectopic and soluble MICA molecules play an important role in OSCC by down regulation of NKG2D on NK and CD8+ T cells leading to aberrant immunological surveillance.

Ca²⁺, Mg²⁺-ATPase Activity in spermatozoa of infertile men

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Introduction Infertility is a widespread complex problem affecting approximately 15-20 % of couples. Ion-exchanging ATPases play an essential role in biology of spermatozoa, including their motility, hyperactivation, chemotaxis, acrosome reaction etc.

Aim The aim of present study was to analyze the Ca²⁺, Mg²⁺-ATPase activities in spermatozoa of infertile men with different forms of pathospermia and to explore a possible role they may play in male infertility.

Methods This study involved 20 infertile men with different forms of pathospermia. The activity of Ca²⁺, Mg²⁺-ATPase was determined on the saponin-permeabilized spermatozoa spectrophotometrically by production of inorganic phosphate.

Results The results show that asthenozoo -, oligoasthenozoo- and leucocytospermic patients have significantly impaired thapsigargin-sensitive and thapsigargin-insensitive Ca²⁺, Mg²⁺-ATPase activity compared to healthy men. However, Ca²⁺, Mg²⁺-ATPase activity has a tendency to increase in patients with oligozoospermia. The depressed ATPase activity in infertile men could thus be due to reduction in intracellular adenosine triphosphate level and damage of the sperm membranes caused by lipid peroxidation products. The most significant decrease in Ca²⁺, Mg²⁺-ATPase activity were observed in patients with leucocytospermia which could be explained by excessive formation of reactive oxygen species by leucocytes.

Conclusion It is suggested that a decrease in the Ion-exchanging ATPase activity may damage sperm function and may be one of the possible cause of male infertility.

Pro-oxidant/antioxidant system in spermatozoa of infertile men

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Introduction Hyperproduction of reactive oxygen species and disturbances of prooxidant/antioxidant balance can damage sperm cells and is considered as possible mechanisms of male infertility.

- Aim** The aim of present paper was to study the prooxidant/antioxidant balance in sperm cells of infertile men with different forms of pathospermia
- Methods** Semen samples from 20 fertile men (normozoospermics) and 72 infertile patients (12 oligozoospermics, 17 asthenozoospermics, 10 oligoasthenozoospermics and 33 leucocytospermic) were used. This study involved 72 infertile men with different forms of pathospermia. The marker of lipid peroxidation - TBARS was evaluated by measuring substances reacting with thiobarbituric acid. The oxidized (GSSG) and reduced (GSH) glutathione levels and activity of enzymes of its metabolism were measured spectrophotometrically.
- Results** In this study, we found the levels of intracellular TBARS in spermatozoa to be elevated and activity of glutathione antioxidant protection system (GPx, GR, GsT) and GSH content to be decreased in infertile individuals with different forms of pathospermia compared with the healthy man with normozoospermia. The index of antioxidant status was calculated by dividing the sum of the activities of antioxidant enzymes (GPx, GR, GsT) and GSH content to the sum of the TBARS and GSSG level. The extent of decrease of indexes of antioxidant status of spermatozoa of infertile men revealed a disorder-associated trend: oligozoospermia > oligoasthenozoospermia ≈ asthenozoospermia >> leucocytospermia.
- Conclusion** Unidirectional change in the index of antioxidant status in different forms of pathospermia allows to use it as biotest for intensity free radicals processes and resistance to free radicals in spermatozoa

The study of morphological characteristics of typical cervical vertebrae

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University of Nis, Serbia | Area **Anatomy**

- Introduction** The literature describes variations in the body and opening of the typical cervical vertebrae, as well as their clinical significance, and the data on them is reduced to individual case reports or population morphological research.
- Aim** The aim of this paper was to contribute to the knowledge of the variations in the body and opening of typical cervical vertebrae, and to consider their possible clinical significance.
- Methods** The study was conducted on 60 vertebrae of human origin at the Institute of Anatomy of the Faculty of Medicine in NiÅ, which were the part of the Institute's collection. The vertebrae belong to the cervical region of the spinal column, and only typical vertebrae were examined. All vertebrae were numbered and photographed next to a ruler. Vertebrae that were damaged or those with bone deformities were excluded from the research.
- Results** The anteroposterior diameter of the vertebral opening was found to be 14.69 ± 2.12 mm, and the mediolateral diameter of the vertebral opening was 25.39 ± 2.52 mm. The anteroposterior diameter of the cervical vertebrae body was 17.56 ± 3.29 mm, and the mediolateral body diameter of the cervical vertebrae was 26.78 ± 4.38 mm. The coefficient of variation revealed a higher variability in the anteroposterior diameter compared to the mediolateral diameter of the body and openings of the typical cervical vertebrae. The coefficient of correlation was also calculated which indicates that the vertebral opening had interdependent measured parameters which can be described with a strong positive correlation.
- Conclusion** The research has proven a relatively high variability of the anteroposterior and mediolateral diameters of the body and openings of typical cervical vertebrae. The

correlation coefficient indicates a high degree of alignment of the growth of the vertebral opening in both measured directions.

Analysis of coronary artery variations

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University of Nis, Serbia | Area **Anatomy**

Introduction Detailed knowledge of the morphology of the coronary arteries, as well as their anatomical variations, is very important for everyday clinical practice for the correct interpretation of coronary angiography and numerous coronary arteries procedures.

Aim The aim of this study was to determine the dominance of coronary arteries and their most common variations.

Methods The study represents a retrospective analysis of patients who underwent computed tomography (CT) scan of coronary arteries. The study involved 200 patients, of which 126 male (63.0%) and 74 female (37.0%) of the average age of 58.34 ± 12.16 years (29-75). The presence of anatomical variation of the coronary arteries and the type of domination of the coronary arteries were determined on these blood vessels.

Results Right coronary artery domination was found in 132 patients (66.0%), left coronary artery dominance in 23 patients (11.5%), while codominance of coronary arteries was recorded in 45 patients (22.5%). Anatomical variations of the coronary arteries that were found were myocardial bridge (1.0%), separated left descending artery and left circumflex artery (0.5%), single coronary artery (0.5%), and right coronary artery with left ventricular coronary sinus (0.5%).

Conclusion The right coronary artery domination was the most common type of coronary artery dominance. Our research identified the most common variations of coronary arteries in our population. The most common anatomical variation of coronary arteries was the myocardium bridging.

Flashbulb memories for personal events in children - criteria and review

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Introduction Flashbulb memories are highly detailed autobiographical memories of an emotional event. At the time of writing, there are few studies evaluating the association between vivid memories and personal events and even less that are focused on children.

Aim While Lanciano et al (1) defines what constitutes flashbulb memories in adults in relation to negative personal events, the aim of our study is to apply these criteria to positive personal events of children and see if they are still relevant. Thus, the questions have been adapted for children.

Methods At the time of writing, the author had asked 100 children aged 7-10 years to fill in a questionnaire regarding an important personal event - i.e. the first school day. 6 children were excluded as they did not answer all of the questions. The questionnaire comprises 4 sections gaging certain elements of what constitutes a

flashbulb memory: specificity, confidence, personal importance and emotional reaction. While most other studies examine flashbulb memories in the context of public events such as the Paris attack (2), our study comprises positive events with personal involvement and importance.

Results With regard to the first section (specificity), 84 of the respondents could give accurate narration of the first school day, while less than 5 could elicit what they had had for breakfast 3 days ago (an event with no personal importance). Respectively, all 96 of the respondents had high level of confidence in their answers (second section). In relation to personal importance, 95 of the respondents define the event as having big importance for them and their family. Finally, 91 of the questioned described the event as a positive one, 3 as negative and 2 could not define it exactly.

Conclusion In light of the results, a conclusion could be drawn that the first school day is indeed a flashbulb memory for the respondents. Furthermore, this study proves that the criteria are applicable to children and with regard to positive events, whereas most other studies are related to negative ones.

Blood lactate level in football players during the training season

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Introduction Physical training should aim to achieve optimal stamina avoid over-training. One way to investigate anaerobic capacity of sportsmen is lactate measurement in blood samples. However, there are different measurement methods, using full venous or capillary blood, plasma and serum samples.

Aim Our aim was to examine the change in the lactate concentration in football players' blood, from January to June 2017, and to compare the methods using full venous blood or plasma samples.

Methods The experimental group included 22 players from FC "Radnicki", Nis, Serbia, age 16-18, who have been active football players for 4-6 years. Control group included 12 same age high school students, who play football recreatively. To assess the anaerobe capability, we used the Wingate ergometric test. Blood samples were taken before and 3-5 minutes after the test. Lactate concentration was determined in full blood and plasma samples using standard methods, on the Olympus AU400 analyzer. Subjects were tested during January, March and June 2017.

Results Physical strain caused lactate level increase in full blood and plasma ($p < 0.05$) during research. Active players had significantly lower lactate plasma levels after exercise in June than January ($p < 0.05$), but there was no such difference in controls. Neither active players, nor controls showed difference in lactate levels before exercise. Plasma lactate level of active players after strain in June was lower than in controls ($p < 0.01$), while there was no such difference in January. Lactate concentration was higher in full blood ($p < 0.05$) than plasma. Full blood samples were technically more difficult to analyse, whereas plasma samples gave no such problems.

Conclusion Lactate plasma level provides valuable information about functional capability of a football player. Determination of lactate level can be the base in planning and controlling phases of physical training during the season.

In silico screening of biological activity of thiopyran-S,S-dioxide derivatives

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- Introduction** The cyclic sulfone motif is present in a large number of bioactive molecules. This class of compounds has demonstrated a diverse range of biological activities. Antiglaucoma agent Dorzolamide and diuretic Metikran even became marked drugs.
- Aim** Creation of a new thiopyran-S,S-dioxide derivatives and an assessment of their biological activity spectrum.
- Methods** Organic synthesis, nuclear magnetic resonance (NMR) spectroscopy, in silico (PASS, GUSAR) studies.
- Results** We synthesized a small library (25 members) of new thiopyran-S,S-dioxides and performed in silico screening of biological activity spectrum and acute toxicity (LD50, rats, intravenous). Pharmacological potential of thiopyrano[3,2-b]pyrans is significantly higher than that of their spiroanalogs and dicyanoanilines. PASS-predicted results for thiopyrano[3,2-b]pyrans (53.2-189.4 mg/kg) showed high probability levels of anti-inflammatory (0.611-0.768), antiarthritic (0.622-0.724), antiasthmatic (0.661-0.827) and antiallergic (0.611-0.798) activity. Toxicity of dicyanoanilines lies in range 50.4-319.7 mg/kg and they do not have any of the above mentioned kinds of biological activity. These compounds possess membrane permeability inhibitory action with Pa 0.602-0.612.
- Conclusion** New compounds were fully characterized using IR and 2D NMR spectroscopy. In silico studies showed high probability levels (61.1-82.7%) of anti-inflammatory, antiarthritic, antiasthmatic and antiallergic activity for tetrahydrothiopyrano[3,2-b]pyrans. The biological studies for the libraries of synthesized compounds are currently underway.

Experimental treatment of autistic rats: effects on learning and memory

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- Introduction** Our previous studies showed favorable effects of risperidone and probiotic on cognitive parameters in shuttle-box test (1). Recently, thiazolidinediones demonstrated enhanced metabolic activity and anti-inflammatory effects in the brain. Pioglitazone decreased the irritability, stereotypy and hyperactivity of autistic children (2).
- Aim** The aim of the present experiment was to study the effects of pioglitazone alone or in combination with risperidone or probiotic on cognitive parameters of rats in experimental model of autism.
- Methods** The male offspring of pregnant Wistar rats treated or not with valproic acid were separated from the mothers on the 23rd postnatal day and divided into 6 groups: 1. Control (physiological solution, p.o.); 2. Autistic (physiological solution, p.o.); 3. Autistic+pioglitazone (2 mg/kg, p.o.); 4. Autistic+pioglitazone+probiotic (2 mg/kg, p.o. + 1%, 1ml/100 g, p.o.); 5. Autistic+risperidone+probiotic (1 mg/kg, p.o. + 1%, 1ml/100 g, p.o.); 6. Autistic+risperidone+pioglitazone (1 mg/kg, p.o. + 2 mg/kg, p.o.). The substances were administered for 21 days and shuttle box active avoidance test was performed in 5 consecutive days at the end of the period.

Results The results of the present study demonstrated considerable differences in the latency time for reaction to both unconditioned and conditioned stimuli in the shuttle-box. The cognitive parameters of the autistic rats did not improve in the learning sessions. Pioglitazone alone and in combination with risperidone or probiotic enhanced the learning and memory abilities of the experimental rats.

Conclusion The administration of pioglitazone did not cause statistically significant improvement of the parameters of autistic rats in shuttle box. However, pioglitazone demonstrated favorable effects on learning and memory parameters of the control rats. Our data suggest beneficial effects of pioglitazone in mechanisms of regulation of cognition and behavior.

Metabolic parameters after combined treatment in experimental model of autism

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Introduction Risperidone is used to reduce behavioral problems in children with autism, but it might cause metabolic alterations. Probiotics and thiazolidinediones have been shown to exert neuroprotective effects (1, 2). Pioglitazone is currently being tested in clinical trials of neurological diseases.

Aim The aim of the current study was to investigate the effects of pioglitazone, risperidone and probiotic on weight gain and glucose levels of rats in experimental model of autistic disorder.

Methods Male Wistar rats were divided into 6 groups: 1. Control (physiological solution, p.o.); 2. Autistic (physiological solution, p.o.); 3. Autistic+pioglitazone (2mg/kg, p.o.); 4. Autistic+pioglitazone+probiotic (2 mg/kg, p.o. + 1%, 1ml/100 g, p.o.); 5. Autistic+risperidone+probiotic (1mg/kg, p.o. + 1%, 1ml/100 g, p.o.); 6. Autistic+risperidone+pioglitazone (1 mg/kg, p.o. + 2 mg/kg, p.o.). Weight gain and glucose levels were evaluated at the end of 21-day treatment period.

Results At the beginning of the treatment autistic rats had lower body weight compared to the control rats. At the end of the experiment there were no significant differences in the weight gain of the experimental groups. However, treatment with risperidone and probiotic has resulted in slightly increased body weight in the experimental rats. Glucose levels were normal, although they were slightly increased in the different autistic test groups compared to the controls.

Conclusion These findings suggest that pioglitazone, risperidone and probiotics may be considered for further testing of therapeutic potential in autistic patients.

Lupus nephritis patients are positive for autoantibodies against components of the complement complex C1

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- Introduction** Lupus nephritis (LN) is a severe complication of the Systemic lupus erythematosus (SLE). Autoantibodies against the complement component C1q (anti-C1q), are among the main biomarkers for LN activity and are known to contribute to renal injury. C1q forms a functional C1 complex with C1r and C1s but the frequency and functional relevance of anti-C1r and anti-C1s autoantibodies remain poorly studied.
- Aim** The aim of the present study is to screen for autoantibodies against the C1 complex components, to evaluate their functional consequences and association with the activity and severity of LN.
- Methods** Plasma from 74 SLE patients with LN and with available clinical data and 72 healthy volunteers was investigated for the presence of anti-C1q, anti-C1r and anti-C1s by ELISA. Anti-dsDNA antibodies were detected by ELISA and the anti-nuclear antigen antibodies (ANA) – by indirect immunofluorescence. Levels of C3 and C4 in plasma were measured by nephelometry. IgG was purified by Protein G from positive plasma and its binding to C1q, C1r and C1s was studied by surface plasmon resonance (SPR). The influence of anti-C1q, anti-C1r and anti-C1s positive IgG on C1 complex formation was analyzed by ELISA.
- Results** The screening of LN plasmas revealed that 18.9% of the patients had anti-C1q autoantibodies but only 9.5% and 8.1% were positive by ELISA for anti-C1r and anti-C1s, respectively. Titres were low and binding was minimal by SPR. Significant correlations were found between anti-C1s and anti-C1r, anti-C1q, anti-dsDNA, ANA, and C3 complement component.
- Conclusion** Anti-C1r and anti-C1s did not modify the C1 complex formation and did not correlate with complement consumption. In contrast, patient IgG bound strongly to C1q by SPR, and the presence of anti-C1q correlated with disease severity, anti-DNA and C3 and C4 consumption. The presence of anti-C1r and anti-C1s does not seem to contribute to the autoimmune pathology, contrary to anti-C1q which show strong correlation with the disease.

Role of endocannabinoid and serotonergic systems in pain perception

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- Introduction** Pain perception is a complex sensation modulated at spinal and supraspinal levels. The endogenous pain modulating system (including multiple mechanisms for pain inhibition and facilitation) represents the most important aspect of individual pain perception.
- Aim** Brain areas involved in pain modulation integrate primary and secondary somatosensory fields including a number of neurotransmitters - opioids, cannabinoids, nitric oxide, catecholamines, serotonin. The purpose of this study was evaluation of endogenous cannabinoid and serotonergic systems involvement in the mediation of pain perception.

- Methods** Experiments (previously approved by BFS) were conducted on male Wistar rats. Anandamide (AEA - CB1-receptors agonist), AM251 (CB1-receptors antagonist), (R)-(+)-8-hydroxy-DPAT hydrobromide (DPAT - 5HT1A-receptors agonist), and NAN-190 hydrobromide (NAN-190 - 5HT1A-receptors antagonist) were applied in different trials. Animals were first injected with each agonist alone. In a different trial both agonists were applied together. The antagonists were additionally applied in order to elucidate the participation of each agonist in the effects. Pain perception was evaluated by Paw pressure test.
- Results** Applied alone AEA produced an analgesic effect on the 10th and the 20th min of the experiment. DPAT instead decreased pain thresholds compared to the controls. After injection of both agonists (AEA and DPAT) an analgesic effect was detected from the 20th min of the experiment on. Each of the antagonists was additionally applied before both the agonists. AM251 as well as NAN-190 abolished the analgesic effect of AEA and DPAT.
- Conclusion** AEA alone produced an early short lasting analgesia. Along with DPAT the analgesic effect arose later but lasted longer. Each of the antagonists applied alone before the agonists abolished such effect. The two systems are involved in pain perception and each one of them modulates the effects on the other.

Effects of mesembrine alkaloids on depressive-like behavior in rats

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- Introduction** Diabetes mellitus (DM) is one of the most widespread metabolic diseases that have increasing prevalence worldwide. Our previous and literature data suggest that DM is often accompanied by the development of complications such as elevated anxiety and depressive-like behavior.
- Aim** Recently published data established that mesembrine alkaloids have activity that participate in the antidepressant mechanism of many antidepressants. Based on this we aimed to study the effects of extracted fraction of MZM from *Narcissus cv. Hawera* on the anxiety and depressive-like behavior in healthy rats and rats with T1DM.
- Methods** Wistar female rats, 12 weeks old at the onset of study were used. The animals were divided in four groups: 1 Control treated with saline; 2 Control treated with MZM at a daily dose of 20 mg/kg, 20 days; 3 DM and 4 DM treated with MZM at a daily dose of 20 mg/kg, 20 days. DM type 1 was induced by a single injection of streptozotocin (65 mg/kg). The criterion for developed DM was increased plasma glucose level above 16 mol/l, 48 hours after the STZ injection (AccuChek strips). The anxiety behavior was evaluated by "Elevated plus maze" test and depressive-like behavior was estimated by "Forced swimming" test.
- Results** The data from this study showed that DM causes a significant decrease in overall motor activity, increased depressive-like behavior without altering the anxiety behavior. Chronic MZM treatment did not alter overall motor activity but significantly suppresses depressive-like behavior and showed a tendency to reduce anxiety behavior in healthy rats. MZM treatment did not influence significantly the behavioral parameters of rats with type 1 diabetes.
- Conclusion** We can conclude that the studied fraction with high content of MZM alkaloids has an antidepressant-like effect in healthy rats but has no significant influence on diabetes-induced depression and decreased exploratory behavior. Further research

is needed to clarify the possible use of the MZM alkaloids as potential anti-depressants.

Influence of WSS in cases of restenosis in carotid arteries

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Introduction Endothelial cells respond to shearing forces from flowing blood and mechanical stretch from arterial pulsation we can analyze the influence of new implanted Ti-stents. Specific causative link between biomechanical factors and arterial pathogenesis remains to be identified.

Aim Investigation of the role of arterial wall shear stress-WSS on activation of extracellular matrix and formation of connectivity tissue at restenosis. Working hypothesis is influence of the power of action of the stents over carotid arterial wall.

Methods Investigated population included 32 patients with carotid artery stenosis, 5 healthy volunteers, and 18 with restenosis within 6 years after stenting. All patients underwent ultrasound detection of brachial artery reactivity. Endothelial function can be measured in carotid arteries and in the periphery by measuring vasomotor function after intra-arterial infusion of pharmacologic substances which enhance the release of endothelial nitric oxide and with combination with Doppler ultrasound (Hitachi, Aloka-Alpha-6; Japan). Advantage of these methods is their non-invasive nature, which generally makes them suitable for studies involving asymptomatic subjects. For this reason, noninvasive tests of endothelial function have been developed.

Results We developed a system for measuring the wall shear stress (WSS) in blood vessels using Doppler ultrasonography and computational fluid dynamics (CFD). The time-dependent velocity at the center of the blood vessel was measured by phase-contrast algorithm based on Origin pro-software (Origin Lab Inc.) and was approximated by finite Fourier series, which was used for generating the velocity profile at the inlet for the boundary condition to the CFD method. When the radius of the cylinder was 1600 μm and/or the inlet velocity profile was assumed to be parabolic, large differences were observed between them.

Conclusion For pulsatile flow, there was a relatively good agreement between them when the radius of the cylinder was average diameter 1600 μm and the inlet velocity profile was given by the Womersley solution for fully developed pulsatile flow in a straight circular cylinder.

In vitro effects on contractile activity of small brain vessels.

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Medical University of Sofia, Bulgaria | Area **Neurobiology**

Introduction Flavonoids are a major group of secondary metabolites, widespread in the plant world. So far, antioxidant, neuroprotective activity and well-expressed hypotensive effect of flavonoids has been established.

Aim The substances Alcesefasolide and Maurithianine were isolated with butanol extraction from the aerial part of *Astragalus monspessulanus* subsp.

monspessulanus. We set to evaluate the influence of these substances on contractility of brain vessels.

- Methods** Arterial segments (a.basilaris) with length of 1.8 - 2 mm were mounted and tested on a dual wire myograph (model 410A, JP Trading, Denmark).
- Results** The examined substances lead to change the vascular tone which may be a result of directly affecting of smooth muscle layer and also an interaction with neurotransmitters and/or neuromediators released by endothelium.
- Conclusion** The flavonoid fraction has been shown to inhibit angiotensin II induced portal vein contraction and inhibition is similar to that of Valsartan. It has been shown that Calcicosine can produce an endothelial-independent vasodilatation. Formonone induces vasodilation in isolated rat aorta experiments.

Genetic factors predisposing to Systemic Lupus Erythematosus

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- Introduction** Systemic Lupus Erythematosus (SLE) is an autoimmune and autosomal - recessive disease. SLE affects mainly the connective tissue which leads to cutaneous and visceral problems. There are four types - systemic, discoid (cutaneous), drug - induced and neonatal.
- Aim** The aim of the study is to show the importance of polymorphisms in different genes to developing Systemic Lupus Erythematosus, as well as factors of the environment, stress, medications such as sulfonamides, beta - blockers, penicillins and many others.
- Methods** The conducted study is based on summarized data from published articles in the Great Medicine Encyclopedia, John Hopkins Lupus Center and Pubmed.
- Results** The most important component to developing Systemic Lupus Erythematosus is the genetic predisposition. To illustrate this, a research conducted by the Bangladesh Medical Research Council Bulletin in 2013 shows that the most common antigen among the studied cases is HLA - DR2. In addition, HLA - DR2/DR3 genotype is responsible for forming autoantibodies. Other genes of great importance are STAT4, C4a and PTPN22 . Their proteins are usually transcription factors or play role in the signal transduction. They are also connected with other autoimmune diseases such as Addison disease, Juvenile chronic arthritis, Vitiligo and many others.
- Conclusion** By its discovering in the 13th century, the number of people suffering from SLE has been increased to 5 million. This emphasizes that SLE is rapidly spreading to different populations. Since SLE has a strong genetic component, more gene studies need to be carried out to find a successful treatment.

Anticonvulsive and neuro-immunomodulatory effects of ketogenic diet in pilocarpine-induced seizures

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Introduction Ketogenic diet (KD) is an established treatment for refractory epilepsy. KD increases ketone body production and its concentration in the blood, providing the brain with an alternative energy supply. 25% of patients with drug-resistant epilepsy become seizure free.

Aim To assess the effect of two weeks administration of KD on seizure scores and brain levels of pro-inflammatory cytokines; namely TNF- α and IL-1 β . Hypothesis, KD exert its anticonvulsant efficacy by reducing the level of neuro-inflammation in the epileptic brain.

Methods Experimental model of neonatal epilepsy with pilocarpine (400 mg/kg, i.p) was used on immature Wistar rats. Plasma glucose and β -hydroxybutyrate was drawn and recorded weekly. The animals were divided into 3 groups: 1- Negative control, received standard chow diet, 2- Positive control, received pilocarpine and standard chow diet, 3- Experimental group, received KD for two weeks. After this period they also were administered with pilocarpine.

Results Application of pilocarpine produced substantial increase in the the levels of seizure activity on Racine scale and the levels of pro-inflammatory cytokines. The lowest levels of TNF- α and IL-1 β were found in the third group of rats administered with KD. The seizure score in this group was also the lowest, compared to other two groups. The difference between group two and three was statistically significant, $p < 0.001$.

Conclusion Our observations lead to conclude that reduced levels of pro-inflammatory cytokines in the brain are asociated with anticonvulsant effects of KD. We speculate that the influence of KD on the degree of neuro-inflammation in the brain caused by status epileptics is the most important factor which explains its anti-convulsant effect.

Polymorphism (rs1800629) of TNF- α gene analysis in traumatized with sepsis

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Introduction Sepsis is a systemic inflammatory response syndrome induced by pathogenic microorganisms. Clinical presentation of sepsis is variable. TNF- α gene encodes a multifunctional proinflammatory cytokine. rs1800629 polymorphism in the promoter region of the gene has an effect on its expression.

Aim The objective of this study was to investigate the effect of rs1800629 polymorphism of TNF- α -308 A / G on the development and outcome of sepsis in patients with trauma.

Methods The study group included 85 patients from the Clinical Center of Serbia who were after a trauma / surgery hospitalized in the intensive care unit. The participants were classified according to whether they developed postoperative sepsis or not, and based on the outcome of sepsis (death or survival). Rs1800629 polymorphism

was detected by the method of chain polymerization reaction in real time (Real-Time Polymerase Chain Reaction RT-PCR).

Results Our study showed that there was a highly statistically significant association between rs1800629 polymorphism and sepsis after trauma. There was also a significant difference in the frequency of genotypes among subgroups compared to the outcome of sepsis (death, survival).

Conclusion Our research has shown that polymorphism rs1800629 is connected with developing and outcome of sepsis after trauma. Complex etiology and pathogenesis of sepsis, and the participation of many genes in this disorder, a more complex study should be performed with more patients and the analysis of additional genes.

Cytotoxic activity of Ru(III) complexes with Schiff bases

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experimental Oncology

Introduction Various Ruthenium(II)/(III) complexes have been reported to possess encouraging antitumor properties in model systems in vitro and in vivo. On the other hand many Schiff bases and especially their metal complexes are found to exhibit promising anticancer potential.

Aim The aim of our study was to evaluate the cytotoxic activity of three newly synthesized ruthenium(III) complexes with Schiff bases resulted from the condensation reaction between salicylaldehyde and ethylenediamine (Salen), 1,3-diaminopropane (Salpn) and 1,2-phenylenediamine (Salphen), respectively.

Methods Cell lines established from human cervical carcinoma (HeLa) and transplantable sarcoma in rat induced by Rous sarcoma virus strain Schmidt-Ruppin (LSR-SF-SR) were used as model systems in our investigations. The effect of the compounds on cell viability and proliferation was examined by thiazolyl blue tetrazolium bromide test (MTT test), neutral red uptake cytotoxicity assay, crystal violet staining, double staining with acridine orange and propidium iodide, 3D colony-forming method. The compounds were applied at a concentration range of 5-100 µg/ml for 24-72 h (in short-term experiments, with monolayer cultures) and 25-30 days (in long-term experiments, with 3D cancer cell colonies).

Results All examined metal complexes reduce significantly viability and/or proliferation of the treated cells in a time- and concentration-dependent manner. Tested independently, the ligand Salen does not decrease cancer cell growth. Both cell lines (HeLa and LSR-SF-SR) are sensitive to the cytotoxic effect of Ru(III) complexes.

Conclusion The investigated newly synthesized Ru(III) complexes with Schiff bases Salen, Salpn or Salphen express promising cytotoxic activity against human cervical carcinoma (HeLa) and rat sarcoma (LSR-SF-SR) cells that has been proved in short term and long-term experiments using methods with different molecular / cellular targets and mechanisms of action.

Cytotoxic effect of disulfiram in v-myc oncogene expressing cancer cells

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Introduction Permanent cell line LSCC-SF-Mc29 (chicken hepatoma induced by the myelocytomatosis retrovirus Mc29) expresses the oncogene v-myc which cellular analogues take part in pathogenesis of many human and animal malignancies. Disulfiram, used in the treatment of alcoholism, possesses also antineoplastic properties.

Aim The aim of the present study was to evaluate the influence of disulfiram on viability and proliferation of virus-transformed LSCC-SF-Mc29 (clone E7) chicken hepatoma cells.

Methods The investigations were performed using MTT test (MTT), neutral red uptake cytotoxicity assay (NR) and double staining with acridine orange and propidium iodide (AO/PI). The ability of the compounds to inhibit the 3D-growth of hepatoma cells was in semisolid medium was estimated by colony-forming method.

Results The results obtained revealed that applied at a concentration range of 0.3 –100 µg/ml for 24-72 h (MTT, NR, AO/PI) and 42 days (3D colony forming method) expresses significant cytotoxic effect that is time- and concentration-dependent. Thus, the effective concentration at which disulfiram completely inhibited 3D colony-forming ability of chicken hepatoma cells in semisolid medium has been found to be ≥ 6.25 µg/ml.

Conclusion In this study we report for the first time the ability of disulfiram to reduce significantly viability and/or proliferation of v-myc oncogene expressing cancer cells.

Modified (Tartaric acid, Magnesium) amorphous calcium phosphates with promising cytocompatibility

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Bulgarian Academy of Sciences, Bulgaria | Area **Other**

Introduction Amorphous calcium phosphates have been reported to possess promising biological properties (such as bioactivity, osteoconductivity, biodegradability) that make them suitable for potential bone implant applications in orthopedics and dentistry.

Aim The aim of our study was to evaluate in vitro cytocompatibility of newly synthesized amorphous calcium phosphates modified with tartaric acid (ACP-TA) or tartaric acid and magnesium (ACP-TA-Mg).

Methods The following cell lines were used as model systems in our investigations: murine BALB/c 3T3 embryonic fibroblasts; human Lep-3 and BJ embryonic fibroblasts as well as SAOS-2 osteosarcoma cells. Direct experiments (DE) with cells seeded on the surface of the materials were performed by MTT test and Scanning electron microscopy (SEM) after 72-144 h (for MTT test) and 10 days (SEM). In indirect experiments (IDE) the cells were cultivated for 72 h in culture medium pre-incubated for 21 days in the presence of the examined material and cell viability was estimated by MTT test.

Results The results obtained reveal the ability of cells to adhere and proliferate on the surface of the examined materials. For example, in DE cell viability (as compared to

the control) has been found to be > 100% (Lep-3, 96 h) and >50% (BJ, 144 h) whereas in IDE it is > 90%.

Conclusion Both materials (ACP-TA and ACP-TA-Mg) exhibit similar rate of promising cytocompatibility proved in direct and indirect experiments with cell cultures of human and murine origin.

Detection of mumps virus in cell culture and by RT- PCR

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Introduction Parotiditis often is caused by the mumps virus, which belongs to the paramyxovirus genus of the paramyxoviridae family. The clinical manifestations and aetiological laboratory confirmation of parotitis are necessary in medical practice

Aim To evaluated of mumps virus replication in Vero cell line and by RT-PCR in patients with parotitis.

Methods The total 15 clinical samples (saliva swabs) from patients with diagnosis parotitis (salivary gland inflammation, fever, and/or meningeal symptoms) were studied in the Department of Virology, National Center of Infectious and Parasitic Diseases, Sofia. The collected specimens are from patients aged 6 days to 14 years. Samples were collected within the first 48 hours of illness. For viral isolation and detection Vero cell culture (green monkey continuous cell line) and RT-PCR (mumps SH region) method were used. The mumps Sofia 6 strain from the attenuated vaccine was used as a positive control.

Results First, we studied the qualitative effect of mumps virus in Vero cell culture. The mumps virus was isolated and detected by cythopathology effect (CPE). Cells were inoculated with 0.2 ml of the samples in monolayer culture and incubated at 24h. The CPEs were observed microscopically from 48h to 120h. Forty percent (6/15) were positive. Second, we analyzed mumps virus nucleic acid by One Step RT-PCR technique from collected cell supernatant. The positive results in 8/15, 53% samples were found.

Conclusion The use of the cell culture and PCR methods were high specificity for the aetiological confirmation of cases of infectious viral parotitis. Isolation of mumps virus in cell culture is recommended as the gold standard for a definitive aetiological diagnosis.

Curcumin and PI3/Akt signaling pathway involvement in ketamine-induced toxicity

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Introduction Ketamine has been demonstrated to induce neurotoxicity as well as to possess modulatory role to the cells of the immune system. Curcumin has been commonly used in food preparation and is shown to display anti-carcinogenic, anti-microbial and anti-inflammatory effects.

Aim	The authors evaluated the potential protective effect of curcumin against ketamine-induced toxicity in rat thymocytes and mechanisms which might be involved.
Methods	Rat thymocytes were exposed to ketamine (100 μ M) and/or increasing (0.3, 1, 3 μ M) curcumin concentrations for 24 hours and assessed for cell viability, apoptosis, reactive oxygen species (ROS) production, mitochondrial membrane potential (MMP), caspase-3 activity and PI3k/Akt signaling pathway involvement.
Results	Ketamine treatment induced increased cell toxicity, hypodiploid cells, caspase-3 activity and ROS production, together with suppressed MMP. Application of Z-VAD-FMK (a pan caspase inhibitor) and Z-LEHD-FMK (caspase-9 inhibitor) efficiently attenuated ketamine-induced rat thymocytes apoptosis. Co-incubation with increasing curcumin (1, 3 μ M) concentrations displayed markedly reduced cytotoxicity, apoptosis rate, caspase-3 activity, ROS production, followed with enhanced MMP. Cells treatment with Wortmannin (a PI3K inhibitor) markedly suppressed protective role of curcumin in rat thymocytes.
Conclusion	Obtained findings indicate that ketamine induced toxicity in rat thymocytes mainly occurs through mitochondria-mediated apoptotic pathway and that PI3K/Akt signaling pathway is required for anti-apoptotic effects of curcumin in ketamine-induced rat thymocytes toxicity.

Effects of exercise on diabetes-induced depressive-behavior and neuroinflammation in rat

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Introduction	Evidence grows that depression and diabetes type2 share biological origins, particularly overactivation of innate immunity leading to cytokine-mediated Neuroinflammation. This can lead to depression. Studies suggest that physical exercise decreases the levels of pro-inflammatory cytokines and so reducing cellular damage.
Aim	The present study is undertaken to evaluate whether physical activity (wheel running) could alleviate neuroinflammation in the rat's brain and suppress depressive-like behavior of streptozotocin-induced diabetic rats.
Methods	24 adult Wistar rats were divided into four groups (n=6): Control group (CG), exercised group (EG), diabetic group (DG) and diabetic-exercised group (DEG). Diabetes was induced by injection streptozotocin (35 mg/ kg). All rats in the trained groups had free access to running wheel for 4 weeks. At the end of the 4th week, sucrose preference test (SPT) and forced swim test (FST) were applied to all animals. After the tests the rats were decapitated and the hippocampi were used for determination of pro-inflammatory cytokine IL-1beta levels with ELISA.
Results	1. The influence of physical activity on the forced swimming test (FST) Physical activity significantly increase the swimming period and decrease immobility time in animals from DEG-group compared to DG-group ($p < 0.05$), in this test. 2. The influence of physical activity on the sucrose preference test (SPT) At 24h-SPT-test, preference index for sucrose was significantly higher in DEG-group ($124 \pm 2, 3\%$), compared to DG-group rats ($90 \pm 1,4\%$), $p < 0.05$. 3. The influence of physical activity on brain levels of proinflammatory cytokine IL-1beta. The levels of IL-1beta in the DEG-group were comparable with EG-group and statistically different ($p < 0.05$) compared with DG-group.

Conclusion The present study demonstrated that physical activity prevented enhancement of the levels of pro-inflammatory cytokines in the diabetic rat hippocampus and ameliorates depression-like behaviors. Our study demonstrated that neuroinflammation is the basis for depressive symptoms in the animals with diabetes.

MDCT angiography of carotid blood vessels in patients with SAPS

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Medical Faculty in Belgrade, Serbia | Area **Genetics**

Introduction Antyphospholipid syndrome is a clinicopathological entity associated with accelerated atherosclerosis, arterial and venous thromboembolisms, fetal loss and positive antiphospholipid antibodies in the serume. The most effective method for diagnosing and monitoring changes in blood vessels is shown to be MDCT.

Aim The aim of our research is to present the results of qualitative and quantitative MDCT analysis on common carotids, comparing the patients with SAPS with control group.

Methods In our study, we analyzed 50 patients via MDCT angiography, with SAPS compared to 30 patients in the control group. The groups were equal in terms of age, gender, and other risk factors except for tryglicerids and cholesterol which were significantly higher in the control group. $(5,94\hat{\pm}0,57)>(4,85\hat{\pm}0,86)$ ($p<0,01$) for cholesterol and $(1,71\hat{\pm}0,56)>(1,33\hat{\pm}0,49)$ for triglycerides.

Results Results showed a statistically very significant difference in the prevalence of stenotic lessions in the right common carotid artery. MDCT arteriography showed that 10 patients with SAFS had stenosis, whereas there were no such cases in the control group ($p <0.001$). Quantitive analysis noted a stenosis of 50% in 96,43 % of patients with SAPS, compared with 50% of patients from the control group with this grade of stenosis. Qualitative plaque analysis showed that patients with SAFS have mixed plaques, in contrast to highly lipid plaques in the control group.

Conclusion Our research revealed a statistically significant difference in the frequency of stenotic lesions on the common carotid arteries between the examined and control group.

Trehalose lipid production, isolation, characterization and study of antitumor activity

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Introduction The fundamental research in the field of biology and medicine aimed at the isolation, characterization, and study of the properties of new biologically active substances and testing their effect on cancer cells [1].

Aim Biosurfactants are naturally occurring surface active biomolecules, owing to their amphiphilic character, produced by microorganisms. With this study we investigated: - the conditions for cultivation and production of trehalose lipid by *Rhodococcus wratislavensis* strain; - isolation and purification of the biosurfactant; - identification of its chemical structure; - cytotoxicity analysis.

Methods Rhodococcus wratislavensis was selected as a producer of the biologically active substance of interest. It was proved by ST measurements and emulsification activity of whole broth. Glycolipids were extracted on hexadecane and purified using medium-pressure liquid chromatography. For characterization mass spectroscopy and NMR studies were carried out. The cytotoxic potential of trehalose lipid was evaluated by MTS viability test for 24 and 48 h on two different types of cancer cells (MCF7-low metastatic and MDA-MB231 high metastatic) to test its specificity. Different concentrations of the trehalose lipid were applied to prove that its action depended on it.

Results In our study we have successfully produced, isolated and characterized Trehalose lipid. Cytotoxicity of this natural product was evaluated on two different breast cancer cell lines.

Conclusion Initial data of exact mechanisms of antitumor activity of the purified trehalose lipid determined its potential for continuing the investigations.

A variation of the neck muscles - bilateral occipitoscapular muscle

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Medical University of Sofia, Bulgaria | Area **Anatomy**

Introduction The posterior cervical region has highly variable muscles. First described by Wood in 1867, the occipitoscapularis muscle, also known as rhomboid capitis or rhomboid occipitalis, originates from the occipital bone and is attached to the scapula.

Aim The aim of this study was to present a variant of cervical muscle anatomy, the bilateral occipitoscapular muscles, and to comment on their relations with adjacent structures.

Methods A 73-year-old male cadaver of European origin from the autopsy material provided at the Department of Anatomy, Histology and Embryology, Medical University of Sofia, Bulgaria was examined for anatomical variations. The cadaver had been fixed in 10% formalin-based preservative to ensure conservation.

Results Bilateral supplementary muscles were observed in the posterior neck region. A band-shaped muscle, which originated from the superior angle of the scapula between the levator scapulae and rhomboideus minor muscles, was discovered on the right. On the left side the muscle consisted of two components: inferior and superior oblique parts. It originated from the superior angle of the scapula. During dissection, it was revealed that the dorsal scapular nerve innervated these muscles.

Conclusion Anatomical variations in the neck region have significant clinical importance. Supernumerary muscles, if present, may be misdiagnosed as tumor-mimicking lesions. Under specific circumstances, the occipitoscapular muscle may also be used as a flap during surgical interventions.

Perspectives of proline usage for biosensor creation

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Lviv Medical National University, Ukraine | Area **Biophysics**

Introduction Proline is an amino acid that is essential for cartilage and skin. This substance improves the structure of the skin and accelerates the synthesis of collagen. It plays significant role in treatment of different skin illnesses especially acne and ulcers.

Aim The purpose of the work was to make a literary analysis of prospective usage of proline in order to create biosensors.

Methods The change in the optical properties of liquid crystals (LC) with a spiral structure after introducing amino acid in the form of a proline in the form of a powder or aqueous solution was used to quantify the proline. This effect is the basis for creating sensitive optical sensor environments.

Results As a result of the research it is possible to distinguish four main directions in which the presence of proline is extremely important: 1. Proline is critical for formation of collagen, that is important for maintenance of different structures and the reduction of friction between them. 2. Prophylaxis of atherosclerosis. 3. Skin health is an extremely important indicator, because it depends on the resistance of our body to various infectious agents. With age, the amount of collagen tend to decrease and the structure of the skin worsens, which leads to an increased risk of dermatological diseases. 4. Regeneration of tissues.

Conclusion Proline has a lot of additional functions: it participates in digestion, antioxidant reactions and immune responses, plays a key role in protein-protein interactions. The spectral characteristics of proline were presented. The main goal was creation of sensitive element of optical systems.

Optical biosensor of L-arginine based on cholesteric liquid crystals

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Lviv Medical National University, Ukraine | Area **Biophysics**

Introduction Amino acid L-arginine belongs to the class of conventionally irreplaceable and is an active and versatile cell regulator. Arginin is part of proteins that interact with DNA and is important for many metabolic pathways of the cell.

Aim The purpose of our work was to study the spectral characteristics of the active medium of the biosensor L arginine on the basis of cholesteric liquid crystals.

Methods The content of free L-arginine is determined by spectrometry Korenman method, ultraviolet and enzymatic method. For our research, we used a spectral analysis method. We investigated the spectral characteristics of the sensitive element of an arginine sensor. The sensing element is formed on the basis of a cholesteric-nematic mixture, namely a cholesteric liquid crystal BLO-62 with an admixture of a nematic liquid crystal 5SV.

Results As a result of literary and practical research it can be construed that arginine accelerates the processes of healing wounds and injuries, regulates the content of nitric oxide NO in blood, which regulates blood flow, the state of the immune system, communication between the nerve cells, blood coagulation, and libido. Arginine reduces cholesterol more effectively than any other amino acid.

Conclusion For all investigated concentrations, maximum changes in the wavelength of minimum passage from the concentration of aqueous arginine solution have been established. For arginine, in the range of concentrations 0 - 7% no noticeable changes in the transmission spectrum are observed.

Optical L-serine biosensor on the base of cholesterol liquid crystals

Nesteruk Timur, I. Diskovskyi, T. Nesteruk

Lviv National Medical University, Ukraine | Area **Dermatology**

Introduction Serine plays a significant role in the formation of active centers of many enzymes and provides their function. L-serine, also known as 2-amino-3-hydroxypropanoic acid, is encoded nonessential amino acid, which participates in the formation of almost all natural proteins.

Aim The aim of our work was to investigate spectral characteristics of active medium of L-serine biosensor on the base of cholesterol liquid crystals.

Methods There are various methods for analysis of serine in the blood, food and substances. We used a spectral method of analysis. Spectral characteristics of a sensitive element of optic sensor of serine were investigated. Concerning practical application, L-serine is used as a biochemical reagent and nutritional supplement for experiments, as well as in cosmetology as skin nourishment. It is important to mention that serine is used in combination with iron sulfate, providing high level of iron absorption from gastrointestinal tract; thus, amino acid L-serine in combination with iron forms a complex that is easily absorbed.

Results Sensitive element was formed based on cholesterol-nematic mixture, in particular cholesterol liquid crystal BLO-62 with addition of nematic liquid crystal 5 CB. Having analyzed the obtained results it is seen that on addition of serine to cholesterol-nematic mixture, a shift in transmission minimum occurs, namely, into long wave region.

Conclusion Peculiarities of correlation of liquid crystal mixture with aqueous solutions of serine have been analyzed.

Optical L-serine biosensor on the base of cholesterol liquid crystals

Diskovskyi Ivan, G.V. Galyk,

Lviv National Medical University, Ukraine | Area **Biochemistry**

Introduction Serine plays a significant role in the formation of active centers of many enzymes and provides their function. L-serine, also known as 2-amino-3-hydroxypropanoic acid, is encoded nonessential amino acid, which participates in the formation of almost all natural proteins.

Aim The aim of our work was to investigate spectral characteristics of active medium of L-serine biosensor on the base of cholesterol liquid crystals.

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iron absorption from gastrointestinal tract; thus, amino acid L-serine in combination with iron forms a complex that is easily absorbed.

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Conclusion Peculiarities of correlation of liquid crystal mixture with aqueous solutions of serine have been analyzed.

Membrane potential dynamics at embryo-genesis under influence of heavy metal

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Danylo Halytskyi Lviv National Medical University, Ukraine | Area **Biophysics**

Introduction Membrane potential is a key regulator of proliferation in a number of cell types, for example, germ cells. It has found that if incubation in an environment includes nickel, cobalt, tin and zinc, embryos appear to slow down the development.

Aim The aim of the work was to evaluate the peculiarities of the dynamics of the membrane potential and the analysis of time relations during the crushing of *Misgurnus fossilis* blastomers using autocorrelation, cross-correlation analyzes.

Methods The starting material of the study was experimental data on changes during 5 hours with a 10 minute interval between values of the membrane potential under normal conditions of incubation of embryos and during incubation in a medium with nickel (10^{-5} M), cobalt (10^{-4} M), tin (10^{-4} M) and zinc (10^{-5} M). The estimation of the membrane potential in the norm and the action of heavy metal ions is made in the dynamics of the development of the embryo of the liver by analyzing the strength of the bonds, which in the time aspect are non-stationary phenomena.

Results The high rate of the auto-correlation function attenuation indicates its defined periodicity. The increase in the modulus of the auto-correlation function, which is observed for all cases, indicates the loss of periodicity of the membrane potential generation, which coincides in time from 370 to 390 min. of the development of germ cells. The connections between the parameters appeared with shifts of 20 min and have oscillatory character on all of the cross-correlograms. It is possible that the dynamics of the investigated processes has common regulatory mechanisms.

Conclusion Additional research in this direction will enable to construct a model of the studied processes and to understand its essence more deeply.

Immunohistochemical Characteristics of Prenatal Neurogenesis of Neocortex In Guinea Pig

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University of Novi Sad, Serbia | Area **Biology**

Introduction The neocortex is the crown of the central nervous system. Neurogenesis of neocortex is a process that leads to the development of the cerebral cortex. Immunohistochemical method can provide more data compared to conventional methods of histological staining.

Aim Analysis of the development of the neocortex in guinea pig by immunohistochemical methods.

Methods The research included 4 pregnant female albino guinea-pig, which gave 12 fetuses ages 25, 30, 35 and 40 days. Fetuses were removed from their mother by Caesarian section under urethane anesthesia, and euthanized by intracardiac perfusion with a Zamboni fixative solution. Three fetuses were analysed each age group. After appropriate fixation, the tissues were embedded in paraffin block and cut in the frontal plate. Histological sections were stained by immunohistochemical markers DCX, NeuN and Synaptophysin.

Results The presence of developmental phases, layers and zones that are typical for mammalian neurogenesis of neocortex. Mitosis and migration of postmitotic cells in the cortical plate. Differentiation and maturation of neurons in the cortical plate. The formation of intercellular connections, the synapses, during the early development of the neocortex.

Conclusion During the neurogenesis of neocortex in guinea pig the formation and maturation of an mature layers take place in neocortex.

Demographic characteristics of patients who use ED regional hospital Elbasan

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Medical University of Tirane, Albania | Area **Emergency Medicine**

Introduction Emergency medicine particular specialty, defined by needs of practice and that stands out from other ambulatory practice of medicine as practiced in any environment and any time. Emergency departments are playing increasingly important role in the care of older adults.

Aim Evaluation of the characteristics of patients presenting in the Elbasan Emergency Department during spring-summer season.

Methods The study is retrospective transversal where the first records of patients admitted to the emergency department between March and August 2016. They are included older patients or 14 years. Data on age, gender, education, place of residence, time of arrival in the emergency department, type of health problem that have been reported and the medicines that have been used or collected. Categorical variables are presented in frequency and chi square test was used to analyze any difference in the distribution of variables in the study. The data were analyzed in SPSS 16.

Results The study involved 1065 patients who were admitted to the emergency service at the regional hospital of Elbasan during the period March to August 2016. The patients belong age group over 60 years and less aged 14-20 with only 7.2 % Of

cases. By gender in 55.6% belong female gender more expressive than male and in the chi square statistically significant ($p = 0.001$). Most of patients are presented in May by 18.8% of cases and less in March to 13.6%, this difference is significant.

Conclusion Age over 60 and women are more frequent users of emergency. The most frequent disorders are gastrointestinal, neurological and cardiovascular, the delivery times are most common in the afternoon and at night. The profile of patients and model of presentation should be taken into account in the organization of emergency.

Status of lipid peroxidation and antioxidant enzymes in pregnant women

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Trakia University, Bulgaria | Area **Biochemistry**

Introduction Currently, there is minor information regarding levels of oxidative-disorders and antioxidant-prooxidant status in women with normal pregnancies (NP). Reactive oxygen species damaged cell membranes, leading to an increase in lipid peroxidation and endothelial cell dysfunction directly associated with pregnancy disturbances.

Aim NP may produce mild oxidative damages that suggest elevated lipid-peroxidation and F2-isprostane plasma levels². We attempted to characterize changes in the erythrocyte lipid peroxidation (MDA), and activities of antioxidant enzymes superoxide dismutase (SOD), catalase (CAT) in erythrocytes and plasma protein oxidation (PCC) measured in women in the third trimester.

Methods 25 women (17-31 years, non-smokers) with a singlet NP in the third-gestational trimester, without history of other relevant disease were selected by a clinical (St. Kirkovich Hospital, Stara Zagora) evaluation. The control group (CG; $n = 10$; 20-32 years) was of non-pregnant, healthy female volunteers. MDA was determined as TBARS substances. SOD and CAT activity was estimated in fresh blood samples by the method of Beers and Sizer, 1952 and by Sun et al., 1988, respectively. PCC was measured by ELISA test.

Results The antioxidant assessment indicated an increase in SOD and CAT activities ($p < 0.05$ and $p < 0.03$) compared to CG. Additionally, when the pro-oxidant system was investigated we found an increase in MDA ($p < 0.02$) in NP group and no significant change ($p > 0.05$) in protein carbonylation, compared to CG. Increased SOD and CAT activity is important for the antioxidant system that transforms the O_2^- anion and leads to the formation and degradation of H_2O_2 to H_2O and O_2 .

Conclusion In parallel, the MDA amounts and PCC were increased and these changes as a result of increased metabolic activity in the placental mitochondrial cells, circulation changes and a reduced antioxidant scavenging, that are inherent to the pregnancy process.

Effects of olanzapine on hyperthermia in an experimental serotonin syndrome

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Medical University Sofia, Bulgaria | Area **Pharmacology**

Introduction Serotonin syndrome is a life-threatening reaction to significant serotonin concentration increase in the CNS. It is caused by serotonin-augmenting drug or by the combined administration of two or more serotonin drugs. Typical symptoms of SS are agitation, clonus, tremor, hyperthermia.

Aim The aim of this study was to establish the effects of 5-HT₂ receptor antagonist olanzapine (5 and 10 mg/kg i.p.) on the hyperthermic response in rat experimental serotonin syndrome.

Methods Animal model of serotonin syndrome was induced by administration of fluoxetine and tranylcypromine. The use of these serotonergic drugs inhibits the reuptake of 5-HT and monoamine oxidase activity. The body temperature of animals was measured with thermistor probes (TX-8) inserted rectally, and monitored in multi-channel recorder.

Results Pretreatment with olanzapine inhibits hyperthermic reaction in an experimental model of the serotonin syndrome and converts a hyperthermic response to serotonergic combination (fluoxetine and tranylcypromine) into a hypothermic response.

Conclusion The present findings suggest that hyperthermic reaction, observed in serotonin syndrome, is mediated by activation of the central 5-HT₂ receptors.

TSEs and antisense technology as a strategy for prion reduction

Kozak Mariya, J. Talapko

Institute of Animal Biology, Ukraine | Area **Biotechnology**

Introduction Transmissible spongiform encephalopathies (TSEs) or Prion diseases are fatal neurodegenerative disorders with infectious, genetic, or sporadic causes. Prion diseases affect both humans and animals. No effective prion disease treatments or prevention exist.

Aim The pathogenesis of TSEs is associated with the synthesis of the cellular prion (PrP^c). Blocking of prion mRNA translation using asODNs has potential as a therapeutic approach in treating these diseases. The aim of the study is an appliance of antisense technology to reduce the level of the prion protein.

Methods Antisense oligodeoxynucleotides (asODNs) that are complementary to the mRNA of the prion were used in the study. Cationic oligoelectrolytes of tailored structures, molecular weight, functionality and surface activity were synthesized via controlled radical polymerization in the presence of functional peroxide containing chain transfer agent. AsODNs' binding ability was studied using UV-spectroscopy, conductometry, turbidimetry and free diffusion in agarose gel. The research was carried out in vitro and in vivo. The effectiveness of asODNs was determined by Western blot analysis. The asODNs safety in complex together with cationic-active oligoelectrolyte was investigated on cells (bull sperm) and rats.

Results Cationic polymers form complexes with asODNs. The level of PrP^c was reduced in the rats' brain (48 %), spleen (60 %), and intestine (80 %). Cell survival decreased to 4-5 days. The potential toxicity was estimated via histomorphological studies and

biochemical assay. The structure of the tissues of the medulla oblongata, the intestine, the liver, the kidneys, the femoral muscle, and the spleen of the animals corresponded to the control. The number of leukocytes increased to 40%, but total protein, glucose, urea concentration and creatinine did not indicate abnormalities. Activities of marker enzymes corresponded to the control value.

Conclusion As a result efficient asODNs and safe delivery systems for inhibition of prion mRNA translation were developed.

Nasal flora (*Staphylococcus aureus*) among medical students in the preclinical phase

Kotris Ivan, D. Kanellopoulos

Faculty of Medicine, University of Osijek, Croatia | Area **Other**

Introduction *Staphylococcus aureus* is usually considered a colonizer but can result in infections under favorable conditions, especially in the healthcare setting.

Aim The aim of this study was to investigate and to identify presents of *Staphylococcus aureus* carriage with nasal swabs among preclinical medical students. Also, explore the possibility of the presence of other microorganisms.

Methods The study was conducted in the Faculty of Medicine, University of Osijek, Croatia. Total of 71 nasal swabs were collected from medical students in the preclinical phase of studies (39 (55%) women, and 32 (45%) men). Swabs were cultivated on blood agar plates and the identification was done by Gram staining and by biochemical tests.

Results Out of 71 processed nasal swabs, on 40 (56%) nasal swabs normal bacterial flora in the nose was isolated. On 13 (18%) nasal swabs there were isolated *Staphylococcus aureus*. *Staphylococcus epidermidis* was isolated on 14 (20%) of total processed nasal swabs. On 4 (6%) nasal swabs there was isolated *Proteus* spp.

Conclusion In this study, in order to evaluate the presents of nasal flora by nasal swabs among medical students in the preclinical phase, we concluded that 56% of medical students in our research have *Staphylococcus aureus*. Further research will be concentrate to investigate nasal flora by nasal swabs among the same medical students in the clinical phase.

DNA testing for genetic defects and immune disorders of embryo

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Introduction Fetal DNA testing is done to reveal serious, mainly genetic conditions that occur with a gene frequency 1/20 pregnancies.

Aim The purpose of the abstract is to show the methodologies of the proper genetic diagnosis.

Methods Greek and international bibliography and specific articles on DNA testing for embryo genetic and immunological diseases were reviewed and published in Pub Med and Science Direct databases during 2002- 2017.

Results Given that genetic diseases are predominantly hereditary, prenatal control is nowadays required, especially in high-risk couples, to reduce the chances of newborns to be born with genetic diseases. For proper genetic diagnosis, we usually do the following three methodologies: 1. DNA mapping, 2. DNA amplification by PCR and 3. FISH method application. DNA mapping is used to control diseases due to gene defects such as thalassemia.

Conclusion DNA technology plays an important role in newborn screening, by expanding even further the limits of its implementation.

Neutral polymers at the erythrocyte surface – different effects on cell-cell interactions in dependence on the type of polymer binding

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Introduction Erythrocyte – erythrocyte (Ery's) interactions are important for cell aggregation, blood viscosity and flow in the microcirculation. Free neutral polymers in solution are used in medical practice as components of plasma expanders and fluids applied for organ preservation in transplantation medicine. Covalently bound to the erythrocyte surface they can camouflage the blood group antigens and produce the so called "stealth Ery's" for transfusion applications.

Aim In this work we investigated how the two binding modes (covalently or not) of polymer molecules to the cellular surface effects the erythrocyte aggregation.

Methods Washed in phosphate buffered saline (PBS, pH = 7.4) human Ery's are used during this study. Linear mPEG of various molecular mass (2000, 5000, 20000) was covalently cross linked to the Ery surface at room temperature and polymers at different concentrations. The zeta sedimentation technique is used for quantification of the extent of cell aggregation (zeta sedimentation ratio, ZSR). Cell electrophoresis was applied to characterize Ery – polymer interface.

Results For the concentration range 0 – 1 g/dl the ZSR increases in the presence of free polyethylene glycol (PEG) with molecular mass 35000, 100000 and 200000. The effect rises with molecular mass. The increase in chain length and concentration of PEG covalently bound to Ery's surface reduces the aggregation. Electrophoresis of Ery's in free PEG indicates that the cells experience much lower viscous friction as expected concerning the bulk viscosity of the medium – it means the polymer is depleted from the shear plane. The electrophoretic mobility of the pegylated erythrocyte decreases with PEG chain length and concentration. It may be due to elevation of viscosity in the Ery – polymer interface and so indicates elevated number polymer segments attached to the cell surface and increase of steric hindrance.

Conclusion Depending on the mode of binding of polymer to the cell surface we found: 1. Rise in aggregation of Ery's with concentration and molecular mass of free polymer; 2. Reduction in ZSR with chain length and concentration of covalently bound molecules. In both modes – the size is decisive for the effects!

New Producers of Protein C, factor X Activators

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- Introduction** Diagnostic testing is employed for selecting appropriate and optimal therapies based on the context of proteins analysis. Some of the proteins in snake venom have very specific effects on protein C and X factor. But this diagnostic system is expensive
- Aim** The aim of this work was selection of optimal concentrations range of extracellular protease-activator of micromycete *Aspergillus ochraceus*. These proteases have protein C and factor X activator activity.
- Methods** Cultivation of *A. ochraceus* was performed under submerged conditions. For isolation of the proteases from cultural fluid, isoelectrofocusing was performed by the Vesterberg method in a gradient of ampholine pH 4.0-7.0. During chromogenic detection, an enzymatic label catalyzes the conversion of a chromogenic substrate (pGlu - Pro - Arg - pNA(S -2366) and Z - D - Arg - Gly - Arg - pNA(S -2765)) to produce a colored precipitate. Fraction with the maximum of the activator activity after chromogenic detection was collected.
- Results** Efficiency of isolated protease for protein C and X factor determination was compared with commercial preparations - Protac® and RVV-X® from snakes' venom in different human plasmas. It was demonstrated the same results with specific activity proteinases of *Aspergillus ochraceus* and with Protac® and RVV-X®. Similar experiments were conducted in the presence of factor X deficient plasma and protein C deficient plasma. It was found that concentration of protein C is identical with Protac® (32,7% ± 5%) diagnostic system and specific activity proteinases of *Aspergillus ochraceus* (31,5% ± 5%). Uniform diagnostics interval was detected with RVV-X® diagnostic system (36,6% ± 4%) and proteinases of *Aspergillus ochraceus* (37,4% ± 4%).
- Conclusion** To sum up, proteases produced by *Aspergillus ochraceus* are very perspective for protein C and X factor diagnostics. This method may be cheaper and easier than another methodics.

The influence of previous transfusions on appearance of anti-hla antibodies

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- Introduction** Sensibilization may be caused by exposure HLA during blood transfusions, previous transplantation or pregnancy. The presence of anti HLA antibodies in the serum of the recipient before transplantation process is an important risk factor for transplant rejection.
- Aim** To evaluate the effect of the number, type and volume of transfused blood products on the appearance of anti HLA antibodies in patients on kidney transplant waiting list.
- Methods** Retrospective study from 2016, which includes 69 patients with end stage renal disease from South Backa, on the waiting list for kidney transplant. Criteria for inclusion in the study were: that patients were diagnosed with anti-HLA antibodies continuously four times a year during 2016 and that patients had blood

transfusions before testing for the presence of sensitization. Anti-HLA antibodies were detected by three methods: CDC–Complement Dependent Cytotoxicity test, ELISA-Enzyme-Linked Immunosorbent Assay, Luminex technology.

Results Out of 69 patients, 44 were sensitized (63.8%). The average PRA value was 8.04%. Most patients (53.6%) received 2-5 liters of blood. A statistically significant correlation was found between the volume of blood received and the occurrence of PRA ($p < 0.001$), as well as between the effects of fresh frozen plasma without cryoprecipitate and the occurrence of PRA ($p = 0.038$). The influence of the number of products received ($p = 0.204$), the number of blood units received ($p = 0.425$) and the time since the last blood transfusion ($p = 0.171$) on the occurrence of PRA was not statistically significant.

Conclusion The volume and type of previous blood transfusions showed significant impact on the appearance of anti-HLA antibodies.

Characteristics of patients with pulmonary embolism treated with thrombolytic therapy

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Introduction Pulmonary embolism (PE) is one of the most common cardiovascular disorder. Massive pulmonary embolism is characterized by systolic blood pressure < 90 mmHg, poor tissue perfusion or multisystem failure and thrombolytic therapy is indicated in these patients.

Aim The aim of our study was to determine how demographic parameters, comorbidities, risk factors, echocardiographic findings, vasopressors and dobutamine affects on outcome of patients threated with thrombolytics therapy.

Methods The study included 43 patients with hemodynamically unstable PE who were treated with thrombolytic therapy at the Institute for Pulmonary Diseases of Vojvodina, in the period of 2013-2016. Demographic parameters (gender, age), comorbidities, risk factors, Well's scoring system and the echocardiographic findings upon admission, the use of vasopressors, dobutamine, rapid application or standard therapeutic protocol of thrombolytic therapy and intubation were analyzed. The statistical significance was determined by Pearson chi square test and comparison of secondary value with Student t-test. They was used with the standard cutoff level of statistical significance: $p < 0.05$.

Results The statistical significance relative to the death outcome had: age ($t = 2,419$; $p = 0,020$), intubation ($\chi^2 = 25,899$; $p < 0,01$), use of vasopressors ($\chi^2 = 14,532$; $p < 0,01$), dobutamine ($\chi^2 = 5,250$; $p = 0,022$), and rapid therapeutic protocol of thrombolytic therapy ($\chi^2 = 5,999$; $p = 0,014$).

Conclusion Risk factors of the greatest impact on mortality were age, intubation, use of vasopressors, dobutamine and rapid therapeutic protocol. Like other results from the literature, our results agree with the results of other surveys except in terms of applying rapid therapeutic protocol as risk factors for the occurrence of death.

Myocardial bridging studied with MSCT coronary angiography

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Introduction Myocardial bridging is a congenital variation in which a band of cardiac muscle overlies a segment of a coronary artery. While frequently asymptomatic, myocardial bridging can have clinical manifestations as angina, myocardial ischemia, arrhythmias, and even sudden cardiac death.

Aim The aim of our study was to determine the prevalence of myocardial bridging as well as the most frequent localization of myocardial bridging with Multi-Slice Computed Tomography coronary angiography.

Methods Our study represents a retrospective study, which included 1643 patients (851 men and 792 women, with an average 64.8 ± 11.7 years of age, range 32-80) who underwent 64-slice Computed Tomography (MSCT) coronary angiography at the Department of Radiology Clinical Center Nis, Serbia. All examinations were made due to suspicion (atypical chest pain, angina equivalent symptoms or multiple risk factors for cardiovascular disease) or assumed progression of coronary artery disease. Presence of muscular bridging was analyzed as well as localization of myocardial bridging.

Results In 12 cases (0.73%) of all patients, myocardial bridging was found. The myocardial bridging most frequently involved a middle segment of the left descendant artery (LAD) on coronary angiography (75.0%) and in 25.0%, it involved a proximal left descendant artery.

Conclusion The prevalence of myocardial bridging was found in 0.73% of all patients. Knowledge of the coronary artery anomalies such as myocardial bridging and its recognition on MSCT has great importance for the further planning of a possible therapeutic treatment. The detection of hemodynamic important myocardial bridging will certainly save many lives.

Assesment of comorbidities in patients with chronic obstructive pulmonary disease

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Introduction Chronic obstructive pulmonary disease (COPD) is one of the most common respiratory diseases in the working-ability population. It has been found that the presence of comorbidities significantly increases mortality of patients with COPD and leads to frequent deteriorations.

Aim To determine frequency of comorbidities in patients with COPD, to determine whether there is relation between the number of comorbidities and: the stages of COPD, duration of COPD, the frequency of COPD exacerbations, the outcome of the disease.

Methods Retrospective study from 2016, which includes 134 patients who were hospitalized at Institute for Pulmonary Diseases of Vojvodina because of deterioration of COPD. The study included only patients age 18 and older, who had one or more comorbidities and excluded all patients who did not have comorbidity. Clinical diagnosis of COPD was established in accordance with official recommendations

for the diagnosis and treatment of COPD, at least two years before being included in the study. The number of comorbidities were evaluated in all patients.

Results In total 60.4% of patients had 1-2 comorbidities, 34.4% of patients 3-5 comorbidities, while 5.2% of patients had more than 5 comorbidities. The most common comorbidity was cardiovascular disease in (68%) patients, while haematological comorbidities was in the lowest percentage (1%) of patients. There was not the relation between stages of COPD and the number of comorbidities ($p=0.116$). There was not the relation between duration of COPD and the number of comorbidities ($p=0.591$). There was the relation between the frequency of COPD exacerbations and the number of comorbidities ($p=0.016$). There was not the relation between the outcome of the disease and number of comorbidities ($p=0,233$).

Conclusion The comorbidities in COPD are often present and significantly affect the COPD deterioration. The most common comorbidity is cardiovascular disease (68%). Patients with psychiatric comorbidity ($p=0,033$), endocrinological comorbidity ($p=0,017$) and patients with bronchial carcinoma as co-morbidity ($p=0,002$) were significantly more often treated in comparison with other patients.

Thrombophilia Clinical Case

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Introduction We report a 31-years old patient with corrected infrarenal aortic coarctation at age 16, who presents with clinical constellation of acute coronary syndrome(ACS). In the course of the examination other vascular anomalies were discovered, along with genetic confirmation for thrombophilia.

Aim The aim of this clinical case report is to highlight the importance of further clinical and genetic testing in young patients with vascular diseases, that are not typical for their age, since that could have significant impact over their therapy and management.

Methods After the acute phase, contrast-enhanced computer tomography (CT) and ambulatory genetic testing for thrombophilia were assigned. The CT found a constellation, including stenoses and vascular variants, which explained the weak pulsations of the peripheral arteries. Later, the genetic testing showed that the patient had more than one homozygous mutation in the panel for thrombophilia. Thus, his medication was altered and anticoagulant was prescribed.

Results After the angioplasty the patient's symptoms eased and he was discharged in satisfactory condition. In the following weeks the patient presented for a checkup examination that was combined with a treadmill stress test, which showed adequate physical capacity for the diagnosed conditions.

Conclusion In patients with aortic coarctation, other vascular pathologies should be considered, especially in cases with clinical symptoms. Also, thrombophilia testing is advised in younger patients with ACS.

Cardiovascular complications in patients with atrial fibrillation and diabetes mellitus

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Introduction Atrial fibrillation and diabetes mellitus are currently two pathologies with high interdependence and with increased incidence and prevalence, as well as severity through complications and, implicitly, increased medical costs.

Aim

1. Researching the variables from an epidemiological and demographic point of view: most affected age groups, the background of the patients, their profession
2. Assessing clinical and paraclinical outcomes including contributing factors
3. Highlighting como

Methods A number of randomly chosen patients (n=109) was selected between 2014-2016 and were statistically and retrospectively analyzed from a large number of patients who had in common atrial fibrillation and diabetes mellitus. Therefore we used statistical correlation tests (Pearson r and r squared). The examination files were accessed in the Clinical Hospital of Brasov, since this hospital is the only first line in receiving cardiovascular emergencies.

Results The majority of the patients were in retired age of 67-80 years (89%) and had their residence in urban areas (76,14%). There was no statistical relevant correlation between the age group and the number of days spent in the hospital ($p=0.23695$). We found a significant correlation between measured arterial pressures by admission and discharge from hospital ($p=0,013134$). A percentage of 60,55% had coronary artery disease, pulmonary hypertension 44,03%, chronic renal disease 34,86%. Left ventricular ejection fraction was altered in 70,3% of cases (n=91). For the total of 989 days of hospitalization (mean=9,07) the healthcare system spendend 72.795,27 EUR.

Conclusion We observed, that the majority of patients had major cardiovascular complications. Therefore, it is necessary to research and to implement new medical approaches in order to better manage and cure these diseases.

Depression and subclinical hypothyroidism

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Introduction Subclinical hypothyroidism refers to a state in which one does not exhibit symptoms of hypothyroidism. Often the first symptom is tiredness. The prevalence of depression has risen tremendously. How often does it pass unnoticed when accompanied by thyroid gland problems?

Aim To determine the prevalence of depression among patients with subclinical hypothyroidism as well as determine the influence of certain socio-demographic and clinical factors in developing this disorder.

Methods A cross sectional study was conducted among 30 consecutive outpatients treated at a tertiary care center. Data was collected through two questionnaires. The first questionnaire consisted of socio-demographic and clinical data. The second one was a standardized Beck Depression Inventory-II (BDI-II).

- Results** Depression was present in the 60% of the studied patients. Mild depression was the most common, then minimal depression, while four patients had moderate depression. It was observed that depression severity among patients who have had subclinical hypothyroidism for longer than a year was significantly higher than among those patients who had it for less than three months ($p=0,046$). Patients who had higher income than national average had significantly lower depression severity ($p<0,05$). Patients without any NCD had significantly lower depression severity than those who have developed at least one ($p=0,023$).
- Conclusion** Depression is highly prevalent among patients with subclinical hypothyroidism. Although the majority of them had minimal to mild depression, what's alarming is the fact that subclinical hypothyroidism can progress to overt hypothyroidism. We must place emphasis on bettering its regulation and thus indirectly act on reducing the prevalence of depression.

Retrospective analysis of head and neck melanoma

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- Introduction** Head and neck melanoma comprises a group of aggressive tumours with varying clinical courses. Previous studies have revealed that there are some demographic and clinical factors having effect on melanoma survival prognosis
- Aim** To find anatomic and demographic and clinical predictive parameters for overall melanoma survival.
- Methods** We retrospectively analyzed 54 first primary cases of melanoma in the head and neck region diagnosed at National Cancer Institute in 2000-2007. This analysis was performed to find anatomic and clinicopathological predictive parameters for overall melanoma survival. Data were processed using Microsoft Excel, data analysis was conducted using SPSS® software. Value of $P < 0.05$ was considered significant.
- Results** The study involved 34 women (62.96%) and 20 men (37.04%). The average age was 67.24 (+/-14.12) years. Lentigo maligna melanoma (51.85% ($n = 28$)) was the most frequent histology form. 81.48% ($n = 44$) of the patients had melanoma on a face and only 7.41% ($n = 4$) on a neck. 48.15% ($n = 26$) melanoma was diagnosed in early stages and 51.85% ($n = 28$) in late stages. The mean of the Breslow thicknesses was 3.5 mm. 11.11% ($n = 6$) of the patients presented Clark Level IV or V. 12.96% ($n = 7$) patients had distant metastases. 20.37% ($n = 11$) of the patients presented tumour ulceration. Distant metastases, tumour thickness and ulceration, were the strongest negative prognostic factors for melanoma specific overall survival ($p < 0.05$).
- Conclusion** Distant metastases, tumour thickness and ulceration are prognostic indicators of overall head and neck melanoma survival.

Beanbag bullets - are they really "non-lethal" ammunition?

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- Introduction** Beanbag rounds (bullets) are becoming more and more available worldwide, one of the most preferred ammunition for the police and law enforcement agencies, as well as for self-defense.
- Aim** The purpose of this study is to describe the potential of "non-lethal" weapons, such as bean-bag bullets, to cause death.
- Methods** A full forensic examination was performed – forensic autopsy, chemical analysis of blood and urine samples.
- Results** Beanbag bullets are designed to inflict superficial painful injuries, however, avoiding serious injuries that can arise with conventional firearms. They consist of a synthetic bag filled with lead pellets. The recommended minimum distance varies between 3 and 10 m. Therefore, at a small distance they should by no means be underestimated. We present two cases where the cause of death was a result of the use of beanbag bullets – one case of suicide (full contact gunshot to the head) and another case of unintentional homicide (short distance gunshot to the head).
- Conclusion** Even though numerous injuries owing to beanbag bullets have been reported in the literature, most of the death cases are a result of impact in the head. 'Non-lethal' ammunition is dangerous and can be lethal if fired incorrectly. Therefore, proper care and precautions should be taken if using non-lethal ammunition.

TNF inhibitors and IL-6 inhibitor in treatment of rheumatoid arthritis

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- Introduction** The availability of new biologic drugs in treatment of the rheumatoid arthritis (RA) has transformed management of this disease over the past 10 years. TNF inhibitors (TNFi) and IL-6 inhibitor are commonly used. (1,2,3)
- Aim** Our goal was to compare efficacy and safety between TNF inhibitors (adalimumab, infliximab, golimumab, etanercept, certolizumab) and IL-6 inhibitor (tocilizumab) in treatment of RA.
- Methods** This retrospective study includes 38 patients who received first biological drug at Department of Clinical Immunology and Rheumatology at Clinical Hospital Center Rijeka. They started with biological drug in the period from 1/2009-1/2015 and were followed for three years after the onset of therapy. Disease activity was measured with CRP (mg/L) and DAS28 score 6, 12, 36 months after first therapy. Time and reasons for discontinuations were followed too.
- Results** Among 38 patients (TNFi:28, tocilizumab:10) 26 (68.4%) patients achieved DAS28 score remission at month 36. In 12 (42.8%) patients treated with TNFi treatment was discontinued due to primary and secondary inefficacy. None of the patients on tocilizumab discontinued the therapy (statistically significant between TNFi and tocilizumab:p=0.047). The mean value of DAS28 after 6 months was 3.25 for TNFi and 2.37 for tocilizumab (statistically significant:p=0.028) and after 36 months 2.90 (TNFi) and 2.56 (tocilizumab). The mean value of CRP after 6 months was 6.51

for TNFi and 1.9 for tocilizumab (statistically significant:p=0.021) and after 36 months 7.48 (TNFi) and 3.60 (tocilizumab).

Conclusion Comparing patients treated with TNFi and tocilizumab as first line of biological therapy, our study on small number of patients has shown that application of tocilizumab has faster accomplishment of remission. Also, 100% persistence of tocilizumab was noticed which supports the opinion that tocilizumab has good efficacy and safety.

Psychiatric disorders in epilepsy

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Introduction Epilepsy is a chronic neurological disease which is characterized by a complex of neurological, psychiatric and EEG disorders where the main symptom is the epileptic seizure that results in pathological bioelectric activity of certain neuron structures.

Aim To discuss the differential-diagnostic possibilities for treatment of psychiatric disorders in epilepsy.

Methods We describe and analyze, using a literature review, 3 clinical cases of patients hospitalized the Clinic of Psychiatry, Alexandrovska University Hospital in 2017.

Results A precise diagnosis of psychiatric disorders in epilepsy as a comorbidity is reached, taking into consideration clinical, social and demographic factors.

Conclusion The differential-diagnostic scheme of psychiatric disorders requires majority of neuropsychological, neuropsychological and imaging assessments.

A prevention of reactivation of hepatitis B virus following polychemotherapy

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Introduction We present a case report of patient with diagnosed chronic hepatitis B and non-Hodgkin lymphoma.

Aim We present a case report of patient with diagnosed chronic hepatitis B and non-Hodgkin lymphoma.

Methods A 54 old man with Non- Hodgkin lymphoma-giant cell, centroblast, nodular variant of germinative cell subtype in stage IIIa AKC diagnosed in 04. 2015, without clinical and ultrasound data for liver cirrhosis, discovered in 04. 2015 : anti- HBc total (+) positive, HBsAg (-) negative, anti- HBe (+) positive, anti- HCV (-) negative, anti-HDV(-) negative, by abdominal ultrasound: data for moderate steatosis hepatis, polypus in gall bladder, cyst in the left kidney, and normodinamic portal circulation. FGS was not made.

Results In 04.2015 before beginning chemotherapy because of non-Hodgkin lymphoma are discovered: anti-HBc total (+)positive, HBV –DNA (-) negative. It was started prevention with Lamivudin 100 mg/ per day, like in following of HBV –DNA in the period 08. 2015- 02.2018 is negative. In 04. 2015 is started polychemotherapy in scheme CHO/R-CHOP and R-DHAP and with Endoxan and GDP 2 since 02.2016

because of relapse. In 04. 2016 is discovered thrombocytopenia and necessitated treatment with thrombocytic aggregation. In duration of the prevention HBV- DNA is lasting negative, and is not registered transaminase activity and progress of the liver disease.

Conclusion The prevention of patient with multiple chemotherapy and discovered HBV antibodies is successful due to continuous applying of Lamivudin.

Primary Cutaneous T-cell Lymphoma in association with two solid tumors

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Introduction Primary cutaneous CD4+ small/medium T-cell lymphoma is a rare, controversial entity among the peripheral T-cell lymphomas with indolent clinical course and favorable prognosis.

Aim The aim of our article is to present the diagnostic and histologic findings of this rare kind of primarily cutaneous lymphoma.

Methods A case of 76 years old woman who was initially admitted to the clinic with a massive lymphedema and inflammation of the right arm. She previously underwent mastectomy because of adenocarcinoma of the right breast, followed by radiotherapy and chemotherapy. She was also diagnosed with appendicitis and after her appendectomy, she has been diagnosed with moderately differentiated colonic type adenocarcinoma. The patient underwent a right hemicolectomy and had no signs of recurrence in the next year. Profound clinical examination at the current admission revealed multiple well-defined infiltrated violaceous plaques with generalized distribution and irregularity growing slowly.

Results Histological examination of the lesion revealed mixed lymphoid infiltrate with a sheet-like distribution, composed of small to medium-sized, pleomorphic lymphocytes and mixed inflammatory cells. Immunohistochemistry revealed a population of mainly CD3+ and CD4+ lymphatic cells corresponding to the diagnosis CD4+ /CD8- small/medium T-cell lymphoma. Ki-67 was positive with 15- 20% of the cells, revealing a relatively low proliferative potential of the lymphoma. CT scan revealed groups of enlarged inguinal lymph nodes. Trepanobiopsy showed no signs of bone marrow involvement. At that point lymphoma was staged as T2NXM0B0, according to the ISCL/EORTC.

Conclusion In conclusion, we present a case of a rare association between two solid tumors and a rare kind of cutaneous lymphoma.

Plasma antioxidant status changes following chemotherapy in lung cancer patients

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Introduction Lung cancer is disease with the highest morbidity among malignant tumors. One of the main environmental risk factor is smoking habits. Other factors are exposure to secondhand smoke, indoor and outdoor air pollution, radiation, etc.

- Aim** The present investigation aims to evaluate the impact of cisplatin chemotherapy on the antioxidant status in patients with lung cancer. In the pilot study are included 16 patients. Patients who recently underwent surgery or have illness which might influence considerably their antioxidant status were excluded from the survey.
- Methods** The blood samples were collected before any treatment started and after the completion of the cisplatin chemotherapy. Apart to the laboratory tests and vital signs usually monitored in lung cancer patients, evaluation of the plasma oxidative stress level has been performed by determination of the amount of TBARS products and the total antioxidant capacity estimation via the ABTS test.
- Results** The obtained data indicate increased amount of the TBARS products in the samples collected after the cisplatin chemotherapy compared to these taken before any treatment started. The antioxidant capacity of the blood plasma remains without significant changes, with a slight tendency of increase after the administration of the chemotherapeutic agent.
- Conclusion** Obtained results suggest that the patient body tends to compensate for chemotherapy-induced oxidative stress by increasing its antioxidant capacity, but still can't balance the ROS production causing irreversible oxidative damage.

Diagnostic dilemmas related to scarlet fever-case report

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- Introduction** Scarlet fever is an acute infectious disease that is manifested by inflammation at the site of infection, a diffuse fine-grained rash and the general signs of infection. The disease is caused by beta-haemolytic streptococcus, which exudes the pyogenic exotoxin.
- Aim** The aim of this paper was to establish a definitive diagnosis based on a clinical picture and diagnostic methods in a patient whose clinical picture points to the scarlet.
- Methods** Biochemical and microbiological findings of blood and urine, US.
- Results** A boy was admitted to UH Foca, febrilane to 39 ° C, with rash and vomiting. In physical examination: febrilane to 38.8 ° C, dehydrated. On the neck, along the front and back of the m.sternocleidomastoideus, enlarged lymph nodes. There was a tiny grainy rashes all over his body except his palms and soles. The tongue was strawberry and lips dry. The tonsils were hyperemic and hypertrophic. The meningeal signs were negative. Labs have indicated an increase in inflammatory parameters ASTO was negative as well as EBV VCA IgM, CMV IgM, and Parvovirus B19 IgM and IgG, Adenovirus IgM was positive.
- Conclusion** Differential diagnostic analysis included scarlet, infectious mononucleosis and Kawasaki syndrom. An analysis of the results of diagnostic tests showed that the cause of the disease was adenovirus.

Treatment difficulties in Crohn's disease in children – case report

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Introduction Crohns disease (CD) is an idiopathic, chronic inflammatory bowel disease which can involve any region of the gastrointestinal tract. This condition is characterized by an eccentric inflammatory process with skip lesions, transmural gastrointestinal involvement and relapse periods of the disease.

Aim This case report aims to raise awareness about treatment difficulties to reach the goal of maintaining remission and preventing relapses in CD in children.

Methods A 14 year old female patient diagnosed with CD in 2013 had a first relapse in 2014, followed by a second period of relapses in 2017. In April 2017 the acute exacerbation of the disease presented with daily vomiting, abdominal pain and a palpable formation in the ileocecal area. In May 2017 the child had abdominal pain and absence of defecation for 3 days. In June 2017 the patient presented with intensified symptoms including abdominal pain, vomiting, fatigue and weight loss of 12 kilograms. In September 2017 the patient had abdominal pain, nausea and vomiting.

Results Diagnostic findings during relapse periods included a thick red mucous membrane, inflammatory changes in cecum and terminal ileum and possible enterovesicular fistulas. During periods of remission a smooth lining, pronounced vascular pattern and absence of erosions, ulcers and polyps characterized endoscopy. The initial treatment of azathioprin was extended by adalimumab in 2014 and by ciprofloxacin and metronidazole in April 2017. In June 2017 the child was referred to the surgical department for a laparotomy with resection of the inflammatory changed region at the ileocecal anastomosis. In September 2017 another relapse induced the therapy with methylprednisolone, slowly tapered, and infliximab.

Conclusion This aims to demonstrate the long term process of finding the appropriate treatment and its adjustments during relapse periods in patients with CD.

Acute Coronary Syndrome – Clinical Case

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Introduction We report a 68-year- old patient who underwent surgery for carcinoma of the colon and presents a clinical constellation of acute coronary syndrome (ACS). The patient had vegetative symptoms, nausea, vomiting and pain in the epigastrium around 3 a.m. He arrived at hospital around 3 p.m. with chest pain, when at first, the cardiac markers troponin and creatine phosphokinase (CPK) (MB isoenzyme) were within reference range and his electrocardiogram showed minimal abnormalities – 1 mm ST-elevations in II, III and aVF leads. However, 20 minutes later the electrocardiogram showed 3 mm ST-elevations in II, III and aVF leads.

Aim The aim of this clinical case report is to highlight the importance of further instrumental and biochemical examinations in case of a patient with clinical symptoms even when in the beginning these examinations show no abnormalities.

Methods Complete blood count, biochemical examination of blood, including the cardiac markers troponin and creatine phosphokinase (CPK) (MB isoenzyme), and

electrocardiography were assigned when the first clinical symptoms were observed, as well as 20 minutes later after the treatment with Izoket spray and Heparin was applied.

Results The patient was diagnosed with an acute coronary syndrome and was sent to another hospital where a percutaneous coronary intervention (PCI) was performed. After that the patient's symptoms eased and he was discharged in satisfactory condition. In the following weeks he underwent checkup examinations.

Conclusion When it comes to patients with clinical constellation of ACS, normal results of examinations in the beginning should not exclude the diagnosis and should be repeated in the next hours in order to treat the patient adequately.

Neurological case of vertebral artery hypoplasia with fusiform basilar aneurysm

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Medical University of Sofia, Bulgaria | Area **Neurology**

Introduction Vertebral artery hypoplasia is embryonic variation in the posterior circulation with frequency of 2-6%. Intracranial aneurysms are reported to be with prevalence of approximately 4%. Both condition are predisposing factors for stroke, however little is known about their cumulative risk.

Aim Studies suggest that congenital anomalies of brain vascular system inance haemodynamic stress, thus increases the risk for aneurysm formation. Our objective is to present a clinical case in which two rarely seen pathologies of cerebrovascular system coexist and discuss the possible mechanism for their interaction leading to recurrent ischemic strokes.

Methods We present a 60-year-old male, with a posterior circulation ischemic stroke, in which congenital anomaly in the intracranial part of the left vertebral artery accompanying an aneurysm of the vertebrobasilar system was encountered. The patient appeared in the emergency room of National Cardiology Hospital with complaints about worsened left arm weakness, dysarthria, diplopia and impaired consciousness - signs indicating a second ischemic incident. After neurological evaluation a noncontrast CT of the head was performed, showing multifocal ischemic encephalopathy and marked basilar artery dilatation.

Results After a CT-angiography a hypoplastic V4 segment of the left vertebral artery with long fusiform aneurysm of the whole basilar and part of the right vertebral artery was seen. The patient received conservative treatment in intensive care unit, after neurosurgical consultation concluded that the case is not suitable for surgical intervention. After 10 days the patient was dismissed from the hospital with severe neurological deficit.

Conclusion Coexistence of vascular variation and aneurysm pathology in the cerebral vascular system with patient history of previous ischemic incident in the same vascular region suggests additive effect of the two conditions. It's probable that the formation of the aneurysm was induced by haemodynamic stress caused by the vertebral artery abnormality.

NYHA 3 hypertrophic obstructive cardiomyopathy treated with myectomy

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Introduction Hypertrophic cardiomyopathy (HCM) is heterogeneous group of diseases which are based on understanding of morphology, pathophysiology and clinical course. It has a variable natural progression, which ranges from dyspnoea and syncope to sudden cardiac death.

Aim Diagnosis of HCM relies on clinical assessment and transthoracic echocardiography.

Methods 42-year-old male smoker with known mitral insufficiency and obstructive HCM was admitted to department of cardiology because of worsening stenocardia during physical activity which is often accompanied with dyspnoea. He denied dizziness, syncope and palpitation. Last few days he noticed severe worsening of dyspnoea during the night. He often wakes up and has to sit until dyspnoea disappears. On examination there was a moderate mesotelesistol murmur over the apex spreading throughout precordium. Laboratory showed a raise of pro BNP from 578 to 1028 ng/L. Stress echocardiography showed a decrease of aerobic physical performance by 10%.

Results Transoesophageal echocardiography was performed which did not appear to be valvular and should decrease with myectomy. Carotid artery Doppler and tests of pulmonary function showed no abnormalities. The patient was classified as NYHA 3, till then he was NYHA 2, and was scheduled for operative treatment. Septal myectomy with mobilisation of papillary muscles was performed. On one-year check-up cardiac MRI was performed which showed septum around 1.3 cm thick with minor mitral regurgitation. Echocardiography showed improved diastolic function without obstruction. Stress echocardiography even showed 10% increase in physical performance. The patient was classified as NYHA 1

Conclusion In presented case septal myectomy was preformed after all conservative treatment has been exhausted. The outcome was better than expected. Patient even gained 10% of physical performance and is now without any signs or symptoms. He is in good physical shape and classified as NYHA 1.

Multidrug-resistant tuberculosis(MDR-TB) in patient infected with Human Immunodeficiency Virus

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Medical University of Sofia, Bulgaria | Area **Infectious Diseases**

Introduction Tuberculosis is an infectious disease, caused by M.Tuberculosis(MTB). MDR-TB is caused by resistant strains of MTB to two or more first-line drugs. Tuberculosis has greater impact on morbidity and mortality in HIV-infected individuals than all other opportunistic infections.

Aim To present diagnostic and therapeutic problems.

Methods A 57-year-old male was hospitalized in Burgas with symptoms of watery diarrhea, fever, night sweats and weight loss. Laboratory tests showed anemia and leucopenia. Patient was positive for HIV and transferred to Specialised Hospital in Sofia, where he was evaluated and combined antiretroviral therapy(cART) was

initiated. Direct microscopy of sputum for MTB was negative. Chest X-ray revealed non-specific changes. After four weeks culture for MTB was positive and therapy with FLD was started. Two weeks after that, the result for MDR-TB was positive. The diagnosis was confirmed with GeneXpert MTB/RIF and appropriate treatment was applied.

- Results** After eleven months of cART, optimal viral suppression (HIV viral load is undetectable) and good immunological response (CD4+ T cells >200/ μ l) were achieved. The treatment for HIV is lifelong. The results of culture for MTB are negative now. Tuberculosis treatment in patients with HIV lasts for twelve months.
- Conclusion** Diagnosis of tuberculosis in HIV-infected patients with advanced immune deficiency is difficult. Culture is the "gold standard" for diagnosis, but it takes four to six weeks for a conclusive answer. GeneXpert MTB/RIF is more rapid and that is especially important in cases of MDR-TB.

Effect *E.longifolia* with Chloroquine in Mice-Infected by *Plasmodium berghei*

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University of Indonesia, Indonesia | Area **Parasitology**

- Introduction** Malaria is one of the infectious disease that can be easily seen in developing countries. According to WHO, Malaria is an endemic disease in 104 countries. In 2012, 627.000 person died caused by Malaria.
- Aim** Malaria treatment is going to become resistance in various regions. Chloroquine for example. Therefore, research of malaria treatment is needed for better choice therapy. *Eurycoma longifolia* jack is a plant that has potential as malaria therapy due to contain quassinoid.
- Methods** This study was to test *Eurycoma longifolia* jack extract dose 60 mg/kgBW and 75 mg/kgBW in single and combination with chloroquine via oral. Type of studies is experimental in vivo with Swiss mice infected by *Plasmodium berghei* as subject. The subject has some similarities with *Plasmodium falciparum* infection in human body. Subject were chosen by consecutive sampling method.
- Results** Results of comparative study day 4 and day 0 levels of parasitemia has significant value ($p < 0,05$). The percentage of growth inhibition in the combination group of chloroquine with *Eurycoma longifolia* jack 65 mg/kgBW; 75 mg/kgBW reached 98,5% and 98,9% compare with reference standard therapy chloroquine (single) that reached 100%, while inhibition of *Eurycoma longifolia* jack alone <50%.
- Conclusion** It can be concluded that combination group via oral better than single group of *Eurycoma longifolia* jack to reduce and suppress parasitemia based on the post-hoc analysis there were significant differences ($p < 0,05$).

The effect of pharmacotherapy on the development of metabolic syndrome

Ignjic Dario

Medical Faculty Novi Sad University in Novi Sad, Serbia | Area **Pharmacology**

- Introduction** The advent of antipsychotics, especially second-generation antipsychotics, has undoubtedly improved treatment results of patients with bipolar disorder. Side effects, however, include metabolic consequences in patients that can lead to serious cardiovascular and cerebrovascular diseases.
- Aim** To determine the correlation between medical therapy of patients with bipolar disorder and the onset of metabolic syndrome.
- Methods** The patient's data was collected from their medical history and analysed in Microsoft Excel and JASP (program for statistical analysis).
- Results** Statistically important changes were noticed in increased BMI ($p < 0,05$), systolic ($p < 0,01$) and diastolic ($p < 0,05$) blood pressure and fasting plasma glucose ($p < 0,001$). Triglyceride levels in patients were increased even before the trial begun. HDL cholesterol did not change significantly. Clozapine caused the most metabolic changes, interfering with all factors except triglyceride levels. The second most changes caused quetiapine, haloperidol and chlorpromazine.
- Conclusion** Antipsychotic medicine shows negative effects on lipid and glucose metabolism. The biggest changes were noted in weight, BMI, systolic blood pressure and fasting plasma glucose. Women were more likely to develop symptoms than men. Second-generation antipsychotics showed more adverse effects than typical antipsychotics, with clozapine having the most negative effects.

Epidemiological characteristics of patients with amyotrophic lateral sclerosis

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University of Banja Luka, Bosnia and Herzegovina | Area **Neurology**

- Introduction** Amyotrophic lateral sclerosis (ALS) is a rare fatal progressive neurodegenerative disease of unknown etiology. The disease clinically presents as combined lesion of central and peripheral motor neuron. ALS can begin as bulbar and spinal form. There is no causal therapy.
- Aim** Aim of our paper was to determine epidemiological characteristics of patients with ALS in Republic of Srpska.
- Methods** In this cross-section study, 34 medical histories of patients who were treated in the Clinic of Neurology in University Clinical Center of Republic of Srpska, were examined. Following data were analyzed: gender, age, profession, distribution by municipalities, presence of brain and spinal cord trauma, starting form (bulbar or spinal cervical/ thoracic / lumbosacral), duration of the disease, and first signs (weakness, atrophy and muscle fasciculations, speech and swallowing disturbances).
- Results** Out of 34 patients, 20 (58,82%) were male and 14 (41,18%) were female. Average age at the beginning of the disease was 53,45 for men, and 56,79 for women. In 29,41% of patients the disease lasted longer than 5 years, and in 11,76% of patients longer than 10 years. A spinal form of ALS was found in 30 (82,24%) patients. In 3 patients (8,82%) ALS started as bulbar form, and in just one patient the disease

started with weakness of respiratory musculature. In the beginning, 23 (67,65%) patients had fasciculations, 20 (58,82%) had weight loss, and 9 (26,47%) had muscle cramps. Brain trauma was present in 2 patients (5,88%). Significant difference in distribution by municipalities and professions was not found.

Conclusion In our study, we found that ALS begins earlier and occurs more frequently in men. Spinal cervical and spinal lumbosacral forms are equally frequent. The most common clinical sign is muscle fasciculations. There is no significant difference in duration of the disease in our study and in literature.

Leptin gene variant associated with the obesity

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Introduction Leptin is an endocrine hormone that has a important role in body weight homoeostasis and mediates its effects via the leptin receptor [1]. Common polymorphisms in the genes coding leptin receptors have been associated with metabolic abnormalities [2, 3].

Aim The research aim is to define the association of the Arg223Gln polymorphism of leptin gene with the obesity in patients with coronary artery disease.

Methods Within the research a complex examination of 222 patients with coronary artery disease and obesity has been performed. The experimental group included 115 patients with coronary artery disease who had standard weight. The control group included 35 apparently healthy people. The groups were contrasted according to age and sex. Genomic DNA was extracted from 1 mL EDTA-anticoagulated whole blood by a salting-out method. The leptin Arg223Gln polymorphism was genotyped by polymerase chain reaction and fragment analysis. Categorical variables were compared by chi-square or Fisher's exact test. A p value lower than 0.05 was considered statistically significant.

Results The presence of allele G and GG genotype polymorphic locus Arg223Gln of the leptin gene in patients with coronary artery disease was associated with the development of obesity, respectively (OR=1.70, 95% CI=[1.26–2.31], $\chi^2=11.8$; $p<0.05$) and (OR=2.77, 95% CI=[1.50–5.12], $\chi^2=10.9$; $p<0.05$).

Conclusion These results indicate that individuals who carried the 223Gln leptin gene variant were associated with the development of obesity compared with individuals who carried the Arg223 leptin gene variant.

Clinical depression and suicide : A case study

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Introduction Clinical depression is one of the most common mental disorders worldwide. In recent years youth depression rates are on the rise. It has become more often for depressed young adults to think about, attempt and succeed at committing suicide.

Aim The stability, productivity and economic potential of any society highly depend on young adults and they have been put at risk. This study aims to open a conversation on methods of recognizing signs of depression and tactics to prevent suicides of young adults.

- Methods** In the following study two separate cases of suicide by mechanical asphyxia from the Department of Forensic Medicine and Deontology at Medical Faculty, Medical University of Sofia have been presented. Both of them are young males, one aged 18, and the other – 27. The scenes were studied, autopsies were performed as well as toxicological studies. Relatives and close friends of the victims were interviewed and suicide notes were collected.
- Results** Both were found alone in their homes, with plastic bags around their heads. In the first case, a bottle of pentobarbital was found and in the second – a helium bottle attached to the bag through a plastic tube. Suicide notes have been found at both scenes. The autopsy in both cases established the common signs of quick death: Hypostasis, dark red liquid blood, internal organ stasis and congestion, severe lung and brain edema. The toxicology report of the 18-year old stated a concentration of 78 µg/mL pentobarbital in the blood. Relatives of the deceased mentioned no prior suicide attempts.
- Conclusion** The discussion for recognition and prevention of clinical depression should be active and attempts towards accurate and prompt diagnosis and treatment must be a responsibility of every single person in order for a functioning society to be preserved.

Sudden Cardiac Death Hidden in the Cold

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- Introduction** Sudden cardiac death is still the leading cause of death in modern world. Its impact over society has increased and despite the numerous reports and prompt clinical diagnosis and treatment, prevention is still an issue.
- Aim** This study aims to investigate whether sudden cardiac death is an underlying cause of death, in deceased with hypothermia as the prevalent diagnosis, which is important considering the possibility of even higher number of death incidents due to cardiac pathology in cases where such, is practically impossible to be proven.
- Methods** A retrospective study was being conducted for the past 5 years (2012-2017) in the Department of Forensic Medicine and Deontology in the Medical Faculty of the Medical University of Sofia, on cases in which the cause of death has been established as hypothermia. In all cases, samples for toxicological analysis and histological analysis have been collected.
- Results** From all the autopsies performed during that period, in 52 cases the leading cause of death has been considered as hypothermia, given the macroscopic findings during the autopsy – bright red color of blood, hypostasis and muscles, along with submucosal gastric hemorrhages. In 78,8% (n=41) of cases, alcohol consumption has been detected in the toxicology report. The histological examinations from the other 21,1% (n=11) of samples, have shown prominent cardiac pathology, with all of them exhibiting myocardial fibrosis and coronary atherosclerosis. The deceased have been between 36 and 57 years of age and none of them have had distinctive musculoskeletal disorders.
- Conclusion** This study has shown that in cases where death has been attributed to hypothermia, distinctive cardiac pathology as well as possible consecutive rhythm abnormalities and conduction disorders, have been the causes that forced physically active and conscious people to remain for a long time in a cold environment.

Progesterone versus Magnesium Sulfate in the Management of Preterm Labor

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Shahid Beheshti University of Medical Sciences, Iran | Area **Gynecology**

- Introduction** Preterm labor is the leading cause of prenatal and neonatal mortality morbidity and long term neurodevelopmental problems. So that different treatments have been employed in order to suppress preterm labor from several years ago.
- Aim** We take a decision that compare the ability of magnesium sulfate with progesterone in suppression of preterm labor.
- Methods** In this randomized clinical trial 132 cases were chosen from pregnant women between the 26-34 weeks of pregnancy who were suffering from preterm contractions of uterus with intact amniotic sac and cervical dilatation of less than 4cm. these women had referred to obstetric ward of Ali – Ebne – Abitalib hospital, Zahedan, and randomly were divided into two equal groups (66 cases in each group). The results were analyzed by chi square and T test with spss software.
- Results** In first group primarily 4 grams of magnesium sulfate infused. And then 10 grams (2grams per hours) was continued. in second group progesterone used 200 mg vaginal suppository as single dose. in first group delivery during 48 hour was failure of treatment and second group if no controlled contraction of uterus after 1 hour, changed to magnesium sulfate and this case was failed. From 66 women in magnesium sulfate group in 58 case (89%) suppressed delivery at least for 48 hours. In second group from 66 women 52 case (79%) suppressed delivery at least for 48 hours.
- Conclusion** This finding show the ability of progesterone in suppression of preterm labor is similar to magnesium sulfate however maternal side effect of magnesium sulfate was 95% while it was no for progesterone.

Potential therapeutic use of modified Zika virus to target Glioblastoma.

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Medical University Pleven, Bulgaria | Area **Oncology**

- Introduction** Glioblastoma is a highly aggressive brain tumour with poor prognosis due to high resistance to conventional treatment such as surgical resection, radiation and chemotherapy. Zika Virus which causes microcephaly in fetus was shown to kill Glioblastoma stem cells in mice.
- Aim** This literature review investigates potential treatment option that could increase the prognosis of patients suffering from glioblastoma by reducing its reoccurrence.
- Methods** A thorough literature review of scientific topics on databases such as pubmed, journal of experimental medicine, centers for disease, control and prevention and science daily news were used.
- Results** Engineered Zika virus was highly selective against Glioblastoma Stem Cells in vitro and mice. Marked reduction in proliferation and increase in apoptosis was observed in tumour cells infected with Zika Virus. After 24 hrs, large number of round, swollen cells with loss of cell integrity were observed signifying cell death.

Increase in cytopathic effects were more evident after 48 hrs. Zika-infected mice showed prolonged survival (up to 50 days) compared to the 28-35 days of non-infected ones. Diogxin previously shown to reduce cell proliferation in skin and breast cancer was also found in zika infected cells using mass spectrometry imaging.

Conclusion Genetically engineered Zika virus was effective at treating glioblastoma cells in mice and invitro. In future, the virus could potentially be used as an oncolytic agent to treat glioblastoma cells to reduce mortality in human. Further research and studies is needed before being implemented in humans.

The new suture method on achilles tendons

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Introduction We describe a novel method of primarily repairing complete Achilles tendon ruptures. Our new method is considered to be "suture loop technique".

Aim Main aim of this method is to improve the effectiveness in surgical repairing the Achilles tendon ruptures. This research will reveal the main advantages of our new suture method in comparison with the existed krackow and its modification method.

Methods 18 rabbits were used in our research, incision was made 4 cm proximal to the Achilles insertion on the calcaneus in the right leg in order to perform the new suture with PDS*II and the left leg served as a control. All Achilles tendons also received an epitendinous repair with 3-0 polypropylene suture to appose the tendon ends. After 7 weeks biomechanical testing in order to assess the strength of Achilles tendons were initiated. In our research we have used Kruskal – Wallis variance test and Wilcoxon test for the purpose of obtaining more precise values.

Results Breaking strength of control tendons 7 weeks postoperatively was 242(185-287)Newton. Tendon group with new suture method endured significantly more force 220 (216-224)Newton in comparison with other two groups in which Krackow and modified Krackow method Giftbox were applied. P value in Kruskal-Wallis test for the 3 groups was $P=0,0018 < 0,05$. The value between control groups were not statistically significant. Wilcoxon test showed significant differences between the control and test groups. Collectively, the rates the wound complication as deep infections , delayed wound healing, adhesion formation varied from 5,8% to 13%. Infection has been the most reported complication in percentage rates from 3% to 7,5%.

Conclusion The breaking strength of tendons repaired with New suture method was significantly higher in comparison to the tendons sutured with Giftbox and traditional Krackow method.

Supplementary motor area syndrome - case study and literature review

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Introduction The supplementary motor area syndrome is a well described clinical syndrome with somewhat poorly understood pathophysiology. It is most commonly associated with resection of tumors, vascular lesions or surgery for intractable epilepsy in the supplementary motor area or the vicinity.

Aim Characterized by the almost universal reversibility of the symptoms (contralateral motor deficit with possible aphasia being the most common) within weeks to months, it is of great importance to differentiate the SMA syndrome from motor deficits due to operative damage to the motor cortex as the prognosis is immensely different.

Methods A 59-year-old female patient presented to the Department of Neurosurgery of University Hospital "St. Ivan Rilski" with symptoms of intracranial hypertension, i.e. headache and nausea with history of 2 weeks. No neurological deficits were present. An MRI was performed and a tumor formation in the right lateral ventricle consistent with an ependymoma was discovered occluding the foramen of Monro. The patient was hospitalized for surgical treatment. A right fronto-parietal craniotomy was performed followed by anterior interhemispheric callosotomy and a gross total resection was achieved.

Results Following the operation, the patient was stable. Global akinesia and aphasia were present – a clinical picture consistent with the description of the SMA syndrome by Laplane (1). A literature review shows that this syndrome is most often associated with corticectomy for intractable epilepsy (1), glial tumors affecting the SMA (2,3), even parasagittal meningiomas (4). This, however, was not the case in our patient. Furthermore, a CT on the 2nd postoperative day showed a hypodense zone in the SMA. Consequently, the resulting SMA syndrome might have been caused by the sacrifice of small parasagittal bridging veins and the following venous infarction.

Conclusion While the clinical picture of the SMA syndrome might appear almost identical to motor cortex damage in some cases, it is important to differentiate between the two as the prognosis is completely different and a prompt recovery is expected in the former even without treatment.

Chronic recurrent tuberculum sellae meningioma - Retrospectal view of treatment complications

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Introduction A mid-40 woman developed amaurosis after pregnancy. Benign tumor with 2 recurrences compressing optic nerve(ON) and internal carotid artery causing blindness, ptosis and paralysis of oculomotor nerve. Two resections with craniotomia frontotemporalis and endoscopic approach from 2000 to 2015.

Aim Optic nerve and olfactory trigone compression by a tumor are rare, case helps reconsider the best surgical strategy for tumor removal in relation to optic nerve preservation, saving visual functions and make resection in max admissible sizes to avoid recidivism.

- Methods** Ophthalmological evaluations before and after surgery. Testing visual acuity with Snellen chart, fundoscopy and Goldmann perimetry test for visual field(VF). Examination of ocular motility and cranial nerves. Endocrine blood tests were performed. Computer tomography(CT) , magnet resonance imaging(MRI) with and without contrast shows tuberculom sellae meningioma(TSM) located in planum sphenoidale region in left parasagittal area. First operation in 2000 – PT. TSM became anemic, thought interruption of blood supply ensure easily detachment performed completing total resection. Second endoscopy operation in 2012 with Simpson grade III. Treatment with antiepileptic and antiedematous drugs , no coffee diet. Consultations and diagnostic imaging every year.
- Results** MRI shows d = 2.5 cm TSM compressing chiasm cistern, hypophysis and spreading to infundibulum. Scotoma of the bottom VF. Only superior nasal quadrant is showing good degree of preservation. Amblyopia – left eye – 1.0 . After resection vision sharpness improved. Amblyopia reduces on 0.6. ON atrophy causing progressive blindness from local tumor recurrence with sizes 5.4/4.8 mm. from the medial side of carotid artery. Postoperative calcification, internal hydrocephaly and edema of frontal sinus. Control examination reveals residual suprasellar formation and pituitary gland cyst. The next diagnostic tests do not showing progress in tumor sizes so no operation is planned.
- Conclusion** Recurrence of TSM and blindness after surgery are really rare around 2 – 3 %. The outcome from treatment depends of the exact location of the tumor and surgical approach. They are the key to reach excision in maximum sizes in order to avoid vision loss, recurrence and damaging important structures.

New approach in deep vein thrombosis treatment

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- Introduction** The aim of treating DVT is to prevent all complications from venous thrombosis and restoring blood flow through the thrombotic vein while preserving the function of the venous valve. Conventional therapy is systemic heparinisation followed by oral anticoagulants.
- Aim** We present our experience in endovascular treatment of acute and subacute forms of DVT, without presence of May-Thurner syndrome.
- Methods** We present patients with DVT divided into four groups, depending on the type of underwent intervention . All are diagnosed with color coded duplex Doppler sonography and, if necessary, CT angiography. In some cases is used percutaneous mechanical thrombectomy with Aspirex, with or without prophylactic PE with temporary cavafilter - Kapchorex. In other cases, venous balloon angioplasty and stent placement are used, in the fourth - hybrid procedure; surgical thrombectomy followed by stenting of the iliac segment.
- Results** We observed satisfying angiographic results in the post-treatment period of affected segment. Therapy with elastic bandages, vasoprotective medications and anticoagulants. During the follow-up of the 3-month period after the procedure, no retrothrobosis was recorded.
- Conclusion** Endovascular treatment is minimally invasive method with high percentage of technical success and an acceptable profile of complications. Aspiration thrombectomy, balloon extension and stenting still require long-term follow-up, but

are safe and effective for treating DVT, and require minimum stay in the hospital and fast recovery of the patient.

Effects of radiotherapy on patients with colorectal cancer

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Medical University of Sofia, Bulgaria | Area **Oncology**

Introduction Ionizing radiation is a general part of cancer treatment to kill poorly differentiated malignant cells. Although being beneficial for the reduction of tumor size in preoperative conditions, severe complications may occur during the procedure.

Aim To evaluate the effects of radiotherapy on the postoperative patient with poorly differentiated adenocarcinoma.

Methods Chemotherapy as well as radiotherapy were administered to a 25-years-old patient after surgical extirpation of colorectal cancer. Pararectal lymph nodes metastases were also present and histologically defined. The latter data imposed further treatment involving radiotherapy. Monitoring the blood samples during the treatment was essential for the detecting of postoperative complications.

Results During the course of radiotherapy the patient developed radiation-induced enterocolitis and as a result of this-adhesive ileus. High level of hsCRP and absence of tumor marker CA19.9 registered in plasma. The condition deteriorated and the following symptoms occurred – meteorism, reduced passage, malabsorption, severe weight reduction. The progress of inflammation caused relative intestine obstruction. The hypoproteinemia with anasarka, abdomen with gas collection, ascites and miserere required urgent reoperation. Massive adhesions and convulsion were found as well as severe intestinal dilatation to be caused by the radiotherapy . Intestinal passability was restored after 200cm bowel block resection and follow-up anastomosis with débarrassage.

Conclusion The patient had no benefit from the radiotherapy. Furthermore intestinal inflammation and severe ileus were caused by it. Because of the subsequent complications, the radiotherapy course of the patient was suspended.

Analysis of applied anesthesia methods for knee joint arthroplasty surgery

Bukelyte Greta, G. Bruzyte, E. Kontrimaviciute , T. Strainys

Vilnius University Faculty of Medicine, Lithuania | Area **Anaesthesiology**

Introduction It is important to choose adequate postoperative analgesia method after knee joint arthroplasty surgery, as it not only helps patients to recover quicker, but also reduce the number of readmissions due to pain and overall cost of care.

Aim To evaluate and compare the level of pain and satisfaction of patients after total knee joint arthroplasty surgeries.

Methods A prospective research was conducted in Vilnius University Hospital Santaros Clinics. 88 patients were polled at time frames: 1,2,4,6,12,18,24 hours after total knee joint arthroplasty surgery. Assessment of anaesthesia peculiarities (type of anaesthesia, doses of local anaesthesia), pain intensity according to VAS at rest and in motion, patient's satisfaction and demographic information. Data processed using MSEXcel.

- Results** 82.95% (n=73) were women, 17.05% (n=15) men. Spinal heavy bupivacaine 0.5% anaesthesia was performed on all surgeries. Patients were classified into four groups according to postoperative analgesia method: 1group of patients 39.77% (n=35)–infiltration with ropivacaine 225-300mg; 2group-29.55%(n=26)-intrathecal morphine 0.10mg; 3group-21.59% (n=19)-intrathecal morphine 0.10mg and n.femoralis block with bupivacaine 50-100mg; 4group-4.55% (n=4)–n.femoralis block with bupivacaine 50-100mg. Lowest average VAS value after 24h at rest was for 2group 1.54+/-1.27; highest–2.5+/-1.3 for 4group. Accordingly in motion: lowest 3.23+/-1.03–1group; highest 5.74+/-2.1– 3group. Lowest satisfaction after 24h was observed in 3group–7.53+/-1.58; best 2group –8.63+/-1.21.
- Conclusion** The lowest VAS value at rest state and best satisfaction of patients within first 24hours post surgery was observed for patients to whom intrathecal morphine was administered. The highest VAS values in motion and lowest satisfaction were observed for patients to whom intrathecal morphine with n.femoralis block was used.

Comparison of analgesia methods after total knee joint arthroplasty surgery

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Vilnius University Faculty of Medicine, Lithuania | Area **Anaesthesiology**

- Introduction** It is important to choose adequate postoperative analgesia method after knee joint arthroplasty surgery, as it not only helps patients to recover quicker, but also reduce the number of readmissions due to pain and overall cost of care.
- Aim** To analyze the effectiveness and side effects of postoperative analgesia methods, using intrathecal morphine and local infiltration of ropivacaine, twenty-four hours after knee joint arthroplasty surgeries with spinal anesthesia.
- Methods** In 2016-2018 a prospective research was conducted in Vilnius University Hospital Santaros Clinics. In total 61 patients who had knee joint arthroplasty surgery with spinal anesthesia (10–15mg heavy bupivacaine 0.5%) were enrolled in the study. Group1 – local soft tissue ropivacaine infiltration anesthesia around the knee (n=35; solution consist: ropivacaine 225-300mg, ketorolacum 30mg, adrenalinum 0.2mg). Group2 - intrathecal morphine sulfate analgesia (n=26; dose 0.1mg). Patients were examined at time intervals – 1,2,4,6,12,18,24 hours postoperatively. Pain intensity was assessed (using VAS) at rest and in motion, patient's satisfaction and side effects - nausea, vomiting, itch, urinary retention were monitored and registered if noticed.
- Results** After 24h mean values at rest of VAS were 1.7±0.9/1.5±1.3 in Group1/Group2. Pain intensity values in motion 12h after the surgery were 2.5±1.7/2.9±1.9. After 24h pain intensity was 3.2±1.0/3.3±1.5. 11.4% (n=4) episodes of nausea were registered in Group1, 34.6% (n=9) of Group2 patients experienced nausea and 5 of them also vomited (p=0.0056). 42.3% (n=11) patients in Group2 had itch while none patients of Group1 indicated it(p=0.0001). Urinary retention rate was evaluated only in Group1 where 85.7%(n=30) of patients were not catheterized prior surgery. Of these 6.7%(n=2) noticed urinary retention 1 hour after surgery. Patients of both groups indicated similar satisfaction after 24h: 8.6±1.2/8.5±1.0.
- Conclusion** VAS values at rest were very similar in both groups, but pain relief efficiency compared to the intensity of pain during movement was better with local ropivacaine infiltration (statistically insignificant) also patients with ropivacaine analgesia experienced less side effects.

MDM2 and CDK4 genes role in pathogenesis of retroperitoneal liposarcoma

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Medical University of Sofia, Bulgaria | Area **Genetics**

Introduction Mouse double minute 2 homolog (MDM2) is a protein, encoded by MDM2 gene which is an important negative regulator of the p53 tumor suppressor. Cyclin-dependent kinases (CDK4) are kinases that control progression through the cell cycle.

Aim Liposarcoma arises in the fatty tissue, is rather an uncommon soft-tissue tumor. MDM2 is the most frequent amplified gene, close to 100%, and CDK4 is amplified in over 90% of cases. The aim of the research is to determine whether the MDM2 and CDK4 genes mutations exert an effect on tumor genesis.

Methods A 50-years-old patient with pain in right abdominal half, discomfort, fever and weight loss was diagnosed via computer tomography with retroperitoneal liposarcoma. A surgery was performed targeting the total carcinoma excision. Parallel to the surgical intervention genetic tests were also performed in order to find a correlation between mutant gene existent and the present cancer. Treatment is accomplished including chemotherapy. After one year the patient got relapse of the tumor with metastases in different areas. It was done extirpation of the retroperitoneal formation, right kidney and right hemicolectomy.

Results Histologic examination reveals a myxoid-type tumor, consisting of an amorphous mucoid material, slightly colored with small dark oval cells with atypia. Amplification of MDM2 and CDK4 were detected by molecular techniques including PCR and MLPA. Co-amplification of these genes is a common feature in well-differentiated liposarcoma and is thought to be the initiating factor in fat tumorigenesis, resulting in proliferation through combined effects upon p53 and the cell cycle. After the full recovery the patient is redirected to the oncology department where further treatment is performed including chemotherapy

Conclusion Gene amplification or altered regulation of transcription that increased MDM2 and CDK4 expression level, is involved in tumor progression of retroperitoneal liposarcoma. Evaluation of the results obtained from the histology of the tumor and the DNA-analysis confirms the present correlation between retroperitoneal myxoid liposarcoma and mutation in these genes.

Intraoperative subcutaneous emphysema during laparoscopic myomectomy - anaesthetic management

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Medical University of Sofia, Bulgaria | Area **Anaesthesiology**

Introduction Laparoscopic surgery is a useful tool for gynecologic surgery which is associated with lower operative morbidity and mortality. The incidence for grossly detectable subcutaneous emphysema associated with laparoscopy has been estimated to be approximately 0.43% to 2.3%.

Aim We present a case of intraoperative massive subcutaneous emphysema extending to the upper torso and the distal part of the neck with prolonged hypercarbia.

- Methods** 41-year-old female with BMI of 19.9, ASA class 1, Mallampati 1 and TMD of 6cm, diagnosed with intramural uterine leiomyoma was scheduled for laparoscopic myomectomy under general anesthesia. The patient was preoxygenated, induced with 200mg Propofol and 100mg Succinylcholine and then intubated with 7 mm ET tube and maintained on O₂, air and Sevoflurane. She was ventilated with tidal volume of 300ml, rate of 12 and PEEP of 5cm H₂O. The patient was placed in Trendelenburg position and pneumoperitoneum was established with 2.5 L of CO₂ to the intraabdominal pressure of 16mmHg and a total of 4 trocars were inserted.
- Results** 60 minutes into the procedure there was an gradual increase in ETco₂ to 54mmHg, there was a palpable crepitus extending to the level of the lower neck. Subcutaneous emphysema was suspected and the surgeons were alerted. The ventilation rate and tidal volume were increased, oxygen was increased to 100%, the intraabdominal pressure was decreased to 12 mmHg, the Trendelenburg position was reduced. ABGs were obtained and they showed acidosis (pH = 7.115) and marked hypercarbia (74.3 mmHg). Before extubation the airway was assessed to ensure there was no compression. The patient was transferred to the ICU on O₂ mask.
- Conclusion** Subcutaneous emphysema of itself is a harmless and transient complication in most cases. However, severe subcutaneous emphysema may cause development of hypercarbia and acidosis (as in this case). It may also develop in the prefascial planes, causing life-threatening complications such as pneumothorax, pneumomediastinum and pneumopericardium.

Gingival augmentation in a patient with insufficient attached gingiva

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- Introduction** Attached gingiva is that portion of gingiva that extends from the base of gingival crevice to mucogingival junction. For many years the presence of an "adequate" zone of gingiva was considered critical for the maintenance of marginal tissue health.
- Aim** Gingival augmentation in area with gingival recession and lack of attached gingiva.
- Methods** A 30-year old male patient is presented. After extraction of upper right first molar and followed by orthodontic treatment a gingival recession and lack of attached gingiva on the second molar is observed. Periodontal plastic surgery including free gingival graft was performed for augmentation of attached gingiva.
- Results** On the upper right second molar after the FGG technique 5mm attached gingival tissue is achieved. These results create an adequate width of gingiva for maintenance of good personal plaque control and ceasing the progression of the recession on the tooth resulting in stability of keratinized tissues
- Conclusion** Free gingival autograft is widely used technique for increasing keratinized tissue around teeth and implants. It has high predictability. Although there are some limitations or difficulties in the performance of the technique based on the area for gingival augmentation. Distal areas are always a challenge.

Therapeutic & function review of Human Mesenchymal stem cells skin grafts

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- Introduction** Cell-based therapies, especially those using stem cells, for improving survival and the therapeutic effect of skin grafts. Mesenchymal stem cells (MSCs) exhibit excellent potential for accelerating wound healing because their self-renewal ability, and ability to differentiate into different cell lineages.
- Aim** The purpose of this review is to evaluate the efficacy and clinical therapeutic differences vascularised hMSC cell sheet (PHCS) in combination with an autologous STSG and standard Human Mesenchymal stem cells (MSCs) in full thickness skin wound repair.
- Methods** The culture conditions of hMSC sheet and pre-vascularized hMSC sheet were optimized in order to enhance the cell sheet strength and microvessel. They were cultured under a hypoxic condition for 4 weeks. Growth factors embedded in the HCS were extracted. To examine the multi-differentiation ability of hMSCs inside the cell sheet after long-term co-culture with ECs, differentiation was performed on the HCS and PHCS. The animals were divided into three groups according to the different grafts applied to the wound bed: STSG, STSG with HCS, and STSG with PHCS with 30 rats in each group.
- Results** The PHCS group had the highest vascularisation level on day 3, which corresponded to the highest angiogenic factor levels. VEGF amount in HCS was around 4.4 times higher than that in PHCS ($p < 0.05$). The bFGF amount in both cultures was comparable ($p > 0.05$). The TGF- β 1 amount in PHCS was slightly higher than HCS, but there was no significant difference ($p > 0.05$). The ANG1 amount in PHCS was around 2.6 times higher than in HCS ($p < 0.05$). The ANG2 amount in PHCS was also high, but there was no detectable level of ANG2 in HCS.
- Conclusion** The PHCS group showed the smallest contraction, best preservation of skin appendages, highest number and area of microvessels, lowest inflammatory reactions. The HCS and PHCS combined with STSG exhibited markedly enhanced therapeutic value in this rat model and may be useful for facilitating the healing of full thickness wound.

Case of bilateral L5 spondylolysis. Management after failed back surgery

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- Introduction** Failed back surgery syndrome (FBSS) is generalized term often used to describe the condition of patients who have not had a successful result with back or spine surgery and have experienced continued pain after surgery.
- Aim** The assessment and diagnosis of FBSS always begins with eliciting thorough history and physical examination. The relationship between pain syndrome and previous surgical intervention should be established. The aim is to emphasize on precise physical examination that may help create a differential diagnosis with the aid of imaging diagnostic modalities.

- Methods** A recent clinical case of 40-year old woman, who has undergone 2 consecutive failed lumbar decompression back surgeries – right L5 hemilaminectomy with partial L4/L5 and L5/S1 discectomies and foraminotomies. Both interventions were performed on the background of undiagnosed bilateral L5 spondylolysis and subsequent segmental instability. The patient was admitted with right L5, S1 radicular pain and hypoesthesia, severe axial back pain which has led to compulsory right inclined position with left-convex scoliosis. After thorough preoperative radiological diagnosis and appropriate surgical planning TLIF (Transforaminal Lumbar Interbody Fusion) surgical procedure was undertaken.
- Results** Improvement of patient's overall condition and neurological status was achieved. Sagittal balance has been restored and the patient regained normal posture being fully able to performs her everyday activities
- Conclusion** The relationship between physical examination, imaging diagnostic modalities and preoperative planning is of utmost importance for successful surgical results. One should always keep in mind changes of normal spine anatomy after previous surgeries, which could lead to even further damages if the surgeon does not pay attention to them.

Carcinoid Tumor of the Middle Ear: a Case Report

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- Introduction** Carcinoid tumors arise from the neuroendocrine cells that are normally found in the lung and gastrointestinal tract. A middle ear normally lacks neuroendocrine cells and carcinoid tumors of the middle ear are very rare.
- Aim** Case report: A 36-year old women presented with the history of two-month hearing loss. General complains were light aural fullness and hearing loss. During the otoscopic examination, a reddish mass extending through anterior part of the right tympanic membrane into the external auditory canal was observed.
- Methods** The high resolution computed tomography of the right temporal bone exposed a soft tissue density mass in the middle ear, epitympanic region, entrance to antrum and mastoid process cells with no evidence of destruction of the temporal bone. The patient was operated: close type mastoidectomy with retroauricular approach under general anesthesia was performed.
- Results** Histopathology: The lesion was then diagnosed as carcinoid tumor based on these morphological and immunohistochemical findings. Follow-up clinical examination one month after the operation showed good result. Within the six month after operation some signs of the tumor recurrence appeared - fullness in the same ear and hearing loss. Computed tomography of the right temporal bone showed recurrence of tumor masses. Revision operation was performed and the tumor masses were found after opening mastoid cells. An ossiculoplasty with PORP type prosthesis and tympanoplasty using both auricular cartilage and temoral fascia were performed. The postoperative period after second operation was successful.
- Conclusion** 1. Carcinoid tumors of the middle ear as a type of middle ear adenomas should be considered as growing mass in the middle ear. 2. Only biopsy and immunohistochemical study can help differentiate this kind of tumor from others. 3. Surgery should be the first choice treatment of these tumors.

Hardware-related complications from internal plate fixation of metacarpal fractures

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Introduction Hand fractures are a common reason for patients to visit clinics. Multiple shaft metacarpal fractures are considered unstable and are more prone to poor functional outcome. Various surgical methods can provide adequate healing. Internal plate fixation is one of them.

Aim Analyzing long-term functional outcomes of adult non-athlete patients who underwent internal plate fixation of 3rd and 4th metacarpal bone shaft fractures. We want to determine any hardware-related complications and is there a need for these kind of patients to undergo second surgery to remove the plate and screw materials.

Methods Four patients were selected - non-athletes, in their mid 30-s. They were all involved in skiing accidents and were diagnosed with unstable 3rd and 4th metacarpal bone fractures. One patient had a 5th metacarpal stable fracture alongside. After fracture reduction, osteosynthesis was performed using plates and screws. Patients started active and passive exercise one week after the operation. They were re-evaluated on the 6th week, 6th and 12th month using pain visual analog scores, total active and passive motion, and the active and passive range of motion of the metacarpophalangeal joint and grip strength.

Results Three of the patients showed no signs of complications, they didn't suggest pain syndrome and their range of motion and grip strength was satisfactory. One patient presented with irritation and pain when exercising active movement in the hand and reported above average discomfort levels. Therefore, a second operation was made to remove the metal hardware. The patient was re-evaluated after 4 weeks and was not experiencing signs of hardware-related complications.

Conclusion Generally, materials were not associated with unwanted long-term signs. Sometimes, they may irritate the surrounding soft tissue causing discomfort. The decision to remove any hardware therefore is made on a case by case basis. As a general rule, the hardware should be removed if it is causing signs of complication.

Survival in patients with HER2/neu-positive and triple-negative breast cancer

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Introduction Among heterogeneous groups of tumors with dissimilar receptor status it is considered tumors with HER2/neu receptors and neoplasms lacking expression of the estrogen, progesterone and HER2/neu receptors, called triple-negative breast cancer, remain quite poor prognosis.

Aim To compare survival in patients with HER2/neu-positive and triple-negative breast cancer in various nationalities.

Methods The study includes 213 cases of breast cancer, including I-IV stages, treated in Karaganda Region Oncology Dispensary, Kazakhstan, in 2014 of age between 31 and 83 years. Average age was 58.25 ± 11.54 . According immunohistochemistry

(IHC) test results, we distinguish 2 groups of patients: HER2/neu-positive (n=46; 21.6%) and triple-negative (n=50; 23.47%). HER2/neu-positive group included 10 Asians and 35 Europeans, triple-negative group – 21 Asians and 28 Europeans. Survival was calculated using the Kaplan-Meier method, curves were compared using Gehan-Wilcoxon, Cox-Mantel and the log-rank tests.

Results Difference of 3-year survival has not revealed in HER2/neu-positive and triple-negative breast cancer groups (75.61% and 66% respectively). Comparing survival in HER2/neu-positive group of patients with various nationalities it is elicited that Asians had higher survival than Europeans, according Cox-Mantel test (p= .02678) and the log rank test (p = .04872). In triple-negative breast cancer group there was no statistically significant differences between survival in various nationalities (Gehan-Wilcoxon test (p=.61206), Cox-Mantel test (p= .75528), the log rank test (p= .75357)).

Conclusion According all used statistical tests total 3-year survival had no difference between patients with HER2/neu-positive and triple-negative breast cancer. HER2/neu-positive breast cancer survival was higher in Asian individuals than Europeans. Triple-negative breast cancer survival had no difference in nationality.

Reconstruction of soft tissue defects of the fingers

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Introduction Soft tissue defects of the fingers with exposed tendons, bones or joints are frequently encountered in reconstructive hand surgery. The second and third dorsal metacarpal artery perforator flaps are used in reconstruction of the soft-tissue defects of index.

Aim This study aimed to show our experiences in the reconstruction of fingers soft tissue defects by second and third dorsal metacarpal artery perforator flaps.

Methods Twenty nine patients with finger defects were treated at the Department of plastic, reconstructive and hand surgery, University Hospital Foca, during the period from january 2009 to december 2015 year. There were 21 males and 8 females, with an average age of 33,5 years (range, 19-71 years). These flaps were used to reconstruct soft-tissue defects after debridement of infected wounds in 17 patients, traumatic wounds in 8 patients, and after excision of skin tumors in 4 patients. The locations included 8 index fingers, 15 long fingers and 6 ring fingers. The area of defect ranged from 1.5 cm x 1.0 cm to 6.0 cm x 3.0 cm.

Results The average flap size was 3,9 × 2.0 cm. Twenty flaps were based on the second dorsal metacarpal artery perforator and nine flaps were based on the third dorsal metacarpal artery perforator. Ten flaps were used to reconstruct defects distal to the proximal interphalangeal joint, and nineteen flaps were used to reconstruct defects over the proximal interphalangeal joint and proximal to it. In six cases there were venous congestion while in four patients there were partial flap loss.

Conclusion Benefits of the second and third dorsal metacarpal artery perforator flaps are quick and easy dissection, thickness and quality of the flap as well as lack of sacrifice second and third dorsal metacarpal arteries.

Long-term Results of Tension-free Vaginal Tape and Pubovaginal Sling

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- Introduction** Stress urinary incontinence (SUI) is defined as the complaint of involuntary urinary leakage through the urethra during physical exertion, laughing, coughing or sneezing.
- Aim** To report the long-term outcome of tension-free vaginal tape (TVT) and pubovaginal sling (PVS) in the treatment of stress urinary incontinence (SUI) in female patients.
- Methods** The long-term objective and subjective results of female patients who were previously randomized in a single blind study to two arms, TVT or PVS, between 2000 and 2004, were evaluated. The patients were asked if they were satisfied with the results of the procedure and if they would recommend it to a friend or relative. The assessment included a physical examination and cough-induced stress test. Satisfaction levels were assessed by Likert-type scale. Cure was described as absence of urine leakage in any circumstances, while improvement was characterized as subjective improvement of SUI without complete resolution.
- Results** One hundred women with SUI underwent surgery at our medical center between 2000 and 2004. A total of 52 patients were followed clinically for objective and subjective assessment. Seventeen were interviewed only by telephone. The objective cure rate was 81.5% and 84%, where as subjective cure rate was 70.3% and 71.9%, for TVT versus PVS, respectively ($P>0.05$). After an average follow-up of 10.5 years, there was no difference in clinical outcome, satisfaction scores and postoperative complications between the two groups.
- Conclusion** Both TVT and PVS are safe and effective treatments for SUI in female patients, with acceptable success rate in long term follow-up.

Internet use among medical students

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- Introduction** Extreme internet use increase in recent years has led to its pathological use (internet addiction). This problem is affecting young people more and more around the world and it produces negative impacts on many aspects of many lives.
- Aim** The aim of this study was to investigate the length of internet use during the day by medical students of the Medical Faculty at the University of Niš.
- Methods** Our research represents a retrospective study conducted in January 2018 at the Medical Faculty of the University of Niš, on medical students. The research involved 50 students who voluntarily agreed to the research. Among the students, there were 36 females (72.0%) and 14 males (28.0%) of the average age of 22.44 ± 2.58 years. The research used an anonymous questionnaire with multi choice type questions or by writing down your own answer.
- Results** The average length of internet use among medical students was 4.48 ± 2.16 h. The average time spent on the internet in male respondents was 4.29 ± 1.25 h, while in female was 4.56 ± 2.26 h. There was no statistically significant difference in the length of internet use between female and male respondents ($p=0.611$). By

comparing the GPA and the length of time spent on the internet, no statistically significant correlation was found ($r=0.125$; $p=0.571$).

Conclusion The results of our research show that the average time spent on the internet with male subjects was 4.29 ± 1.25 h, while female subjects were 4.56 ± 2.26 h. A statistically significant difference in the length of internet usage between female and male respondents was not found.

Raising child with autism - necessities and challenges of parents

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Introduction Autism is not condition that affects only the child, but the whole family lives with this disorder. Most of the parents need different kind of support to cope with many challenges that impose during raising the child.

Aim Analysis of needs of families with autism and overview of challenges and difficulties that children and their families face with during life.

Methods The conducted study involved 91 parents of children with ASD and respondents were chosen from register of patients diagnosed with autistic spectrum disorders. Survey was a method used for collecting quantitative data.

Results The majority of respondents are mothers (78%). Most parents meet with difficulties in receiving support for their children, primarily because of delaying and problems with making appointments in health care institutions (31,9%). Financial problems report 63,7% of parents, and 60,4% had to quit job. The most important for parents (80,2%) are good relations with services that work with child, but only 30% are satisfied. The greatest challenge in raising child is communication with child (58,2%), and in providing support to child possibility for families to have a rest (60%). Improving education (48,4%) is the priority for families in Serbia.

Conclusion Parents of children with autism in Serbia face with many challenges and difficulties in raising the child and they need additional support and help.

Alcoholic state and fatal traffic injuries - two years review

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Introduction Side effects of alcohol are reflected in the numerous changes of the psychophysical state of the organism, so the importance of alcohol as a factor in the genesis of traffic accidents is quite clear and understandable.

Aim Main goal of this paper is to clearly present the significance of alcohol as a factor in traffic accidents with fatal injuries and to determine corellation between those.

Methods As our source of materials we used the materials provided by Institute of Forensic Medicine in Nis that have been collected in 2015th and 2016th. Also, we concluded a parallel analysis of the provided data.

Results Processed materials imply that during that period 6.54% individuals died in traffic accidents. This accidents mostly occured between Jun and September, especially

on Saturdays, between 12 pm and 18 pm. Most of the fatalities were individuals between 41 and 50-years old. Men were the majority in this accidents and 49.47% of them were under the influence of alcohol and they were either drivers, pedestrians or passengers. Women rarely acted as drivers, they mostly took part in fatal accidents as pedestrians or passengers and they were sober in 70.27% of the cases. 48.48% of the individuals involved in the fatalities had alcohol in blood stream.

Conclusion There should be zero tolerance for alcohol on any given occasion that is related to an individual taking part in traffic.

Relationship Between Morbidity and Clinical Trials for the years 2007-2016

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National Center of Public Health and Analyses, Bulgaria | Area **Clinical Trials**

Introduction Morbidity patterns play important role in the drug development strategies and spending. Statistical and prospective data provide evidence on the diseases which would influence drug development in the different countries.

Aim This study aims to determine if there is a relation between the number of starting clinical trials in Bulgaria and morbidity related indicators for the period 2007-2016.

Methods The purpose of the review is to provide a high-level overview of the number of starting clinical trials and morbidity statistics in Bulgaria. Several indicators regarding health status and determinants were considered for the purpose of the overview, such as healthy life years and life expectancy at age 65 by sex, self-perceived health by level of perception, self reported unmet need for medical care by detailed reason – too expensive, too far to travel or waiting list, etc. All indicators were reviewed for the period 2007-2016 and compared to the number of clinical trials starting during the year.

Results The results show that there is a relation between the trend of the health care indicators and the number of clinical trials starting. Different conclusions could be made depending on the different indicators.

Conclusion Bulgaria lags behind mature markets in terms of quality of healthcare service. Participation in clinical trials is seen to provide higher quality treatment and increased availability of medically advanced drugs. Clinical trials provide opportunity to upgrade the quality standards of the day-to-day work of the medical professionals conducting trials.

Medical Students With Greater Social Support Report Fewer Depressive Symptoms

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Introduction Significant findings of depression on medical students compared to age-matched peers have been reported worldwide. Social support is thought to be one of the important factors establishing the onset and course of psychiatric disorders, as a means of stress-coping mechanism.

- Aim** To identify depressive symptoms experienced by medical students; and its relation to social support, taking into account the number and satisfaction (quantity and quality) of social support.
- Methods** Within this cross-sectional study, 106 undergraduate medical students (age 19 ± 1 years, 50.9% female) on their second, third, and fourth year of study at an Indonesian university completed a questionnaire comprised of general demographics; measures of depressive symptoms (Beck's Depression Inventory II); and social support (Sarason's Social Support Questionnaire). The statistical analyses used were Kruskal-Wallis, Mann-Whitney, as well as Spearman Rho correlation.
- Results** Students report higher levels of depressive symptoms compared to the rates of depression in young adults of general population. Females were found to have higher percentage of depression than males. However, no statistically significant differences in percentages were found within the samples according to age, gender, or year of study. Between social support satisfaction and number, greater number of social support available was revealed to have statistically significant negative correlation towards depressive symptoms, whereas social support satisfaction was found to have no statistically significant correlation towards depressive symptoms among students.
- Conclusion** The results highlight the importance of larger networks and interpersonal resources available that act as social support to buffer the development of depressive symptoms among medical students. Findings suggest providing students with befriending interventions as a tool to promote greater social support.

New metal complexes of monensic acid: cytotoxicity in cancer cells

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- Introduction** Monensin is used in veterinary medicine as antibacterial agent that also has anticancer properties. We found that [Mg(II), Ca(II), Mn(II), Co(II), Ni(II), Zn(II)] complexes of monensic acid significantly inhibit growth of tumor cells.
- Aim** The aim of our study was to evaluate the influence of four newly synthesized complexes of monensic acid (MonH) with ions of rare elements (La(III), Gd(III), Nd(III), Tb(III)) on viability and proliferation of cultured human and animal cancer cells.
- Methods** Two permanent cell lines were used as model systems in our study: MBA-MB-231 (human triple negative breast cancer) and LSR-SF-SR (rat sarcoma induced by Rous sarcoma virus strain Schmidt-Rupin). The effect of the compounds on cell viability and proliferation was estimated using MTT test, neutral red uptake cytotoxicity assay, crystal violet staining, double staining with propidium iodide and acridine orange (in short-term experiments, 24-72 h) and 3D colony forming method (in long-term experiments, 20-30 days).
- Results** The results obtained reveal that the compounds examined possess significant cytotoxic activity when applied at a concentration range from 0.5 to 20 $\mu\text{g/ml}$ in both short-term (with monolayer cell cultures) and long-term (with 3D cancer cell colonies) experiments. Rat sarcoma cells (LSR-SF-SR) seem to be more sensitive to the cytotoxic properties of MonH and its metal complexes as compared to human triple negative breast cancer cells (MBA-MB-231).

Conclusion Our study demonstrate the ability of monensic acid (MonH) and its complexes with trivalent metal ions of rare elements [La, Gd, Nd, Tb] to reduce significantly viability and proliferation of cultured breast cancer and virus-transformed rat sarcoma cells. Additional investigations are required to clarify the mechanisms of action.

Vitamin D level in Kosovo

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Introduction Vitamin D is important in order to have healthy bones (Kurt, 2010). In addition, it can help regulate the inflammatory process and thus can be used in the treatment of many diseases (Osmani, 2005).

Aim The purpose of this research has been the treatment of the structure and metabolism of vitamin D in the body, the lack and the excess amount of vitamin D, the diseases that can touch an organism in case of lack or excess of vitamin D.

Methods 410 cases were taken as a sample for this paper. Respondents are classified according to gender, age, rural and urban settlements. Of these 314 are females and 96 belong to male gender, age ranges from 0 to 81 years.

Results As a result, the referent values of vitamin D are: Deviance: <20 mg / ml, Insufficiency: 20 - 30 mg / ml, Sufficiency: 30 - 100 mg / ml. Based on the results, 60% of cases have vitamin D deficiency, 25% of cases have insufficient Vitamin D and 15% of cases have normal vitamin D levels. Vitamin D affects almost 50% of the population worldwide.

Conclusion Absence and surplus with vitamin D is very common in all age groups. Very few foods contain vitamin D, therefore guidelines recommend supplementing vitamin D to tolerable levels of sunlight. Insufficiency or lack of vitamin D causes serious disorders in the metabolism of calcium and phosphorus salts.

Waste management opinions related to waste management

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Introduction Through inadequate processing or dumping, the spread of infectious diseases, including AIDS, tuberculosis, cholera, which remain the leading cause of deaths in many countries may be encouraged (A. Lamb, 2010).

Aim The purpose of the research was to describe the thoughts and knowledge of health workers regarding the importance of fairly waste, to understand their shortcomings so that through continuous education in this area we will raise the knowledge about the risks and consequences that results in not proper waste management.

Methods This study was focused on an area of interest for all nurses and other health workers in order to find out the reasons for the lack of proper waste management. The statistics in this study are clearly identified in: purpose, research question, research design data analysis and findings, which clearly show how the current state is.

Results The questionnaires were anonymous and supplemented by 56 health workers of QKMF and QMF of Kosovo, starting with the description of the importance of proper waste management and making a summary of how it is done by separation, filling, sealing, labeling, disposal and end opinions about the reasons for the lack of proper waste management.

Conclusion From the findings of this research the findings indicate that all staff should be trained in waste management, including separation into three baskets according to color code, also a great care of all staff is needed.

Dental complications in a 7-year-old patient with Type 1 Diabetes Mellitus

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Introduction Type1 Diabetes mellitus (T1DM) is the most common metabolic disease in children. The major chronic vascular complications include neuropathy, nephropathy and opthalmopathy. These children are also at an increased risk of dental problems such as periodontal diseases, xerostomia, candidosis.

Aim The aim of our study is to present a case of a 7-year-old girl with complicated T1DM and dental disorders resulting from poor metabolic control and bad oral hygiene.

Methods The disease is characterized with poor metabolic long-term control and frequent episodes of nocturnal hypoglycemia and postprandial hyperglycemia. The result of inadequate insulin treatment - diabetes is complicated with Mauriac's syndrome – nanism, hepatomegaly and tendency for hypoglycemia. In addition, we found significant growth retardation (- 4,8 SDS) and Hashimoto thyroidism. As a result of the clinical findings autoimmune polyglandular syndrome was developed. The oral manifestations included multiple carious lesions and gingivitis in combination with xerostomia and oral candidosis. Unilateral facial asymmetry resulting from mandibular deviation was established.

Results The disease is characterized with poor metabolic long-term control and frequent episodes of nocturnal hypoglycemia and postprandial hyperglycemia. The result of inadequate insulin treatment - diabetes is complicated with Mauriac's syndrome – nanism, hepatomegaly and tendency for hypoglycemia. In addition, we found significant growth retardation (- 4,8 SDS) and Hashimoto thyroidism. As a result of the clinical findings autoimmune polyglandular syndrome was developed. The oral manifestations included multiple carious lesions and gingivitis in combination with xerostomia and oral candidosis. Unilateral facial asymmetry resulting from mandibular deviation was established.

Conclusion Diabetes mellitus is a socially significant disease associated with systematic and oral complications. Our study presents clinical manifestations of DMT1 in a child which occur as a result of poor metabolic control and unpleasant oral hygiene. The dentist plays an important role by maintaining the patient's optimal oral health.

Multiparametric versus biparametric MRI protocols for Prostate Cancer detection

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Vilnius University Faculty of Medicine, Lithuania | Area **Radiology**

Introduction Prostate cancer is the second leading cause of cancer death in men, with the incidence expected to double by 2030 mainly due to the ageing global population.

Aim To study whether a short unenhanced biparametric MRI (bp-MRI) matches mp-MRI in detecting significant PCa.

Methods A retrospective analysis of 58 patients. 30 TRUS biopsies, 23 transperineal biopsies and 8 radical prostatectomies were performed in the study group. Low risk group consisted of 26 (43%) patients, medium risk - 11 (18%) and 24 (39%) in high risk group. Two radiologists separately assessed the mp-MRI examination (T2-weighted [T2W] imaging, diffusion-weighted imaging [DWI], apparent diffusion coefficient map [ADC-map] and dynamic contrast-enhanced imaging [DCE]). Two months later, the bp-MRI version (T2W imaging, DWI, and ADC-map) was evaluated.

Results Reader 1: Assessing mp-MRI: sensitivity of 0.9341, and specificity 0.874. Assessing bp-MRI: sensitivity of 0.9110, and specificity 0.8123. Reader 2: Assessing mp-MRI: sensitivity of 0.9778, and specificity 0.75. Assessing bp-MRI: sensitivity of 0.8889, and specificity 0.875. mp-MRI: intra-reader agreement Cohen's Kappa (k) was 0.7924 for reader 1 (95% confidence interval [CI], 0.7924–0.9668) and 0.7746 for reader 2 (95% CI -0.5853–0.9639). bp-MRI: intra-reader agreement Cohen's Kappa (k) was 0.7093 for reader 1 (95% confidence interval [CI], 0.5067–0.9119) and 0.7204 for reader 2 (95% CI 0.5255–0.9153).

Conclusion MpMRI and bp-MRI have the same amount of increased insignificant PCa false positives. Bp-MRI is sufficient to mp-MRI for significant PCa detection.

Coverage of healthcare providers by hepatitis B vaccine (period 2000-2016)

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Introduction Viral hepatitis B is one of the most common infections in the world (1/3 of the world's population is infected with the hepatitis B virus, and 5% of the world's population have been registered as carriers).

Aim The aim of this study was to present the coverage of health-care personnel by the hepatitis B vaccine in the period 2000-2016 on the territory of Nisava and Toplica District.

Methods The descriptive epidemiological study was used. All data were obtained from the protocols of the Department for vaccines. The annual reports of infectious diseases were also used.

Results The total number of vaccinated persons in the observed period was 9572 in both Districts. A total of 4686 health care providers were vaccinated. There were 4395 vaccinated health-care providers from the Nisava District and there were 291 from the Toplica District. 4501 health-care providers were vaccinated pre-exposure, and in 195 health-care providers post-exposure vaccination was conducted because of an accident.

Conclusion Compared with the total number of health-care providers (11.024) in both districts, the number of vaccinated health-care providers is still insufficient. An increasing number of vaccinated health-care providers has been registered in several past years. In the reporting period is determined extremely low turnout of health-workers for preexposition protection.

Assessment of the anterior cruciate ligament lesions using MRI

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University of Belgrade School of Medicine, Serbia | Area **Radiology**

Introduction The anterior cruciate ligament (ACL) is one of the most commonly injured ligaments in our body. Magnetic resonance imaging is one of the most specific diagnostic methods for early detection of ACL lesions.

Aim To analyse associate injuries in patients with knee injuries and ACL lesion, using MR.

Methods The study involved 63 patients, divided into two groups: without LCA tear (group 1) and with LCA tear (group 2). All patients underwent clinical examination, followed by MRI examination, using turbo spin echo sequence (TSE) on a 1.5T scanner, according to the following protocol: : T2w FS axial plane, T1w, T2w, T2w FS in sagittal plane, T2w FS in a coronal plane, as well as in a paraxial plane in T2w to view ACL.

Results In group 1, 77% had meniscal lesion, in group 2, 79%, which was not statistically significant difference, $p > 0.05$. In group 1, there was 20% with lesion of MCL, in group 2, 15%, which did not reach statistically significant difference. Bone oedema was present in 33% in group 1, and in 36% in group 2, which was not statistically significant difference, $p > 0.05$. Intraarticular effusion was seen in 36% in group 1, and in 36% in group 2, $p > 0.05$. Lesion of cartilage was seen in 33% in group 1, and in 23% in group 2, $p > 0.05$.

Conclusion There is no statistically significant difference in associate knee injuries among patients without and with ACL tear. MRI has been proven to be reliable diagnostic procedure in patients with knee injuries.

Advanced MRI techniques in post operative follow-up of glioblastoma

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Introduction Glioblastoma is the most common primary brain tumour in adults (4-5 in 100.000 people). Despite multimodal treatment comprising safe resection, radiotherapy, concomitant and adjuvant chemotherapy, relapses are very common and efficacy of therapy is assessed with magnetic resonance imaging.

Aim Proving that advanced MRI techniques, such as Diffusion weighted MRI, Susceptibility weighted MRI, T2 echo-planar dynamic susceptibility contrast MRI, Gadolinium contrast, MRI Spectroscopy, are important addition to conventional methods (which use RANO criteria) in differentiating glioblastoma progression from pseudoprogression, and that are more efficient than conventional techniques.

- Methods** In this retrospective cohort study 17 patients were included. They were divided into two groups based on having post treatment progression or pseudoprogression, proved both in clinical and MR parameters. We used 3T MRI scanner "Skyra", Siemens (Erlangen, Germany). All patients included in the study have undergone resection, radiotherapy, concomitant and adjuvant chemotherapy. All the patients had either progression or pseudoprogression. For all of them we used both conventional and advanced MRI imaging methods.
- Results** Results of non-parametric Mann-Whitney test didn't give statistically significant results. On the other hand, both groups of patients got correct diagnosis of tumour progression or pseudoprogression only after advanced methods were used.
- Conclusion** Even though we didn't get statistically significant results that could certainly prove that advanced methods are more efficient than conventional methods in differential diagnosis of glioblastoma progression from pseudoprogression, there is a tendency that advanced MRI techniques are very important in properly differentiating these two conditions.

Level of information of parents for oral health

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- Introduction** The level of information of parents on oral health protection and risk factors is closely related to the oral health of pre-school children. There are no empirical data on the level of information of parents.
- Aim** To study the level of knowledge on oral hygiene, fluoride prophylaxis and nutrition related to oral health of pre-school children in Prizren municipality.
- Methods** In order to achieve the objectives of the study, n=227 randomly selected parents were interviewed in 12 pre-school institutions and preschool programs in Prizren primary schools. Parents completed a questionnaire with 27 questions related to the aims of the study.
- Results** The level of parent education plays a significant role in understanding the importance of food in oral health ($p < .009$). There is a significant difference in reporting of sweet meals ($p < .05$) and other food harmful to teeth ($p < 0.05$) by controlling parents' education. A very small number of parents (8.8%) said they began to brush their children's teeth as soon as they grew their teeth whereas 48.7% of parents began to brush their children's teeth at the age of 3-4. 53.5% of parents thought that primary (deciduous) teeth did not matter as they would be replaced with new teeth.
- Conclusion** Results show that a considerable part of the parents thought that primary (deciduous) teeth did not matter as they would be replaced with new teeth. It seems that the level of parenting is closely related to the care of children's oral health.

The influence of texting at night on health among adolescents

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- Introduction** Health refers to the general condition of the body and mind in terms of their soundness and vigor. Health is more a matter of how well all the body's component parts are working (Insel & Roth, 2004).
- Aim** Repeatedly, studies have shown that today's adolescent students are seriously sleep-deprived, and that it affects their health, their mood and their safety behind the wheel. Our study goal was to see if texting after bedtime affects adolescent health.
- Methods** This study utilized a sample of 462 adolescents (54.4% boys). All participants were recruited from secondary schools and high schools in Gjilan and Kamenica. The instrument used in this study is a self-report questionnaire, which contained a variety of questions about participants' Internet use. The entire procedure took approximately 30 minutes to complete.
- Results** Results show that there is a positive significant relationship among the drowsiness and headache of the eyes that causes the use of the phone at night $r(462) = .332, p < .01$. So, the longer the time of using the phone at night the greater the fatigue, drowsiness, headaches and eye pain.
- Conclusion** As a conclusion, this study shows the serious problems which occur by the use of internet at night, it also support our hypothesis. It's a warning to all parents to be more careful and conscious about their children's devices at the time they should fall asleep.

Abdominal pain syndrome in children and adolescents

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- Introduction** One of the most common complaints that had been made by children and adolescents is abdominal pain.
- Aim** Aim of this study was to evaluate the incidence of abdominal pain syndrome in hospitalized children and adolescents.
- Methods** Questionnaire survey was performed among 269 children aged 7 to 17 years. The questionnaire included 48 questions on the character of abdominal pain syndrome, the frequency abdominal pain, heredity, diet and daily regimen, concomitant disease. Among the respondents were 57% boys and 43% girls. Age: 7-11 years were 36% of children, 12-14 years-22%, 15-17 years-42% of patients.
- Results** 54% of children complained of the abdominal pain, among them 86% had intermittent pain, 18% suffered from frequent pain. Pain was equally marked by both boys and girls. 46% of patients suffer from pain 1-2 times a month. Seasonal occurrence of pain was not found. Aching pain (34%) and lancinating pain (24%) are the most common types of abdominal pain. Most of the respondents developed the pain on an empty stomach (39%) and 1-2 hours after meals (34%). The duration of the pain is on average 20-30 minutes. Chronic diseases of the gastrointestinal tract among relatives were identified in 50% of cases.

Conclusion Abdominal pain syndrome occurs twice as often as diagnosed chronic diseases of the gastrointestinal tract. Children with abdominal syndrome need additional examination for making correct diagnoses and for prescribing an appropriate treatment.

The Very-Low Implementation of Surgical-Safety-Checklist in General-Hospital of Depok City

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Introduction Several incidents can occur during surgery. WHO developed a surgical safety checklist (SSC) the incidents. Based on quality indicator in General Hospital of Depok City (GHDC), the implementation of SSC verbally has not achieved the target.

Aim This quality assurance was conducted to find the solution for this problem.

Methods This quality assurance was conducted through identification of problems priority from quality indicator of hospital surgical room, priority of problem etiology and solution. Priority of problems and the etiology were determined using criteria matrix technique consisting importance, technical feasibility, and resources availability. Priority of solutions was determined using criteria matrix technique consisting magnitude, importance, vulnerability, and cost. The implementation of surgical safety checklist verbally divided into three parts, including had done perfectly, incomplete, and had not done at all.

Results The main problem was SSC had not done yet verbally in GHDC and causal factor of this problem was Standard Operational Procedure (SOP) of SSC was not available. Formulation and implementation of SOP was chosen as the priority to solve the problem. After implementing SOP in one week, the surgical room that performed SSC perfectly in every process includes sign in, time out, and sign out was 22% and did not reach their target. Surgical Safety Checklist was performed perfectly 89% in sign in, 56% in time out, and 67% in sign out.

Conclusion After forming SOP as chosen intervention, the implementation of surgical safety checklist verbally in General Hospital of Depok City was still low (22%). To improve the implementation into target, longer duration and re-socialization are needed because health care providers were in contemplation phase of stage of change.

Nontraumatic retroclival haematoma – CT evaluation

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University: Medical University, Sofia, Sveta Ekaterina | Area **Other**

Introduction Retroclival haematomas are a rare finding. Most often they are encountered in children after trauma. Nontraumatic, spontaneous retroclival haematoma are extremely rare with few cases described in the literature. The pathophysiology of the formation of retroclival haematoma is not fully understood. Most cases are posttraumatic. It is believed to be associated with ligamentous injury at the craniocervical junction or bone fractures in the clivus for the posttraumatic retroclival haematomas. Very few cases of spontaneous retroclival haematomas, as in our case, are described in the literature.

- Aim** We report a case of a 65 year old female patient who presented with severe sudden onset of headache
- Methods** She had previous cardiac surgery 10 days ago and therefore was on anticoagulant treatment. There was no reported history of antecedent trauma. The patient was referred for head CT for evaluation.
- Results** Non contract MDCT of the head revealed an extraaxial retroclival hyperdense collection extending laterally to the left and right cerebellopontine angle. Downwards the hyperdense collections extended into the spinal canal until the level of C4. MDCT angiography showed no signs of vessel aneurysms. The basilar artery was dislocated posteriorly by the pathologic collection. A follow up CT was performed 24 hours later. The follow up CT showed no progression of the haematoma. The patient was stable and on conservative treatment.
- Conclusion** Retroclival haematoma are very rare. The supposed etiology includes shearing of the bridging veins and of the basilar venous plexus. Spontaneous retroclival haematoma is reported to be associated with thickened epidural veins and intracranial hypotension is considered as possible causal factor for this entity. CT can diagnose the haematoma by demonstrating pathological hyperdense collection in the posterior cranial fossa behind the clivus and give precise information about its localization and extend knowledge of the anatomy can help in localization of the haematoma and allow assessment of associated findings and complications like brain and spinal cord compression and ligaments disruptions. Conservative treatment is the treatment of choice in most cases.
