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Acta Medica Academica

Journal of Department of Medical Sciences
of Academy of Sciences and Arts of Bosnia and Herzegovina

Abstracts

Presented at the 11th Days of the Bosnian-Herzegovinian American Academy of Arts and Sciences (BHAAAS)

June 20-23, 2019, Sarajevo, Bosnia and Herzegovina

Editor-in-Chief: Husref Tahirović
Guest Editor: Emir Festić

Volume 48 (Supplement 1) 2019 ▪ ISSN 1840-2879 (Online) ▪ DOI: 10.5644/ama2019(Suppl 1)

BHAAAS
Bosnian-Herzegovinian American Academy of Arts and Sciences

UDRUŽENJE DOKTORA PORODIČNE/OBITELJSKE MEDICINE
Family Medicine Physicians Association

http://bhaaas.org/ www.familymedicine.ba

Acta Medica Academica
Volume 48, Supplement 1, June 2019

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Narcis Pozderac, Sarajevo, BA

COVER PHOTO PICTURE: Enis Logo, "Sarajevo City Hall (Bosnian, Croatian and Serbian: Gradska vijećnica Sarajevo)", 1985. Courtesy of the author.

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Preface

On behalf of the Bosnian-Herzegovinian American Academy of Arts and Sciences (BHAAAS), I welcome you to the 11th annual "Days of BHAAAS in Bosnia-Herzegovina". This year, our multi-disciplinary conference includes 16 scientific symposia, one mini symposium, four cultural events and two plenary sessions.

Eight medical symposia are taking place from June 20th to June 23rd, 2019. Invited international speakers as well as the local ones and those from the region, will exchange the knowledge and experiences in the spirit of comradery and togetherness. In this special edition of journal Acta Medica Academica (AMA), you will find some of the abstract presentations which are presented at the respective medical symposia. All abstracts selected for publication have gone through the 2-step peer review before being accepted for publication in the special edition of the Journal.

I would like to sincerely thank Professor Dr. Husref Tahirovic, Editor-in-Chief, for the crucial role he has played in the planning and execution phases of this endeavor. I would also like to thank the members of organizing and scientific committees for their invaluable contribution and support. Last, but not the least, I would like to thank the BHAAAS Board of Directors for securing the financing for publication of this special edition of AMA.

I hope that each and every one participant of the 11th Days of BHAAAS will find for themselves something positive and exciting during our event, and that they will share it with the others.

Cordially,
Emir Festic, MD, MSc
President of the BHAAAS

Topic Review
Oral Presentation 01
Acta Medica Academica 2019;48(Suppl 1):7.

Advances in Treatment of Metastatic Triple Negative Breast Cancer

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Triple negative breast cancer (TNBC) is significantly more aggressive and associated with worse prognosis than other types of breast cancer. Better understanding of biology and heterogeneity of TNBC will likely result in more treatment options. Triple negative breast cancers have complex biology. Today, we know that there is specific heterogeneity within this group of breast cancers. Scientists defined several subgroups of TNBC: Basal-like 1 and 2, immune-modulatory, mesenchymal, mesenchymal/stem like, luminal androgen receptor and claudin low subgroup. Several agents showed promising results as potential treatment options for TNBC, but chemotherapy is still first treatment of choice. IMpassion130 is first phase 3 clinical trial showing clear benefit from an immunotherapeutic approach in this population. Statistically significant improvement in overall survival was achieved in PD-L1 positive metastatic TNBC patients with chemotherapy and atezolizumab, compared to chemotherapy and placebo. Based on the results of this clinical trial, immunotherapy has become standard treatment option for metastatic TNBC. Other agents with promising results according to phase 1 and 2 trials are antiandrogens (for luminal androgen receptor subtype), PARP inhibitors, PI3K and mTOR inhibitors, Abl/Src inhibitors and many others. They require further validation before becoming standard of care. New antibody-drug conjugates are also evaluated in clinical trials. **Conclusion.** Despite the progress in treatment of TNBC, prognosis remains poor. Although immunotherapy with checkpoint inhibitors has changed the therapeutic approach in metastatic TNBC, many open questions remain.

Topic Review
Oral Presentation 02
Acta Medica Academica 2019;48(Suppl 1):7.

Diagnostic Approach in Breast Carcinoma

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We summarize the advances of radiological diagnostic approaches in detection of breast cancer in every day clinical practice, alongside discussing previously used methods. We review all diagnostic radiological methods available and reflect on advantages and disadvantages of each available procedure. We also emphasize the importance of invasive diagnostic procedures in breast cancer such as core biopsy, providing accurate, minimally invasive, pathohistological diagnosis thus optimizing personal treatment plan according to molecular subtypes of breast cancer. We emphasize the importance of new diagnostic methods, such as breast tomosynthesis, in early detection of breast cancer, especially in women with very dense breasts, increasing the percentage of early detected breast cancers. We also state the importance of previously available methods, e.g. magnetic resonance, which is necessary in screening the population of high risk for breast cancer. **Conclusion.** Early detection of breast cancer, especially through organized systemic screening of population, and by utilizing all the available radiological methods according to the individual needs, will lead to early detection of breast cancer with better prognostic outcome.

Professional Experience
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):8.

Our Experience in Breast Reconstruction after Mastectomy

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The goal of breast reconstruction is to restore body's integrity and self-confidence after mastectomy. Breast reconstruction should be offered to every woman after mastectomy, if it can be performed. There are many methods of breast reconstruction. Each of these methods has advantages and disadvantages. The method of choice is usually decided upon between the surgeon and the patient in relation to the desire and possibilities. After many years of experience in breast reconstruction we report and discuss the results of reconstruction of the breast by own tissue (DIEP flap), breast reconstruction by implant (with modifications), breast reconstruction with implant and own tissue (m. latissimus dorsi flap). We also discuss results of secondary reconstruction after complications in the form of tissue decay. **Conclusion.** The choice of the method of reconstruction depends on the size of the breast, the patient's desire and the experience of the surgical team. We give priority to breast reconstruction with one's own tissue, whenever possible, because we believe this method has advantages over the implant.

Topic Review
Oral Presentation 01
Acta Medica Academica 2019;48(Suppl 1):9.

Obstructive Sleep Apnea in the Primary Care

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Obstructive sleep apnea (OSA) is a prevalent and under-recognized chronic disease, characterized by repetitive episodes of paused or shallow breathing during sleep caused by partial or complete upper airway (UA) obstruction. Its severity is categorized based on the apnea-hypopnea index: Mild (5-15 events/hour), moderate: (15-30 events/hour) and severe (>30 events/hour). Additional measures of severity are: Respiratory effort related arousals, degree of nocturnal hypoxemia, oxygen desaturation index and extent of sleep fragmentation. The most common symptom is daytime somnolence, while bed partners usually complain of loud snoring or witnessed breathing cessations. Other complaints include impairments in memory, concentration or mood, morning headaches, excessive movements of sleep or palpitations. OSA is strong risk factor for stroke, cardiac disease, and neurologic and psychiatric conditions. It also negatively affects quality of life and safety. Primary care physician should have heightened suspicion for OSA when faced with characteristic symptoms or known risk factors. The primary method of screening is overnight pulse oximetry. Epworth sleepiness scale and STOP BANG questionnaire are also helpful. The diagnostic test of choice is polysomnography, although in selected patients, home sleep apnea test can be used instead. The mainstay of treatment is administration of positive airway pressure (PAP) therapy. Non-PAP therapeutic strategies include: Oral appliance, positional therapy, weight loss, nasal "Provent", sleep apnea "pacemaker" and various surgical procedures. **Conclusions**. OSA is a prevalent and under-recognized chronic disease. It is associated with cardiovascular and neuropsychiatric complications. Increased recognition of the risk factors for OSA by the primary care physicians is necessary, followed by referral to specialists who can properly diagnose and treat OSA.

Topic Review
Oral Presentation 02
Acta Medica Academica 2019;48(Suppl 1):9.

The Role of Family Medicine Physicians in Early Identification, Diagnosis and Treatment of Mental Disorders

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The comprehensive and continuous medical care represents important principle in the work of family medicine physicians (FMP). This bears significance on mental disorders and other chronic illnesses. Numerous studies have reported on the interaction of mental disorders and cardiovascular diseases and type 2 diabetes. Mental disorders are important factor in the development of heart diseases, they affect the course and prognosis of diseases, but also, cardiovascular diseases play a role in the emergence of certain mental disorders and affect their treatment. The national educational programs in the region recognize this problem, so a significant part of the training for FMP is devoted to diagnosing and treatment of mental disorders. Comprehensive care principle allows FMP to evaluate all comorbidities and by examining the global health status of the patient, environmental factors and anamnestic data, FM physician can choose the most appropriate medical treatment for a particular mental disorder, thus avoiding unwanted drug interactions. A significant part of the work of FMP is prevention and education on unhealthy habits, which may lead to other comorbidities in patients with mental disorders. Adequate patient-physician relationship usually has substantial impact in achieving adherence to taking medication and application of simple psychotherapeutic strategies. Continuity in medical care facilitates formation of trust in patient-physician relationship, which is one of the most important factors in the treatment process. **Conclusion.** A FMP plays crucial role in reducing mortality and improving the quality of life of patients with mental disorders and comorbidities.

Topic Review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):10.

Cardiovascular Diseases in Pregnancy

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The aim of this review is to showcase challenges that perinatologists and cardiologists face, and the risks of pregnancy due to cardiovascular diseases of mother, fetus and neonate. Cardiovascular diseases (CVD) complicate 0.2-4% of all pregnancies in western industrialized countries. Hemodynamic, hemostatic and metabolic changes, genetic testing and counseling as well as diagnostics of CVD in pregnancy will be discussed. A very important aspect is timely planning of the delivery mode due to the risk to mother and fetus. Ventricular arrhythmias during pregnancy, childbirth and postpartum are one of the most common complications in women with structural heart disease. It is important to know contraindications for pregnancy and counseling before pregnancy. High risk for mothers is pulmonary hypertension and Eisenmenger's syndrome. According to available data, congenital heart defects account for the largest proportion of CVD in pregnancy, as much as 75-82% of all CVD in pregnant women. Advances in reparative CV procedures have enabled a certain proportion of women with congenital cardiac malformations to get pregnant and give birth. Arterial hypertension is one of the major causes of mother's morbidity and mortality, as well as possible ablation of the placenta, organ failure, the development of disseminated intravascular coagulation and premature birth. Pregnancy and puerperium are associated with higher incidence of venous thromboembolism occurring at ~ 0.05-0.20% of all pregnancies. **Conclusion.** Based on the literature search, it can be concluded that with the team work and carefully planned and monitored pregnancies, in most cases, complications and dangers for the mother and the fetus can be avoided.

Topic Review
Oral Presentation 04
Acta Medica Academica 2019;48(Suppl 1):10.

Same Problem, Two Guidelines for Two Continents

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Review the hypertension guidelines that summarize the available evidence with the goal to assist and facilitate health professionals in making clinical decisions with regards to prevention, diagnosis, evaluation and optimal treatment. Hypertension (HTN) is readily diagnosed and relatively easy to treat yet remains to be a leading cause of global morbidity and mortality. Elevated BP is a major risk factor for coronary artery disease, heart failure, chronic kidney disease, stroke, peripheral arterial disease, and atrial fibrillation. High frequency of HTN globally (especially in low and middle-income countries) is concerning despite the wide range of well-tolerated and inexpensive pharmacological treatment options available. The guidelines that summarize the available evidence with the goal to assist and facilitate health professionals in making clinical decisions with regards to prevention, diagnosis, evaluation and optimal treatment, have evolved with time. The two most contemporary guidelines addressing HTN prevention, diagnosis and treatment are the 2017 American College of Cardiology (ACC)/American Heart Association (AHA) and 2018 European Society of Cardiology (ESC)/European Society of Hypertension (ESH). The guidelines have more commonalities then ever; however, the most obvious and significant differences are in the definition and classifications of HTN. Understanding the common approaches and differences in the separate guidelines will help clinicians make decisions on how to adopt and implement them in their practice, and to take an individualized approach to patients and their associated risks. **Conclusion.** Controlling the HTN pandemic is a global healthcare mission. The emphasis in the future should shift towards patient education, lifestyle and dietary changes, improvement in adherence to the recommended treatment, as well as team and community approaches to HTN treatment.

Topic Review
Oral Presentation 05
Acta Medica Academica 2019;48(Suppl 1):11.

Oxidative Stress Related Diseases, Biomarkers And Antioxidants

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The aim is to review oxidative stress (OS) and its role in major diseases, and to highlight the most commonly used OS biomarkers and challenges in antioxidative therapy. While at moderate concentrations, reactive species play important roles in normal physiology. However, their overproduction and disbalance in redox mechanisms result in OS, which is implicated in diverse pathological conditions including neurodegenerative, inflammatory and cardiovascular diseases. Oxidative damage of cellular proteins, lipids and DNA inhibits their normal functions leading to the initiation and progression of diseases. Neurodegenerative diseases are in focus, as the central nervous system is particularly susceptible to reactive oxygen species (ROS) damage. Lipid peroxides occurrence and decreased antioxidant enzyme activities proved to be tightly correlated with senile plaques formation and neurofibrillary tangles in Alzheimer's disease. Similarly, protein carbonyls, as a result of protein oxidative damage, are present in Parkinson's disease. The measurements of ROS still presents a challenge and it is often difficult to draw general conclusions on the significance of OS biomarkers, however, some of them represent valuable tools in clinical use. The use of antioxidants can be crucial in preventive and therapeutic approaches, which is why the intervention of such compounds is being widely explored. **Conclusion.** OS has been considered to be the main cause in the etiology of many diseases. Being a nuanced phenomenon, it implies optimal selection of validated biomarkers in specific diseases. Biomarkers of OS and antioxidants are thus fundamental in diagnostic and preventive purposes, respectively, however, the future studies are expected to better define and validate their use.

Topic Review
Oral Presentation 06
Acta Medica Academica 2019;48(Suppl 1):11.

Update on the Treatment of Psoriasis

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The aim is to provide an update on the current guidelines regarding psoriasis treatment goals and treatment options. Psoriasis is a chronic, inflammatory and multisystem disease characterized by keratinocyte hyperproliferation and immune-cell infiltration into the skin. Both genetic and environmental factors are important in the etiology of the disease. Psoriasis is associated with several comorbidities, including psoriatic arthritis, metabolic syndrome, cardio-vascular events and depression. Despite its prevalence and considerable effect on quality of life, psoriasis is still underdiagnosed and undertreated. Many patients seek initial evaluation and treatment at the primary care level and therefore it is important to know that treatment of psoriasis has tremendously advanced in the recent years. Psoriasis management decision should be based on assessment of disease severity and phenotype, the existence of physical and psychological comorbidities, the need for referral to dermatologist for specialist care, patients´ preference and when possible identification and elimination of psoriasis trigger factors. Therapy should be titrated to the goals of treatment, which should be clearly defined for each patient. **Conclusion.** An individualized, patient-centered approach, based on the knowledge of treatment potentials and a good interpersonal communication between patient and doctor, is essential for the effective management of psoriasis.

Topic Review

Oral Presentation 07

Acta Medica Academica 2019;48(Suppl 1):12.

Rational Choice of New Oral Anticoagulant Therapy Based on *CYP2C9* and *VKORC1* Genetic Polymorphisms and Patient Characteristics

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VKORC1 and *CYP2C9* genotypes are the most important genetic determinants of warfarin's drug response and have direct impact on the initial dose of warfarin (the type of the *CYPC2C9* and the *VKORC1* mutations affect the initial dose of warfarin). Patients with specific genotypes may require more prolonged time (>2-4 weeks) to achieve a stable international normalized ratio (INR) effect for a given dosage regimen. These patients are often not adequately protected with therapy against thromboembolic events. In the clinical practice, five NOACs are used, of which dabigatran is a direct thrombin inhibitor, and rivaroxaban, apixaban, edoxaban and betrixaban are factor Xa inhibitors. The bioavailability of dabigatran is the lowest (6.5%), while that of rivaroxaban (80-100%) is the highest. The half-life of rivaroxaban is 5-13 hours, while betrixaban's is 19-27 hours. Dabigatran and apixaban should be administered twice daily. The CYP 450 metabolism is part of rivaroxaban and apixaban pharmacokinetics. Renal elimination is the lowest for betrixaban (17.8%) and apixaban (27%). Dose reduction is required in patients with CrCl 15-29 ml/min, while they are contraindicated in patients with CrCl <15 ml/min. From the NOAC family of agents, only dabigatran has an available antidote (idarucizumab). **Conclusion.** Individual response to warfarin is influenced by age, race, body weight, height, gender, concomitant medications (including those that compete for binding to albumin), comorbidities, diet, nutritional status and genetic factors (*CYP2C9* and *VKORC1* genotypes). Knowing the patient's comorbidities, and taking into account age, sex and anamnestic data, forms the basis for choosing a particular NOAC, with an imperative knowledge of their pharmacodynamic and pharmacokinetic properties.

Original Research

Oral Presentation 08

Acta Medica Academica 2019;48(Suppl 1):12.

Periodic Review of Cardiovascular Disease in the Federation of Bosnia and Herzegovina (2011-2018)

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Association of Cardiologists of Bosnia and Herzegovina

Cardiovascular disease (CVD) continues to be the killer No 1 in Bosnia and Herzegovina (BH). In 2018, in Federation of BH the overall mortality rate was 987.7 per 100,000 citizens and this showed an increase compared to 2010, when it was 876.2 per 100,000 citizens. The standardized mortality rate for all causes and all ages for Federation of BH showed substantial increase in 2018, and with the value of 987.7 per 100.000 citizens almost equalled a general mortality rate. The leading causes of deaths in the population of Federation of BH in 2018 were diseases of the circulatory system with a share of 53% of all causes (the rate of 510.8 per 100.000) and recorded a slight decrease compared to 2010, when it was 53.8% (rate 472.1 per 100.000). The leading cause of death in the population of Federation of BH was acute myocardial infarction with a rate of 93.5 per 100,000 citizens, which represented a significant increase from 2010, when the rate per 100,000 was 69.2. The second cause of death in 2018, was stroke with a rate of 84.2 per 100,000 which represented a slight decrease from 2010, when it was 89.9 per 100,000. The third cause of death in 2018, was heart failure with a rate of 70.4 per 100,000, which is a decrease compared to 2010, when the rate was 75.7 per 100,000. The fourth cause of death in 2018, was cardiomyopathy with a rate of 68.9 per 100,000, which was decreased rate compared to 2010, when the rate was 78.7 per 100,000 citizens. **Conclusion.** Statistical data point to a significant proportion of CVD in general mortality of the population in Federation of BH.

Original Research
Oral Presentation 09 Acta Medica Academica 2019;48(Suppl 1):13.

Home Physical Therapy of Patients with Cerebral Palsy as Family Centered Therapy

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Objective. In Bosnia and Herzegovina, individuals with disabilities often live in families that lack sufficient financial resources to enable transportation to special schools or rehabilitation institutions. Therefore, authorities should have more understanding and consideration for rehabilitation projects of family centered therapy and should provide better financial support for relevant NGO activities. The study aims to provide initial data on frequency of postural impairments, gross motor function and the efficiency of home physical therapy as family centered therapy in patients with cerebral palsy. **Materials and Methods.** The study included 120 patients with cerebral palsy who participated in the project implemented by the Cerebral Palsy Association of Federation of Bosnia and Herzegovina. **Results.** Of 120 participants, 44 (37%) were in degree-I and II of GMFCS- E&R group. The remaining 76 (63%) patients, were in degree-III, IV and V group. The average age in the first group was 28.5±16 years and in the second group was 25.6±14.7 years. Participants in the second group frequently showed: forward head tilt (46.5%), left curving upper back (29.9%), left curving lower back (28.6%), posterior pelvic tilt (31.2%), X legs (50.6%), internally rotated foot (35.1%), and forward tilted foot (24.7%). There were no significant differences in the position of entire posture between the control and the test group before and after the rehabilitation. **Conclusion.** Home physical therapy once a week during three months is not sufficient, it is necessary to practice it continuously at least twice a week.

Original Research
Oral Presentation 10 Acta Medica Academica 2019;48(Suppl 1):13.

Presence of Risk Factors for Hypertension in the General Population of "Healthy" Individuals

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Objective. To determine the presence of risk factors for hypertension in the general population of "healthy" individuals. According to numerous studies, the presence of elevated blood pressure in the adult population of "healthy" individuals is 25%. **Materials And Methods.** We wanted to determine the presence of risk factors for hypertension and for other chronic diseases in the sample of general population. The sample included all adult residents (19 years and over) without previous exam at our clinics, who were mostly coming as escorts to elderly patients. A total of 300 subjects were surveyed. **Results.** Out of total of 300 participants, 25% were found to have high blood pressure, 36% had high cholesterol level, 19% had high blood sugar, and 38% lacked regular physical activity. There were 36% of smokers and 36% had elevated BMI. Family history of elevated blood pressure was found in 15 participants. In regards to the type of occupation, 55% of surveyed participants were office workers. **Conclusion.** Preventable risk factors are prevalent in "healthy" population. Policy makers and family medicine teams should work together on this problem in order to prevent cardiovascular and diabetic complications. Family medicine discipline is faced with lack of specialists, possibly due to lack of incentives for practice of family medicine.

Original Research
Oral Presentation 11 Acta Medica Academica 2019;48(Suppl 1):14.

Zoonotic Diseases in Federation of Bosnia and Herzegovina

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Objective. Zoonotic diseases are a group of over 200 diseases. They occur around the world, but some of them are specific for certain regions and countries. For the European region and for Bosnia and Herzegovina, the most important are: salmonellosis, brucellosis, leptospirosis, Q fever, echinococcosis, trichinellosis, and hemorrhagic fever with renal syndrome. According to the current Law on protection of the population from infectious diseases, 84 diseases have mandatory reporting, including zoonoses. The number of people infected from zoonotic diseases is variable from year to year and connected to climate change and emergency situations such as floods, earthquakes etc. **Materials and Methods.** We investigated zoonotic diseases in Federation of Bosnia and Herzegovina in the five-year period (2013-2017). We used monthly and annual reports published by Institute for Public Health of Federation of Bosnia and Herzegovina. This retrospective study was conducted by a descriptive-analytical method. **Results.** During the study period, the total number of registered infectious diseases was 93.261 (excluding influenza and influenza-like diseases) and the percentage of zoonotic diseases accounted for 2.7% of the total. This percentage was highest in 2015 (3.3%) and in 2014 (3.1%) during and after the periods of floods. The most common zoonotic diseases were: salmonellosis (52%), brucellosis (28%) and leptospirosis (9%). Regional distribution of diseases by county was variable; brucellosis occurred most frequently in central Bosnia and Una-Sana County, and salmonellosis in Sarajevo County. **Conclusion.** Zoonoses are prevalent diseases in Federation of Bosnia and Herzegovina. One possible solution to the problem of zoonoses is "One health concept".

Original Research
Oral Presentation 12 Acta Medica Academica 2019;48(Suppl 1):14.

Characteristics of Anemia in Patients with Hashimoto's Thyroiditis

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Objective. Anemia is a frequent and often under recognized comorbidity of Hashimoto's thyroiditis. Hashimoto's thyroiditis suppresses erythropoiesis by reducing the proliferation of erythrocyte precursors and erythropoietin production. It also leads to nutrient deficiencies, including iron, vitamin B12 and folic acid. The aim of the study was to determine the characteristics of anemia in Hashimoto's thyroiditis. **Materials and Methods.** The study was an observational study conducted over a period of twenty-four months, from 01.11.2016. to 01.10. 2018. The data were collected on the basis of clinical history, physical examination, medical documentation, laboratory analysis and ultrasound examination. **Results.** A total of 56 patients with newly diagnosed Hashimoto's thyroiditis and anemia, 52 (93%) women and 4 (7.0%) men, of an average age of 54 ± 5.1 years, were evaluated. Normocytic anemia was the most commonly observed type of anemia in Hashimoto's thyroiditis (67.9%). Microcytic anemia due to iron deficiency was the second most commonly observed anemia (26.7%), while macrocytic anemia was rare in our cohort (5.4%). **Conclusion.** An adequate etiological assessment of anemia in Hashimoto's thyroiditis is necessary for successful therapy of anemia.

Case and Topic Review
Oral Presentation 13
Acta Medica Academica 2019;48(Suppl 1):15.

Holter Monitoring During an Active Standing Test at Home for the Diagnosis of POTS

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A 17-year old female patient accompanied by her mother was admitted to the pacemaker center because of unusual episodes of dizziness and syncope with spontaneous recovery, occurring with standing up. She had symptoms such as palpitations, tiredness, nausea and gastrointestinal problems, and could not tolerate heat. Most of these symptoms started in puberty. The first holter ECG and echocardiography exam were normal. A physical examination was undertaken and no abnormalities were noticed. Her pulse was about 65 bpm and blood pressure 120/80 mmHg. After examination of the joints, it was noticed that her joints were hypermobile and her skin was hyperelastic. The Beighton test score was 7. An active stand test was performed, and it was noticed that her pulse increased by more than 30 bpm during the 10-minute test relative to the supine heart rate before the test. Another holter ECG was done at home, but with the recommendations for active stand test, followed by standing for 10 minutes after she wakes up on the second day. A similar increase in the heart rate was noticed on the Holter ECG, especially after she woke up in the morning, associated with upright posture dizziness, presyncope symptoms, heavy arms and legs, making it difficult to stand, and preferring to lie in bed. The patient was diagnosed with postural orthostatic tachycardia syndrome (POTS). Holter ECG may be efficient in proving and confirming the diagnosis of POTS, with the help of the physical examination, the active stand test and the Beighton scale, but with the need for the full cooperation of the patient. **Conclusion.** We have presented a case of postural orthostatic tachycardia syndrome, a form of dysautonomia associated with hypermobile joints. Due to the inability to do the head-up tilt table test, the usage of Holter ECG was shown to be useful in confirming the diagnosis of POTS.

Case and Topic Review
Oral Presentation 14
Acta Medica Academica 2019;48(Suppl 1):15.

Churg-Strauss Syndrome Complicated by Heart Failure

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A 33-year-old man presented for a pulmonology consultation because of breathing problems and cough. Eight years prior, he was diagnosed with bronchial asthma and he underwent sinus surgery that same year. Two days before presentation to pulmonology, he was released from the hospital because of suspected wound inflammation (status post cholecystectomy). It was noted that his blood count showed elevated eosinophils. Echocardiogram showed presence of dilated cardiomyopathy with severe mitral and moderate tricuspid insufficiency, moderate pulmonary hypertension, and pericardial and pleural effusions. CT of the chest showed changes suggestive of lung involvement with eosinophilic granulomatosis with polyangiitis (EGPA). He was diagnosed based on the clinical criteria of American College of Rheumatology. Cardiac surgeon recommended heart transplantation. EGPA represents auto-immune necrotizing vasculitis of small blood vessels, which is associated with allergic rhinitis and/or asthma. Disease has three phases in which it affects different organs. The heart is affected in 15-60% of cases. The vasculitis of small vessels and coronary arteries may lead to ischemia as well as eosinophilic myocardial infiltration. **Conclusion.** Heart is frequently involved in patients with EGPA. Full cardiology exam is indicated in all patients with suspected EGPA.

Oral Presentation 15

Case and Topic Review
Acta Medica Academica 2019;48(Suppl 1):16.

Diagnosis and Treatment of Heart Myxoma in Left Atrium

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A 29-year old patient, with history of transient cerebrovascular attacks, presented with symptoms of heart failure seven days prior to the hospitalization. Focused bedside ultrasound exam suggested presence of tumorous mass in the left atrium. Upon hospitalization in the intensive care unit, echocardiogram revealed 8x5 cm mass in the left atrium partly protruding into the left ventricle during diastolic phase of the heart cycle. Urgent thoracic CT and pulmonary artery angiography confirmed the finding. Subsequent echocardiogram revealed inferobasal and inferoseptal segment akinesia, bilateral pleural effusion and dilated inferior vena cava, which were not present during the primary echo assessment. Percutaneous coronary intervention prior to the surgical treatment revealed occlusion of right coronary artery. During the surgery, tumorous mass was resected with annuloplasty and reconstruction of P2 segment of the mitral valve. During the one- and three-month follow ups, patient remained stable with the reduction in size of the left atrium. Myxomatous heart tumors are rare and in most cases are benign. Over 90% are solitary and about 75% are found in the left atrium. Growth of the tumor is usually slow and initially asymptomatic. About three-quarters of all heart benign tumors are myxomas. Benign tumors of the heart in most cases are accidentaly found during the routine ultrasound examination. Small and compact tumors rarely do present with symptoms, while large tumors, as a result of the compressive effect, present with various cardiac symptoms. Thromboembolic complications may affect distant organs. **Conclusion.** Complete surgical resection of benign cardiac myxoma may be a definitive treatment of this rare disease.

Oral Presentation 16

Professional Experience
Acta Medica Academica 2019;48(Suppl 1):16.

Quarterly Review of Unscheduled Patients at the Mujković Polje Family Medicine Outpatients' Clinic

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Mujković Polje Family Medicine Outpatients' Clinic No 5, at the "Dr. Isak Samokovlija" Health Center Goražde, covers 2,575 patients (registered by teams: 1,204 in team I and 896 in team II). The aim of this paper is to present the number of unscheduled patients in the first team compared to the total number of patients examined, and the number of patients scheduled in a period of 3 months (01.10.2018 to 31.12.2018). An audit of the patient scheduling protocol from team I, led by a family medicine specialist, provided data that were processed in relation to the total number of monthly patient visits, patients who came on time to a scheduled appointment and the number of unscheduled patients who came for a consultation. In the three-month study period, the family medicine specialist (team I) examined 2,290 patients, of which 1,393 patients (60%) did not have scheduled visits. During the same period there were 1,243 scheduled patients, and 897 insured patients (72%) were on time for their appointment. The most frequent reason for the unscheduled visits was of "administrative requirement" nature. **Conclusion.** The percentage (60%) of unscheduled patients examined at our Health Center poses a significant problem. This high ratio of unscheduled to scheduled patients may undermine the established scheduling system and may lead to conflicts in the waiting room.

Topic Review
Oral Presentation 01 Acta Medica Academica 2019;48(Suppl 1):17.

Enhanced Recovery After Surgery/ERAS Protocol

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Enhanced Recovery After Surgery/ERAS protocol is a comprehensive perioperative management program that has been shown to improve postoperative outcomes and facilitate recovery. These standardized pathways can benefit multiple surgical specialties. This presentation aims to review ERAS protocol in gynecologic surgery, with emphasis on pain management and dietary recommendations. Enhanced Recovery After Surgery is a protocol designed to achieve early recovery after surgical procedures and to reduce surgical stress and organ dysfunction in surgical patients. It also decreases length of stay and the incidence of postoperative complications. It is a comprehensive and multimodal perioperative management program that includes set of different protocols that take place before, during and after surgical procedures. Use of opioids after the surgery is associated with significant side effects. In addition, the opioid use epidemic warrants judicious use of these medications. Through ERAS-recommended perioperative pain management, it is possible to significantly decrease need for the postoperative opioids and often to completely avoid its use. Preemptive analgesia, as well as intraoperative and postoperative stepwise combination pain management, may decrease pain scores and decrease the need for opioids. Prolonged preoperative fasting and delayed start of postoperative feeding may lead to metabolic changes and fluid disbalance, which can impede recovery. ERAS protocols encourage minimal preoperative fasting and early feeding that can prevent those undesired effects. **Conclusion.** ERAS-recommended pain management and dietary recommendations might significantly contribute to faster recovery, lower opioid use, shorter length of stay, higher patient satisfaction, and decreased costs.

Case and Topic Review
Oral Presentation 02 Acta Medica Academica 2019;48(Suppl 1):17.

Gastric Perforation Caused by Incarcerated Pylorus Within a Large Ventral Hernia

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Incarcerated pylorus within a ventral hernia is an uncommon clinical entity with only a few cases described. Our aim was to present a case of gastric perforation caused by this etiology along with relevant literature review. A 64-year old man with a known large ventral hernia presented with signs of acute abdomen. On exploration, the patient was found to have incarcerated pylorus causing perforation of the gastric fundus, along with other hernia contents. High intragastric pressure due to incarceration of the pylorus had lead to perforation of the proximal stomach. After adequate operative intervention, patient ultimately recovered and was discharged home. This is a rare and yet-unreported case in the literature to the best of our knowledge. **Conclusion.** The finding of pylorus within the ventral hernia mandates exploration of the entire length of the stomach in order to avoid missing this type of an injury.

Case and Topic Review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):18.

Fiberoptic Intubation Through Laryngeal Mask Airway (LMA)

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Difficult intubation can be anticipated and unanticipated. Unanticipated difficult intubation can be life-threatening and it is a significant challenge for anesthesiologists. In such situations it is essential to follow pre-existing algorithm. The introduction of LMA into day-to-day practice is described in relation to a case report. A 51-year old female patient, ASA physical status II, and with BMI of 25, was planed for elective laparoscopic cholecystectomy. Based on her preoperative Mallampati grade of I, she was predicted to have "easy airway". After two failed attempts of intubation, Ambu Aura-i LMA#4 was inserted, however, after adequate ventilation failed, it was decided to wake up a patient and postpone the surgery. Next day, the patient was brought back to the operating room, and a team of two anesthesiologists (one consultant), were prepared for a difficult airway. The first attempt by a junior anesthesiologist and second by anesthesia consultant, both failed (Cormack-Lehane IV). Between the intubation attempts, the patient was ventilated with a face mask with 100% pulse O2 saturation. After failed second attempt, LMA #4 was placed successfully, with adequate ventilation in the initial attempt. Flexible fiberoptic bronchoscope was introduced through LMA and an endotracheal tube 7.0 was successfully inserted. **Conclusion.** Endotracheal intubation through LMA using fiberoptic bronchoscopy can be an easy and safe method of securing unexpected difficult airway. In order to overcome this technique, special training is required. This technique is especially important for anesthesiologists in small general hospitals with limited resources.

Professional Experience
Oral Presentation 04
Acta Medica Academica 2019;48(Suppl 1):18.

Fiberoptic-Guided Intubation Through Ambu Aura–i Laryngeal Mask Airway in Difficult Airway Management: Case Series

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A difficult airway is described as the clinical situation in which a conventionally trained anesthesiologist experiences difficulty with face mask ventilation and/or tracheal intubation. Fiberoptic intubation through a supraglottic airway device (SAD) is recommended if tracheal intubation fails. We present our experience with four successful intubations through an Ambu Aura-i laryngeal mask airway (LMA) #5 with fiberoptic guidance, after direct laryngoscopy with no visualization of vocal cords (Cormack-Lehane IV), in the period from December 2017 to October 2018. In all four cases the visualization of the glottic aperture by direct laryngoscopy proved difficult and/or tracheal intubation was unsuccessful. An Ambu Aura-i LMA was inserted and the trachea intubated with fiberoptic bronchoscope using the above described technique, per our hospital's difficult-airway-procedure. In all four cases, we left the LMA in situ with deflated cuff after intubation. There were no airway related complications. Intubation through a SAD is only appropriate if the clinical situation is stable, oxygenation via the SAD possible and the anesthesiologist is trained in the technique. **Conclusion.** If tracheal intubation fails, supraglottic airway devices are recommended to provide a route for oxygenation while considering definitive approach. According to our hospital procedure and based on the international guidelines, we successfully applied fiberoptic-guided tracheal intubation through Ambu Aura-i LMA in all 4 cases.

Professional Experience
Oral Presentation 05
Acta Medica Academica 2019;48(Suppl 1):19.

Evaluation of Clinical Outcomes in Modified Lichtenstein Hernioplasty with Retrofunicular Sutures

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An inguinal hernia is one of the most common operations in surgery. At our institution, surgical treatment of inguinal hernia employs both classic Lichtenstein technique and a modified Lichtenstein technique, which includes deployment of retrofunicular sutures. Our objective was to evaluate the differences between standard Lichtenstein technique and modified Lichtenstein technique in inguinal hernia operation in relation to the occurrence and intensity of intraoperative, early and late postoperative complications and hernia recurrence. We performed retrospective analysis of prospectively collected data during years 2015 and 2016 at the Clinic for Abdominal Surgery KCUS. The study included 120 patients older than 18 years, diagnosed with primary inguinal hernia and referred for repair. During the study period, no intraoperative complications were found in any group. Evaluation of early and late postoperative complications and clinical outcomes of our patients treated with the modified technique showed lower or equal number of late complications in relation to the classic Lichtenstein technique. The incidence of recurrent hernia during the period covered by our study was slightly lower than in other comparable studies. **Conclusion.** Based on the evaluation and comparison of the results obtained, we conclude that modified Lichtenstein technique with retrofunicular stitches in comparison with the classic Lichtenstein technique is not inferior in terms of outcomes. Its use may be recommended in general surgical practice especially in patients with weakness of the inguinal canal floor.

Topic Review
Oral Presentation 01 Acta Medica Academica 2019;48(Suppl 1):20.

Critical Ilness Polyneuropathy and Intensive Care Acquired Weakness

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The aim of this topic review is to provide overview of intensive care acquired weakness. Besides critical illness polyneuropathy, numerous publications have delineated itensive care unit acquired weakness, which refers to newly developed muscle weakness related to critical conditions with different underlying etiologies and hospital courses. Underlying pathophysiological mechanisms include wide spectrum and interplay of microvascular, metabolic and bioenergetic changes with resultant alterations of peripheral nerve function, loss of muscle strength and altered contractility with muscle atrophy and consequent disability. While in polyneuropathy the main characteristic of the clinical picture are flaccid and symmetrical paralysis that involve lower extremities and respiratory muscles, intensive care unit (ICU) acquired weakness affect muscles of proximal extremities and respiratory muscles. In both conditions patients usually have prolonged intensive care unit stay, difficulities in weaning and prolonged mechanical ventilatory support. Among the most important risk factors are sepsis, multi-organ failure, advanced age, long immobilization and metabolic disturbances. Diagnosis is clinical, although electrophysiological testing may be useful. Preventive measures include early and rapid treatment of underlying cause, early mobilization, avoidance of hyperglycemia or early parenteral nutrition. Patients who develop critical illness polyneuropathy and muscle weakness have increased morbidity and mortality with varying periods of recovery, ranging from weeks to months after discharge. Patients who develop both critical illness polyneuropathy and ICU acquired muscle weakness have worse prognosis, while patients with isolated muscle weakness may have better prognosis. Early recognition and initiation of prevention measures for these detrimental conditions may favorably impact the course of treatment and decrease negative effects on the survival, complications and long term prognosis. **Conclusion.** ICU acquired muscle weakness is associated with adverse outcomes and prolonged recovery. Prevention and early recognition are crucial goals in care of patients at risk.

Topic Review
Oral Presentation 02 Acta Medica Academica 2019;48(Suppl 1):20.

Ventilator-Induced Lung Injury (VILI)

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The aim the review is to provide an update of numerous strategies to reduce lung overdistension and prevent ventilator-induced of lung injury (VILI) in ARDS patients. ARDS, an acute lung inflammation, is clinically perplexing because its therapy and management remain largely supportive. Some approaches to mechanical ventilation exacerbate lung injury and increase mortality. It is frequently a challenge to determine how much of the observed lung injury is due to an underlying disease process versus the ventilator strategy. The collection of pulmonary consequences of mechanical ventilation has been termed VILI. Understanding VILI mechanisms, its biologic and physiologic consequences and clinical approach to prevent or minimize its effect are clinically relevant. Clinical management and the ventilator setting should be focused on providing good gas exchange while minimizing ventilator-induced lung injury. Practically, it is strongly recommended to: use a small tidal volume per breath calculated via predicted body weight; use lower inspiratory pressure and prone positioning; use higher PEEP and neuromuscular blocking agents* in severe ARDS. Additional evidence is needed to clarify the use of partial or total extracorporeal membrane oxygenation (ECMO) in severe ARDS. Moreover, identification of ARDS subphenotypes might be useful in selecting patients for future clinical trials. **Conclusion.** Early and sustained application of the VILI mitigation strategies is crucial to avoid iatrogenic injury and adverse outcomes.

Topic Review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):21.

Tranexamic Acid in Acute Hemorrhagic Events

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Tranexamic acid (TXA) has been used for decades to prevent and treat clinically relevant hyperfibrinolysis (HF) and more generally for prevention and treatment of bleeding due to variety of causes. In the course of major surgical interventions (cardiac and orthopedic surgery, liver transplantation), TXA reduces perioperative blood loss and need for transfusions. In trauma patients with partly excessive bleeding, TXA can reduce mortality, in particular, if administered within a narrow time frame after injury. Unlike in elective surgery, 25–35% of all patients with severe physical injuries already show some form of coagulopathy when admitted to ICU. Compared to the patients who have been treated for deranged coagulation, these early coagulopathies are associated with a four-fold higher mortality. Profibrinolytic activation appears to play decisive role in these cases. More pronounced the shock is, more severe HF and risk of mortality will be. Several studies revealed that HF exceeding 3% was associated with dramatic increase in mortality. There are few side effects from use of TXA except when administered in high dose where neurological events have been noted, possibly relating to tranexamic acid interfering with cerebral GABA and glycine receptors. The effect of TXA on thromboembolic events and mortality requires further attention. **Conclusion.** Polytrauma patients and those undergoing surgical procedures involving organs rich in plasminogen pro-activators (e. g. liver, kidney, pancreas, uterus and prostate gland) are at high risk for hyperfibrinolysis (HF). The extent of posttraumatic HF apparently greatly depends on the extent of shock and resulting hypoxia and tissue injury. Uncontrolled HF is associated with a high mortality. Antifibrinolytics, such as TXA are used for prophylaxis and treatment of the bleeding caused by local or generalized HF.

Topic Review
Oral Presentation 04
Acta Medica Academica 2019;48(Suppl 1):21.

Fundamentals of Meaningful Clinical Research and Quality Improvement in Intensive Care Medicine

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Fundamentals of meaningful clinical research and quality improvement include defining meaningful outcomes, asking answerable research questions, and efficient study designs and analytical methods. Clinical research is essential for advancing knowledge and practice of intensive care medicine. Over the past several decades there has been an increasing number of multicenter randomized controlled clinical trials in this field of medicine. Placed at the very top of evidence-based medicine pyramid, these major clinical trials generally provided either contradictory or negative results. The reasons are multiple, including poorly defined research questions, heterogeneous patient populations, and focusing on short term mortality as the primary outcome. Recently, abundance of electronic health records and molecular diagnostics facilitated new era with phrases, such as "precision medicine" and "big data", becoming a commonplace. In their current forms, these efforts, rather than yielding any benefit, may cause additional harm by creating additional complexity and confusion, and by distracting clinicians from the well-established best practices. **Conclusion.** Care and outcome of critically ill patients have been steadily improving around the world, not due to application of the advanced treatments, but rather due to extremely important practice surveillance, education and neccessarily quality improvement efforts.

Topic Review
Oral Presentation 05
Acta Medica Academica 2019;48(Suppl 1):22.

Acute Respiratory Failure (ARF)

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This review discusses approaches to the management of acute respiratory failure (ARF) and the treatment options. ARF is impairment in function of lungs or respiratory muscles. It manifests as impaired oxygenation, ventilation or increased work of breathing. It represents the most frequent reason for intensive care admission with high associated mortality (20-45%) and morbidity (25–58% hospital readmissions in 1 year). The consumption of healthcare resources was reported at $54.3 billion in 2009 (USA). The approach to management of ARF can be non-invasive or invasive. Non-invasive approaches include therapeutic positioning, oxygen administration via high flow nasal cannula and non-invasive ventilator support. Ensuing mechanical ventilation needs to be provided in a safe way, which requires understanding of cardiopulmonary interactions and mechanical power delivered by the ventilator. The goal of mechanical ventilation (MV) is to provide minimum necessary oxygenation and ventilation, while actively avoiding lung injury. Besides ventilator settings, recruitment maneuvers and prone positioning may be necessary to provide safe MV. Intermittent monitoring of the driving pressure may further contribute to the safer MV. Esophageal pressure monitoring as a surrogate for pleural pressure, which helps estimate the transpulmonary pressure, may be indicated in the selected patients. When the patient's life is at risk despite administration of standard supportive therapy, rescue or advanced strategies such as extracorporeal CO2 removal and/or extracorporeal membrane oxygenation may provide improved outcomes. **Conclusion.** The approach to management of ARF can be non-invasive or invasive. When intubation and invasive MV is needed, problems should be anticipated and prevented. Besides the standard supportive care, rescue strategies may be necessary.

Topic Review
Oral Presentation 06
Acta Medica Academica 2019;48(Suppl 1):22.

Dispelling Myths in Neurocritical Care

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Neurocritical care is a relatively new and highly specialized field. Evidence is often lacking for the management of some neurocritical care disorders. This leads to variations in practice and occasionally to the dissemination of concepts that are inaccurate or frankly incorrect, yet accepted as established knowledge. This review addresses the management of some neurocritical care disorders, the optimal ventilator strategy in myasthenic crisis, and the safety of apnea test in brain death declaration. A few other myths that need to be dispelled from the practice of Neurocritical Care, will be discussed, including the therapeutic target for intracranial pressure management, the value of hypervolemia and the diagnosis of delayed cerebral ischemia in aneurysmal subarachnoid therapy. **Conclusions.** Although, definite evidence is not always available to guide the management of some critical neurological diseases, clinical decisions in neurocritical care should be based on best available evidence and detailed understanding of pathophysiology. Uncritical heuristic approaches should be dismissed.

Topic Review
Oral Presentation 07
Acta Medica Academica 2019;48(Suppl 1):23.

Macrophage Activation Syndrome in Pediatric Rheumatic Diseases

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This review will summarize current knowledge on presentation, laboratory tests and pathophysiology of macrophage activation syndrome (MAS). MAS is a type of secondary Hemophagocytic Lympho-Histiocytosis (sHLH). It has been recognized as a complication of many rheumatic diseases, but it is mostly associated with Systemic Juvenile Idiopathic Arthritis (SJIA), where it can be seen in its complete or incomplete form in up to 30-40% of patients. In SJIA, it is usually triggered by poorly controlled inflammation of the underlying disease. Additional predisposing factors include infections (mostly herpes virus family and influenza) and heterozygous profile for HLH mutations affecting cytotoxic functions, typically seen in their homozygous form in the primary HLH. Mutations in genes regulating inflammatory pathways and inflammasome, such as NLRC4, may also play a role. MAS carries high mortality, and is frequently unrecognized, especially when it is a first presenting sign of an underlying rheumatic disease. Understanding laboratory characteristics of MAS is crucial for early diagnosis as typical clinical signs, such as DIC and liver failure, trail after laboratory abnormalities. Its treatment is a medical emergency, and starts with high dose intravenous steroids and cyclosporine. New promising therapies include agents blocking IFN-γ and IL-18, thought to be major cytokines driving the "cytokine storm", a hyper-inflammatory state characterizing MAS. **Conclusion.** MAS is a serious complication of several rheumatic diseases, seen in up to a third of children with SJIA. It carries high mortality and its treatment is a medical emergency. Pathophysiology shares similarities with primary and reactive HLH.

Topic Review
Oral Presentation 01
Acta Medica Academica 2019;48(Suppl 1):24.

Anterior Sacral Meningocele in Children – Diagnostic Dilemmas and Treatment

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Anterior sacral meningocele (ASM) is neural tube defect caused by a prolapse of meninges (dura and arachnoid) through an anterior sacral defect. Over 300 cases of ASM have been reported so far with variety of comorbid conditions. Etiology and pathogenesis are not fully understood, although it is usually classified as a congenital neural tube defect arising during neurulation stage of the embryonic development. It is associated with a defect of the anterior sacral wall, which is the origin of Currarino triad, consisting of presacral mass, sacral dysgenesis and anorectal malformation. Patients with ASM often remain asymptomatic. Consequently, in some cases the diagnosis cannot be obtained until the lesion reaches large dimensions. A wide variety of anorectal pathologic conditions, both benign and malignant, can also be diagnosed. However, in most pediatric and adult patients, the constipation is the first and the most persistent sign. Magnetic resonance imaging is the gold diagnostic standard, and the posterior approach is the most common type of surgical approach in treating patients with this condition. **Conclusion.** Due to several comorbid conditions which are possible in patients with diagnosed ASM, multiple specialists need to be involved in the treatment. This malformation can also show hereditary pattern. Therefore, closest relatives should also be evaluated genetically. Since the constipation is the most common compliant in pediatric age, it must always be evaluated thoroughly, especially in cases when it is persistent and resistant to the standard conservative treatment.

Topic Review
Oral Presentation 02
Acta Medica Academica 2019;48(Suppl 1):24.

Diagnostic Challenges of (I)Normal Pressure Hydrocephalus

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In this review we summarize current knowledge on clinical presentation, diagnostic approach and management of idiopathic normal pressure hydrocephalus (iNPH). Idiopathic normal pressure hydrocephalus is a syndrome characterized by gait disturbance, cognitive impairment and urinary symptoms that may represent a real diagnostic challenge due to similar core clinical characteristics with other entities frequently seen in elderly population, such as Parkinson's and Alzheimer's diseases. Although iNPH has a characteristic neuroradiological picture, there is still lack of widely accepted, standardized diagnostic criteria guidelines. Epidemiological studies have reported different scales used for measuring the severity of symptoms and the current guidelines still have not specified the cut-off limits between normal and impaired function. It is important to emphasize that establishment of accurate diagnosis is essential, given the fact that 70–80% of patients with iNPH are expected to improve after ventricular shunting. **Conclusion.** In the clinical decision making process regarding the initiation of treatment, the major difficulty lies in the lack of consensus on diagnostic criteria and the selection of patients for shunt placement. Therefore, overview of the current knowledge is indispensable.

Topic Review
Oral Presentation 03 Acta Medica Academica 2019;48(Suppl 1):25.

The Life and Surgical Achievements of Ambroise Paré

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Ambroise Paré was an illustrious surgeon of the Renaissance, whose ideas, books and practical endeavors revolutionized surgery. He promoted medical empiricism and established a platform for evidence-based medicine that would define future anatomy and surgery. Therefore, he is considered as a father of modern surgery/neurosurgery and precursor of neuroscience. Ambroise Paré was born in the French province in 1510 to the humble family. At an early age, he became a barber-surgeon and surgical student at the Hotel Dieu hospital in Paris. The experience he gained there enabled him to become a military surgeon making many innovations in wound management, arterial ligation to prevent hemorrhaging during limb amputations, but also in war head injury and spinal trauma. His scientific publications were written in his native French, which made them widely accessible. He insisted that a surgeon should operate on gently to reduce pain and to improve the outcome. Although he served four successive French monarchs at the royal Court, his long career also included care for the wounded, sick and poor, which made him famous. Professional vocation and personal life of Ambroise Paré were burdened by unrewarding political circumstances and religious prejudice. The purges organized by non-tolerant Catholic fanatics endangered his physical existence since he was a Huguenot (reformed protestant) by faith. However, his life was saved by hiding in a closet during the St. Bartholomew's Day Massacre in 1572.

Topic Review
Oral Presentation 04 Acta Medica Academica 2019;48(Suppl 1):25.

Fluorescein Sodium Guided Surgery of High-Grade Gliomas: New Concept and Future Projects

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Primary malignant brain tumors are rare and account for about 2-3% of all adult cancers. However, in the pediatric population the frequency of primary malignant brain tumors is up to 25%. Glioma is the most common primary intracranial tumor, representing about 81% of all malignant brain tumors. A high-grade subtype called glioblastoma is the most common (60% of all gliomas). Its 5-year relative survival is only at 5%. The most conclusive prognostic factors for high-grade glioma (HGG) are extension of resection (EOR), age at the time of diagnosis, and Karnofsky status. Surgical intervention involves debulking and resection of tumor achieving a balance between resection of tumor tissue and preservation of normal functioning brain. Evidence suggests that by maximizing the EOR, while preserving eloquent and normal functioning brain, the optimal surgical result, in terms of quality of life and survival benefit could be achieved. No clear criteria have been defined to support the surgeon´s decision where to limit the resection of HGG. Generally, it has been shown that outcomes are better with GTR approach of >98% of the tumor resected compared to the often used approach of >90% of the tumor resected. Increased surgical safety during dissection in this marginal tumor zone was improved by the development of fluorescein-guided surgery with modern microscopes equipped with filters for detection of the fluorescence. The fluorescein sodium identifies tumor tissue with a sensitivity of 82–94% and specificity of 90–91%. **Conclusion.** Since the beginning of 2019, a new concept of resection of HGG guided with fluorescein sodium has been introduced in our country. So far, the method has been used in several patients.

Topic Review
Oral Presentation 05 Acta Medica Academica 2019;48(Suppl 1):26.

Pleural Effusion as a Ventriculo-Peritoneal Shunt Complication in Children

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The aim is to review existing literature describing pleural effusion as a complication after ventriculo-peritoneal shunt (VPS) placement. Cerebrospinal fluid (CSF) shunting is one of the main treatment options in children with hydrocephalus. VPS, as well as other CSF shunting procedures, however, may lead to several complications, with infections and mechanical failures being the most common. There are several other adverse events that can occur. Pleural effusion is one of the rare ones, especially in small children. In these cases, fluid accumulating in the pleural space could be exudate, transudate, or even CSF. It is necessary to perform sampling of the pleural content in order to differentiate the type of the fluid. One of the novel diagnostic strategies employed to define the source of the pleural effusion is determination of specific biomarkers for CSF leakage in the pleural fluid, such as beta-2 transferrin and adenosine deaminase. Pleural effusion can be associated with or without catheter migration, and the pathogenesis in the latter case is poorly understood. Standard chest X-ray is usually sufficient for accurate diagnosis of fluid accumulation in the pleural space. Radiography can also be used to visualize position of the catheter and to identify possible displacement. In all possible scenarios, CSF shunting system should be explored and replaced as needed. **Conclusion.** Pleural effusion is rare but serious complication of ventricular shunt, which should alert medical providers to evaluate and eventually replace existing CSF shunt.

Original Research
Oral Presentation 06 Acta Medica Academica 2019;48(Suppl 1):26.

Pituitary Adenoma – When To Operate?

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Objective. Pituitary adenomas are among the most common benign supratentorial extrinsic brain tumors. We present the results of combined endoscopic and microscopic endonasal transsphenoidal approach for pituitary adenomas, which has been shown to be safe and efficient for different types of adenomas. **Materials and Methods.** We retrospectively reviewed medical records of 103 patients with pituitary adenomas surgically treated at our department during the last 7 years. All macro and giant adenomas referred to our clinic, whether functional or non-functional, were resected if there was a clinical or symptomatic manifestation. **Results.** There were 45 male and 58 female patients. Median age of the patients was 42 years. Patients have been fully preoperatively evaluated by magnetic resonance imaging, ophthalmology and endocrinology. According to the size, 13 (12.6%) were microadenomas, 74 (71.8%) were macroadenomas, and 16 (15.5%) were giant adenomas. The most dominant symptom was visual field defect in 49 patients (47.5%); headaches were presented in 44 (42.7%); hyperprolactinemia in 37 (35.9%), acromegaly in 10 (9.7%), elevated intracranial pressure in 8 (7.8%), and galactorrhea in 7 (6.8%). 70% of patients had an improvement in their symptoms after the surgery. The most common postoperative complication was cerebrospinal fluid leak, seen in 7 (6.8%) patients. **Conclusion.** Surgery should be the first option in acute visual deterioration, neurological problems, persistent hormonal imbalance, or progressive headaches. Although therapy with dopamine agonists (DA) may be offered at times, we advocate surgery in young and middle age patients because of side effects, high cost, resistance and need for protracted administration of DA.

Original Research
Oral Presentation 07 Acta Medica Academica 2019;48(Suppl 1):27.

Wavelet Transform as a Helpful Tool During EEG Analysis in Children with Epilepsy

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Objective. We studied mathematical approach with Wavelet Transform (WT) during EEG analysis in children focusing on identification of epilepsy. **Materials and Methods.** The EEG signals were collected and analyzed at the Department of Neuropediatrics, University Clinical Center Sarajevo. Continuous wavelet transform was applied in the analysis of EEG signals. Global Wavelet Spectrum was used for discrimination between healthy and epileptic patients. Additional characteristics of the analyzed data were: 19 signal-channels of EEG, duration – 20s or 2688 samples and sampling rate of Fs = 134.4 Hz, which is sufficient for identification of all components of EEG signals. The coefficient distribution of WT was presented as the time–frequency domain. Signal database set consisted of 51 patients. **Results.** Fifty patients with a diagnosis of epilepsy and one healthy patient, age 1-18, were included. Before processing, the signals of a healthy patient and patients with epilepsy were similar and it was difficult to discriminate among them. After wavelet transform was applied and Global Wavelet Spectrum was used representing time-frequency wavelet analysis, we could clearly distinguish those signals. All patients with epilepsy diagnosis showed markedly high-energy deviations. **Conclusion.** In this study, WT proved to be a successful technique in terms of EEG analysis in children. By using the wavelet method, the risk of subjectivity of the physician, which is possible in the process of interpretation of the EEG test, could be mitigated.

Original Research
Oral Presentation 08 Acta Medica Academica 2019;48(Suppl 1):27.

Surgically Treated Patients With Brain Metastases: Prognostic Factors, Outcome and Comparison of Recursive Partitioning Analysis (RPA) and Diagnosis-Specific Graded Prognostic Assessment (DS-GPA)

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Objective. Metastases are the most frequent tumors in the brain. The most commonly used scoring systems to predict the outcomes are the RPA (Recursive Partitioning Analysis) classification and the DS-GPA (Diagnosis Specific-Graded Prognostic Assessment) score. The goal of our study was to determine prognostic factors that influence outcome in patients who undergo surgery for brain metastases and to compare different outcome scores. **Materials and Methods.** 229 patients who underwent surgery for brain metastases at our institution between January 2005 and December 2014 were included in the study. Patient data were evaluated retrospectively. **Results.** The mean survival time was 19.2 months and the median survival time was 8 months. For patients with a single metastasis (n=149), the length of survival was 17.6 and 8 months, respectively. For patients with multiple metastases (n=80), the length of survival was 17.9 months and 6 months, respectively. Significant influence on the mean survival time showed the following variables: age <65 years (9 vs. 5 months, p=0.002), female sex (10 vs. 6 months, p<0.001), RPA Class I and II (11 vs. 4 months, p<0.001) and postoperative radiotherapy (8 vs. 5 months). **Conclusion.** The RPA Classification was more accurate in predicting the outcome than the DS-GPA score.

Original Research
Oral Presentation 09 Acta Medica Academica 2019;48(Suppl 1):28.

Cervical Pedicles as the Anchors for Posterior Spinal Instrumentation

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Objectives. To describe the anatomy and biomechanical characteristics of the cervical pedicles. **Material and Methods.** 53 human cervical columns (C2-C7) from the Hamann-Todd Osteologic Collection of the Cleveland Museum of Natural History were analyzed (318 vertebrae and 636 pedicles). **Results.** The largest pedicles were at C2, the smallest at C3 and then gradually increased in size to C7. In the large amount of pedicles from C3-C6, the pedicle width was smaller than 4 mm (75% to 13% respectively). The certain number of pedicles from C2-C4 had no medullary canal (0.9 to 3.8% respectively). All the pedicles converged in the horizontal plane with the large individual variations. The thinnest cortex of the pedicle was always the one approximating vertebral artery (the lateral cortex). Preoperative CT is necessary to evaluate the dimensions of the pedicles. There is no safe zone for bicortical pedicles screw placement from C3-C7. The landmarks for the pedicles screw placement were identified (the lateral vertebral notch, inferior articular facet and, for C7 only, transverse process). The critical pedicle perforation using the free hand technique was identified in 7% of the cases in our anatomical study. The pull-out strength of the cervical pedicle screws was three times larger in comparison with the lateral mass screws. **Conclusion.** Cervical pedicles are suitable anchors for the posterior cervical instrumentation but the placement of the pedicle screws is not easy. One has to know the detailed anatomy of the cervical pedicles, and preferably practice the technique of the placement of the screws on cadavers. New emerging technologies such as the intraoperative navigation and robotics can be helpful.

Case Series and Topic Review
Oral Presentation 10 Acta Medica Academica 2019;48(Suppl 1):28.

Decompressive Craniectomy in the Treatment of Complex Severe Traumatic Brain Injury

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Four interesting cases of severe traumatic brain injury (TBI) treated by decompressive craniectomy and a short review of literature on decompressive craniectomy are presented. In modern medical era, decompressive craniectomy (DC) has been used since Bergmann first described the technique in 1880. DC can be performed in combination with evacuation of extra-axial collection, removal of intraparenchymal hematoma, diffuse brain edema, following the debridement of penetrating wounds and evacuation of foreign body, removal of necrotic brain parenchyma or open impressive fractures. It has been shown that time spent with intracranial pressure exceeding 20 mm Hg correlated directly with the adverse outcome of the patients and that early decompression (within 4 hours from the injury) may result in improved functional outcome within 6 months. In the period of 2011-2014, at our university hospital in Zagreb, 154 decompressive craniectomies have been performed in patients with severe TBI. We present 4 cases with complex severe TBI admitted through our emergency service. Three out of four patients significantly improved after the surgery and were discharged from the hospital for further rehabilitation. **Conclusion.** We present four interesting TBI cases and their postoperative outcomes.

Oral Presentation 11

Professional Experience
Acta Medica Academica 2019;48(Suppl 1):29.

Spinal Tumors: Patients Operated in the Period of 2014-2019 in Northeastern Bosnia Region

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Spinal tumors can be classified into 3 groups based on the compartment involved: extradural; intradural extramedullary; and intramedullary spinal cord tumors. Metastases are most often found extradurally. We conducted a retrospective analysis of the medical charts of patients that were operated in the period from January of 2014 until March of 2019 at the neurosurgery department of University clinical center Tuzla. A total of 36 patients had undergone spinal tumor resection surgery in the analyzed period, 20 female and 16 male patients. Median age was 55 years; the youngest patient was aged 7 and the oldest 76 years. The largest subgroup was made of patients with intradural extramedullary tumors (24), followed by intramedullary tumors (7), thus leaving 5 patients in the subgroup of extradural spinal tumors. **Conclusion.** Data from our institution led us to the conclusion that there was a steady annual case rate with an almost uniform distribution through years of the analyzed period. There was a female predominance and the most common pathohistological diagnosis was meningioma.

Oral Presentation 12

Professional Experience
Acta Medica Academica 2019;48(Suppl 1):29.

Intradural Spinal Tumors: Surgical Considerations and Institutional Experience

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We retrospectively analyzed patients with intradural spinal tumors operated at our institution from 2010 to 2019. In the preoperative evaluation, we have assessed: 1) Pain by Visual Analogue Scale (VAS) 1 – 10; and 2) Neurologic Deficit: no deficit (N), sensory (S), motor (M), combined sensorimotor (SM), or sphincter deficit (SMD). We have analyzed correlations between histology, location and age. We have shown that the locations where the tumors mostly occurred were: a) for Schwanomas and ependimomas - lumbar spine, and b) for meningiomas - thoracic spine. The best postoperative reduction in pain was after surgery for ependimomas (VAS) and for Schwanomas (VAS 1), while the weakest effect on the reduction in pain was for neurofibromas. In terms of location of the tumor and resolution of pain, the weakest effect was for the thoracic spine tumors. We also report the full recovery in all cases with the sphincter deficit, 50% recovery in cases with the sensory deficit, and the least favourable results in cases with the motor deficit, where there was no recovery at all. We have done follow up at 4 to 36 months. The mean hospital stay was 8 days, with 3 major postoperative complications; 2 patients with liquorrhea and 1 patient with pneumonia. There was no need for fusion after surgeries. **Conclusion.** In terms of the postoperative reduction in pain and improvement in neurological deficit, histological type of the tumor had no discernable impact. The effect of the tumor location on postoperative neurological deficit was less favorable for cervical and thoracic tumors.

Professional Experience
Oral Presentation 13 Acta Medica Academica 2019;48(Suppl 1):30.

Posterior Fossa Tumors in Adults

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The posterior fossa is the site of many types of tumors, and brain metastases are the most common malignancies in that location among adults. Other brain tumors, such as ependymomas, medulloblastomas, and juvenile pilocytic astrocytomas, mostly occur during childhood and are relatively rare in adults. Most primary intracranial tumors, such as gliomas and meningiomas, tend to be located in the supratentorial compartment. The literature on posterior fossa tumors in adults relies mainly on limited retrospective clinical studies, and such studies employ a wide range of treatment approaches that are usually based on therapies developed specifically for children or for supratentorial brain tumors. A group of consecutive patients who underwent resection of the posterior fossa tumor were retrospectively identified and included. Magnetic resonance imaging of the brain was performed following presentation and during a follow-up period. Prognostic factors, comorbidity, surgical resection and outcome of posterior fossa tumors in adults were evaluated. In the reviewed cases, we analyzed resection of posterior fossa tumors, patient age and gender, complications, radiological follow-up and outcome. **Conclusion.** Posterior fossa tumor surgery is associated with a significant risk of complications and the complications are typically more frequent compared to similar supratentorial surgeries. Gross total resection is advocated in most posterior fossa tumor types. Additional treatment with radiotherapy, radiosurgery and chemotherapy is recommended in cases of tumor remnant or metastasis.

Professional Experience
Oral Presentation 14 Acta Medica Academica 2019;48(Suppl 1):30.

Selective Dorsal Rhizotomy in Cerebral Palsy: Results of New Treatment in Slovenia

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Spasticity is characterized by an abnormal increase of muscle tone, affecting movements and the patients' quality of life. The pharmacologic treatment may limit the effects of the condition, however, the surgical treatment is gaining importance. In Slovenia, selective dorsal rhizotomy (SDR) was performed for the first time in October 2017. We report a case series of children with spastic paraparesis treated surgically with SDR. Spasticity in cerebral palsy (CP) was most common indication for the SDR. Initial evaluation and medical treatment was done in the Slovenian rehabilitation institute, as well as the postoperative rehabilitation. The indications included hemiplegic and diplegic type of CP with potential ambulatory function (Modified Ashworth Scale (MAS) grades 2 and 4). After L1 laminotomy, the roots form L1 to S2 were exposed bilaterally, divided into 4 to 8 rootlets, monitored, and those evoking the most abnormal response in the muscles were cut, which was about 70% of the rootlets. It was particularly important to spare the innervation of the sphincters. The prospective study included 8 consecutive patients, aged 4 to 15 (mean 8 years). The MAS dropped significantly after surgery. The spasticity was reduced immediately after surgery and the muscle strength started to improve after 3 weeks. There were no complications or side effects in our series. The children were then included in the continuous postoperative rehabilitation program. **Conclusion.** The SDR is an efficient surgical technique for reducing spasticity, especially in young children with CP-related spastic diplegia. The technique requires meticulous neuromonitoring during the operation followed by continuous rehabilitation. The treatment outcome of the SDR is long-lasting and the side effects with careful surgery are minimal.

Topic review
Oral Presentation 01
Acta Medica Academica 2019;48(Suppl 1):31.

Theranostics in Neuroendocrine Tumors: Expanding Personalized Medicine

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Somatostatin receptor imaging has played an important role to understand the receptor status in neuroendocrine tumors (NETs). Understanding the mechanism of uptake of somatostatin imaging tracers, pathological grading and appropriate indications for neuroendocrine tumor imaging (NET) is important. Interpretation of imaging and knowing the pitfalls and uncommon findings are critical to accurate reporting. The complexity of Lu-177 Therapy (PRRT) for NET tumors and its integration into a new therapy practice is discussed. Theranostics in NETs have provided way to personalized medicine for patients with metastatic/progressive NETs. We review the current literature and multiple cases demonstrating the imaging advantages of Ga-68 DOTA-TATE over Octreoscan imaging. It is also crucial to understand the characteristics of the tumor (e.g. Ki67 index) to decide on which molecular imaging ligand to use for imaging. PET/CT imaging ligands improved imaging over Octreoscan, decreased radiation to the patient and shortened the exam time. PRRT with Lu-177 DOTA-TATE has impacted patient survival and symptoms. The complexity of building a new PRRT practice, team work and challenges based on current practice is also reviewed. **Conclusion.** Ga-68 DOTATATE has significantly transformed the imaging of NETs since its FDA approval in the US since June, 2016. It has better imaging characteristic than Octreoscan including sensitivity, specificity, accuracy and better patient characteristics. PRRT for NETs is an expanding practice for patients with progressive, SSTR-positive NETs and therefore establishing a good workflow and teamwork is critical for success.

Topic review
Oral Presentation 02
Acta Medica Academica 2019;48(Suppl 1):31.

PET Imaging in Prostate Cancer: Update and Review of Literature

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Worldwide prostate cancer is 2nd most commonly occurring cancer in men and 4th most commonly occurring cancer overall. One in 6 men will be diagnosed with prostate cancer in their lifetime. Anatomical imaging with Transrectal Ultrasound (TRUS) and Magnetic Resonance Imaging (MRI) are used for initial diagnosis and staging of the disease. Hybrid positron emission tomography and computed tomography (PET/CT) using molecular ligands C-11 Choline and F-18 Fluciclovine are currently used for biochemical recurrence of prostate cancer in the United States. Multiple molecular ligands for staging of prostate cancer are being used in different countries but are still investigational in the United States, the most promising of which is Ga-68 PSMA. Case based presentation describing the role of various anatomical and molecular imaging methods is performed. Food and Drug Administration approved molecular imaging biomarkers like F-18 Fluciclovine and C-11 Choline will be discussed along with investigational PSMA ligands. Review of current literature related to prostate cancer Theranostics is also discussed. **Conclusion.** Hybrid PET/CT has shown to impact patient therapy by providing diagnostic information to guide precise therapy in patients with biochemical recurrence of prostate cancer. The role of newer imaging ligands and PET with magnetic resonance imaging (PET/MRI) needs further evaluation.

Topic review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):32.

MAMS Platform Protocol for Prostate Cancer

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This review analyses the new approach to clinical trials in prostate cancer. The Systemic Therapy in Advancing or Metastatic Prostate Cancer: Evaluation of Drug Efficacy (STAMPEDE) trial recruits patients commencing long-term androgen-deprivation therapy (ADT; orchiectomy or gonadotropin-releasing hormone [GnRH] agonists or antagonists) for the first time for locally advanced or metastatic prostate cancer. Several agents have improved overall survival (docetaxel, abiraterone acetate, enzalutamide, cabazitaxel, radium-223, and sipuleucel-T) or reduced morbidity (zoledronic acid and denosumab) among such patients. These agents were initially investigated in men with very advanced disease whose tumors had progressed during first-line ADT, a disease state now termed castration-resistant prostate cancer. STAMPEDE is an internationally recognized multi-arm, multi-stage (MAMS) platform protocol, incorporating a number of comparisons of new treatments added to standard-of-care compared to standard-of-care alone. It has already demonstrated improved survival with the addition of abiraterone. A total of 1917 patients underwent randomization. The median follow-up was 40 months. There were 184 deaths in the combination group as compared with 262 in the ADT-alone group (hazard ratio, 0.63; 95% confidence interval [CI], 0.52 to 0.76; P<0.001); the hazard ratio was 0.75 in patients with nonmetastatic disease and 0.61 in those with metastatic disease. There were 248 treatment-failure events in the combination group as compared with 535 in the ADT-alone group (hazard ratio, 0.29; 95% CI, 0.25 to 0.34; P<0.001); the hazard ratio was 0.21 in patients with nonmetastatic disease and 0.31 in those with metastatic disease. It also showed that radiotherapy to the primary cancer improved failure-free survival (HR 0.76, 95% CI 0.68–0.84; p<0.0001) but not overall survival (0.92, 0.80–1.06; p=0.266) in patient with newly diagnosed metastatic or advanced prostate cancer. **Conclusion.** STAMPEDE provides new research platform for investigating multiple agents in prostate cancer. It has already provided data that changed the landscape of treatment for metastatic prostate cancer. Additional aims are now going through the investigation.

Topic Review

Oral Presentation 01

Acta Medica Academica 2019;48(Suppl 1):33.

What is New in Bone Substitute?

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To present advantages and disadvantages in using the currently available bone substitutes. Bone defects and voids from various etiologies have to be filled with the material to allow bone healing. The gold-standard for this treatment is autogenous bone grafting. Because of donor site morbidity, synthetic bone substitutes are developed to fill the void. These include Osteoconductive and osteoinductive materials. New materials, such as Bone Morphogenic Proteins and peptides like I-Factors are developed, which are osteoinductive and facilitate bone formation. Clinical experience and problems and limitations are presented. **Conclusion.** Bone substitutes are important and very useful components of the any contemporary orthopaedic procedure. One has to be familiar with their individual characteristics when using them.

Topic Review

Oral Presentation 02

Acta Medica Academica 2019;48(Suppl 1):33.

Developmental Dysplasia of the Hip (DDH)

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Developmental dysplasia of the hip, formerly designated as a congenital dislocation of the hip, belongs to the most common and practically most important congenital disorders of the locomotor system. The beginning, duration and intensity of causative factors directly affect the degree of morphological, anatomical and biomechanical changes in the hip. Primary causal factors and secondary morphological changes are reversible. Sexual distribution shows that developmental dysplasia of the hip may occur more often in girls than in boys, in the ratio of 4-6:1. Per initial reports, no succinct cause was uncovered, but more recent theory supports multifactorial etiology. Clinical examination alone may be unreliable for the diagnosis of DDH, but is mandatory part of the physical exam of the newborn. An ultrasound examination of the hip, which can be performed in the first days of life, is an objective method of high sensitivity and specificity, and plays crucial role in the early detection and monitoring of the success of treatment for developmental disorders of the hip in the first year of life. In Bosnia and Herzegovina, no comprehensive examination of the frequency of developing hip disorders has been conducted so far, but based on published partial results it can be concluded that our country belongs to the areas with increased incidence. **Conclusion.** The most important factor in effective diagnosis and treatment of DDH is (early) timing. More precise the early diagnosis is, the treatment duration is shorter and the number of complications is reduced.

Topic Review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):34.

Clubfoot

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Clubfoot is the most common congenital foot defect and the second most common overall congenital defect. It is found on average in 1 per 1,000 live-born babies, twice as often in boys. It is bilateral in 50% of patients, who may have genetic predispositions. The reliable cause of this disease is unknown. The deformity is noticeable at birth. It consists of several components: equinus, varus, adductus and excavatus. Clinically, inspection determines the presence of anterior foot, cavus deformity, varus and foot equinus, and internal tibial torsion. The lower leg is always thinner due to more or less pronounced muscular atrophy, and the foot is shorter and more stiff; this finding is more evident in unilateral cases. Plain radiography remains to be very important. The initial treatment of clubfoot is nonsurgical, regardless of how severe the deformity is. An effective way of treating a congenital clubfoot was designed by Ignatio Ponseti, by whom the method was named. The success of the treatment of the congenital clubfoot depends on the timing of the diagnosis and the treatment initiation. The goal of the treatment is a foot, which as much as possible, looks like anatomically normal, is painless and which does not require wearing special shoes. **Conclusion.** Treatment should begin as soon as possible (in the first week of life). It is necessary, therefore, to maximize the elasticity and ability to stretch the soft tissues of the newborn.

Topic Review
Oral Presentation 04
Acta Medica Academica 2019;48(Suppl 1):34.

Postoperative Pain Management in Trauma and Orthopedic Surgery

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Postoperative pain is an acute pain that every patient feels with various intensity after surgical procedures. Poor pain control may increase the cost of treatment, extend hospital stay, increase complications, and lead to development of chronic pain. Adequate and timely access to treatment of acute postoperative pain improves recovery and mobilization of the patient, reducing morbidity and shortening duration of the hospital stay. The multimodal approach to pain management has a positive effect on the ultimate outcome of the treatment. Involvement of the patient, family, staff and physician makes the basis of the team approach to pain therapy with the best expected outcomes. In more complicated cases, a multidisciplinary approach to pain control is used. Pain assessment is mostly based on the determination of pain intensity by visual analogue scale (VAS), numeric scale (NRS) or verbal scale (VRS). Various analgesics such as NSAIDs, COX 1 and 2 inhibitors, opioids or their combinations are used in pain management. The therapeutic effect is achieved by various means of administration: oral, subcutaneous, intramuscular, intravenous, nasal, transmucosal, transdermal, patient controlled analgesia, and epidural or intrathecal injections. Preemptive application of analgesics can produce more favorable outcomes. **Conclusion.** In the postoperative pain treatment we should focus on analgesics, methods and techniques that will relieve or suppress the pain. A good preoperative evaluation of the patient and assessment of pain level are needed for the adequate pain control.

Topic Review
Oral Presentation 05
Acta Medica Academica 2019;48(Suppl 1):35.

Advance Trauma Life Support Course – Goals and Benefits

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To familiarize the attendees with the concept and importance of Advance Trauma Life Support (ATLS) education. Advance Trauma Life Support (ATLS) program is an educational curriculum for the medical providers on the treatment of critically ill trauma patients in the hospital and "in the field". It is best suited for the providers and hospitals that do not frequently care for trauma patients, as well as for those who work with limited resources. The plan for ATLS program adoption in Bosnia and Herzegovina and the region, is to find interested parties (medical and administrative) to facilitate organization of ATLS courses. The goal is to provide specific education according to the ATLS principles to as many potential attendants as possible over the longer period of time. This project could be supported at least in part by various European ATLS associations. **Conclusion.** ATLS program should be a part of any general surgery or orthopedic residency program curriculum. It should also be accessible to a broader group of medical providers.

Topic Review
Oral Presentation 06
Acta Medica Academica 2019;48(Suppl 1):35.

Coronal and Sagittal Spinal Imbalance

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The review provides an update on the current parameters for evaluation of the coronal and sagittal spinal imbalance, important in the decision making in spinal and lower extremity reconstructions. The physiologic spinal and overall body alignment will be discussed. The relevant parameters will be addressed, including: Spinal curvatures (thoracic kyphosis, Th/L junction, lumbar lordosis), pelvic parameters (pelvic incidence (PI), sacral slope, pelvic tilt (PT), global alignment (sagittal vertebral axes (SVA) and thoracic pelvic angle (TPA) and relationships (PI and lumbar lordosis). Certain physiologic and pathologic conditions that cause spinal imbalance and surgical strategies in correcting it will be presented, as well. **Conclusion.** An evaluation of the overall global spinal alignment is an important factor in the decision making during the preoperative evaluation. A successful restoration of the physiologic spinal alignment leads to better surgical reconstructive procedure outcomes.

Topic Review
Oral Presentation 07
Acta Medica Academica 2019;48(Suppl 1):36.

What Should I Do for a Lumbar Listhesis?

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Listhesis, displacement of one vertebra compared to another, is a common name for the various conditions of lumbosacral junction. Each type of lysthesis has different etiology, severity, clinical presentation, prognosis, and treatment. We will discuss various etiological factors: developmental (dysplastic, isthmic) and acquired (degenerative, posttraumatic, post-surgical). The severity is divided per grades that range from I-IV. Clinical presentation of a lumbar listhesis may be silent, moderately painful, or even disabling. Depending on the various factors that will be discussed, the treatment approaches may include observation, non-operative strategies, as well as operative fusion with or without decompression. **Conclusion.** Prognosis of this disease is favorable if treated appropriately.

Original Research
Oral Presentation 08
Acta Medica Academica 2019;48(Suppl 1):36.

Incidence of Postoperative Infections after Spinal Surgery: 5-year Follow-up

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Objective. The objective is to determine incidence and risk factors for surgical site infection (SSI) occurrence after various spinal surgical procedures in adults. **Materials and Methods.** The authors analyzed medical records of 522 patients who underwent spinal surgery at our institution between January, 2009 and January, 2012. Elective and non-elective patients in whom instrumented and non-instrumented surgeries were performed were included in this study. The exclusion criteria were: Patients with previous confirmed vertebral infections, and patients with primary or metastatic tumors. Different risk factors were analyzed. We compared results between the patients with postoperative SSI and an equal number of randomly chosen patients without SSI. The level of statistical significance was $P<0.05$. **Results.** The incidence of SSI in our institution was 2.7% (14/522 patients) and the observed trend in SSI favored male patients. The mean age of the patients with SSI was 60 years and the mean duration of hospitalization was 41 days. In all 14 patients with SSI, surgery with instrumented fusions was performed. The most frequently isolated bacteria was Staphylococcus aureus (4 cases). At the 5-year follow up, no infection recurrence was recorded. The literature-reported incidence of SSI after adult spinal surgical procedures has ranged from 0.7-12%. **Conclusion.** SSI after spinal surgery results in prolonged treatment and additional costs. Many factors may increase risk for SSI. Older age, male sex and 2 or more involved levels requiring instrumentalization showed higher risk for development of SSI.

Oral Presentation 09

Professional Experience
Acta Medica Academica 2019;48(Suppl 1):37.

35-Year Experience in Application of Compression-Distraction Methods and Application of Fix AS Fixator

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We present our experience in the treatment of long bone defects, deformities and fractures using the Ilizarov method. Compression-distraction method of Prof. Ilizarov is one of the most commonly used methods in the treatment of the most severe conditions in orthopedics and traumatology, such as: open fractures, bone defects, pseudoarthrosis, infections, tumors and correction of severe skeletal deformations. We performed "before and after" comparisons in selected cases, based on our experience of 35 years. In the first 15 years, we used the original Ilizarov external fixator. In the last 20 years we have used modified fixator called: Fix AS, as we believe that this modified external fixator, compared to the original one, has advantages for both the patient and the surgeon. Several cases from our institution will be presented. **Conclusion.** Fix AS fixator method has been successful in solving severe skeletal deformations, lengthening of the extremities, complications associated with fractures, among other indications.

Oral Presentation 10

Professional Experience
Acta Medica Academica 2019;48(Suppl 1):37.

Surgical Treatment of the Ruptured Pectoralis Major Muscle

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We describe advantages of the early primary repair of the pectoralis major muscle. Pectoralis major tendon rupture is a relatively rare injury, resulting from a violent, eccentric contraction of the muscle. Over 50% of these injuries occur in athletes, classically in weight-lifters during the 'bench press' maneuver. We present 9 cases of distal rupture of the pectoralis major muscle in athletes. All patients underwent open surgical repair. Magnetic resonance imaging was used to confirm the diagnosis in all patients. We analyzed patients using (1) the visual analogue pain score, (2) functional shoulder evaluation and (3) strength measurements. At the final follow-up of minimum 6 months the results were excellent in 4 patients, good in 4 and one patient had poor result. Six patients were able to return to practicing their sports. The intraoperative findings correlated extremely well with the MRI scan reports in all patients. **Conclusion.** Early surgical repair and the accelerated rehabilitation protocol for the distal rupture of the pectoralis major muscle often allows complete functional recovery and restoration of the full muscle strength, which is of essential importance for an active athlete.

Professional Experience
Oral Presentation 11
Acta Medica Academica 2019;48(Suppl 1):38.

The Treatment of Pseudoarthrosis of the Long Bones Using Intramedular Fixation: Our Experience

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Pseudoarthrosis represents a very common issue in orthopedics. In the Department of Orthopeadics and Traumatology in County Hospital Zenica, we performed re-do surgical procedures in patients who had initially been operated as a result of the trauma. In prospective evaluation of the patients, we used x-ray diagnostics at 3, 6 and 9 months. In the past three and a half years, we operated 20 patients with pseudoarthrosis of the long bones using intramedular fixation. Materials that we used are UTN, UFN, Targon and Expert humeral nail. Pseudoarthrosis has been completely repaired in 19 patients. In one patient, the operative treatment was declined by the patient and pseudoarthrosis continues to be present. All patients were operated without decortication and spongioplastics. Recanalization was used with the nail. **Conclusion.** The postoperative course of 19 patients was without complications and recovery was fast. The patients and doctors were satisfied with the results.

Topic Review
Oral Presentation 01
Acta Medica Academica 2019;48(Suppl 1):39.

Non Pharmacological Treatment in Psychosis

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Non pharmacological treatment has been known since the origins of Psychiatry, but has never had as high impact as the pharmacological treatment. It has been established in the literature that the spectrum of difficulties that patients with psychosis face is much wider than just the symptoms of the specific illness. Research has also shown that many people with diagnosis of psychosis have difficulties in everyday activities, such as going out, functioning as a part of a family and community, meeting new people, etc. Considering these, we try to explore methods that could lead to the improvement in these factors and to help the ones with psychosis. We apply three different tools with the aim to explore psycho-social interventions in patients with diagnosis of psychosis. The first tool is called Dialog +, and its main aim is to improve therapeutic relationship between patient and psychiatrist and to make the appointment therapeutically effective intervention. This should lead to the better understanding between the two and better adherence in the treatment. The second tool is Volunteer Support. In this strategy, patients are linked with the volunteers, and this relationship is referred as befriending. Volunteers are expected to provide psychological, social and practical support to the socially isolated patients. This tool is also expected to explore the impact of volunteering in mental health for volunteers. It is expected to decrease social distance to people seen in psychosis. The third tool is called Family Involvement. Involving family members in the care can help improve family communication, care and outcomes. The intervention draws from the tradition of "trialogue" and psychosis-seminars where mutual learning occurs through the sharing of experiences, support and psychoeducation on pre-agreed topic. **Conclusion.** The main advantages of the non-pharmacological interventions are observed improvement of symptoms, reduction in social isolations and self stigma, and increase in self confidence throughout the intervention. Besides, these interventions are feasible and cost effective, which gives them a potential of being widely implemented.
Acknowledgement and Disclaimer: This research was commissioned by the National Institute for Health Research (NIHR) using Official Development Assistance (ODA) funding. The views expressed in this publication are those of the author and not necessarily those of the NIHR or the Department of Health and Social Care.

Topic Review
Oral Presentation 02
Acta Medica Academica 2019;48(Suppl 1):39.

Mental Health Service Users' Associations: Learning is Empowering

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There is a growing consensus that the issues of empowerment of persons with mental disorders and psychosocial disabilities should be a part of various endeavors to improve the health conditions of such persons. Drawing from the literature and own experience, the authors offer an outline of rationales for why supporting the initiatives of mental health service consumers in the form of civil society organizations offers value that is both intrinsic to the betterment of health and quality of life and beneficial to society at large. The authors' experience has been gained in the process of reforming mental health services in Bosnia and Herzegovina and from the findings of their survey conducted during 2018-2019 that aimed to determine the degree to which users' associations possess the qualities of learning organizations. **Conclusion.** This abstract identifies conditions and processes relevant for aiding users' associations to take part in shaping the provision and reform of mental health services.

Topic Review
Oral Presentation 03
Acta Medica Academica 2019;48(Suppl 1):40.

Are Counselling Services Needed in Medical Schools?

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We review existing programs in the medical schools that offer services to the students and suggest optimal non-stigmatizing ways to design those services through peer counseling and psychoeducation, and with the open access to professional services when they are required. Medical students face stressors on regular basis in their academic life. This has been shown to contribute to the occurrence of depression and anxiety in a number of individuals. The previous research has shown the omnipresence of depression among medical students. However, it is difficult to overemphasize the profound and detrimental effect of depression on academic achievement of students not only by reducing their overall grade point average but also by increasing absenteeism. Since large number of medical students exhibits a type A personality, the erosion of academic achievement goes on to further deepen their depressive thinking. However, it has been shown that medical students can learn to adopt a successful coping mechanism and that this acts to reduce perceived stress levels. One of the main goals of counseling is to help provide students with these coping mechanisms. Whether it is peer to peer, support groups, internet based or conventional counseling, relatively brief and individually focused mindfulness-based interventions may be useful in reducing levels of stress, anxiety, and depression in medical students, in the short term. **Conclusion.** Medical students worldwide are subject to copious amount of stress. For the purpose of lowering the rates of depression and suicide, but also increasing effectiveness of their studies and subsequent career, counseling may be helpful in providing adequate coping methods.

Original Research
Oral Presentation 04
Acta Medica Academica 2019;48(Suppl 1):40.

Psychiatric Adverse Events Associated with the Use of Cephalosporins in Hospitalized Patients

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Objectives. Considering the broad spectrum of activity and low toxicity profile, cephalosporins are among the most widely prescribed antibiotics. Their excessive use in the last decades has led to an increase in the number of reported adverse drug reactions affecting the central nervous system. Our aim was to monitor psychiatric adverse events (PAEs) during the use of cephalosporins in hospitalized patients. **Methods.** Retrospective, observational study was conducted in the period from January 1 to August 31, 2017, at University Medical Center "Bezanijska kosa" in Belgrade. Patients who developed PAEs during cephalosporin therapy were included in the study. PAEs were classified into categories according to the Medical Dictionary for Regulatory Activities (MedDRA). Three algorithms were used for causality assessment: Naranjo, Liverpool, and WHO-UMC. **Results.** In total, 3004 patients received cephalosporin therapy during the observed period. Six patients developed possibly cephalosporin-related PAEs. Recorded PAEs included anxiety symptoms (3 patients), disorientation, confusion and increased physical activity levels. The median time from the initiation of therapy until the onset of symptoms was 4.5 days. Possible causative antibiotics were: ceftriaxone administered in 4 patients that developed PAEs, cefepime and ceftazidime administered in 1 patient with PAEs, each. **Conclusion.** This study presented PAEs developed during cephalosporin therapy. Intensive surveillance and psychiatrist consultations are crucial for proper identification of these events. Moreover, it is necessary to develop special protocols for monitoring psychiatric ADRs in the pharmacovigilance system.

Original Research
Oral Presentation 05 Acta Medica Academica 2019;48(Suppl 1):41.

The Wellness Concept in Occupational Therapy

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Objective. The wellness concept in occupational therapy is a newer concept in health care. Wellness represents a lifestyle that includes a good balance of our activities (e.g. productivity, exercise, enough sleep and rest) that affect our social roles and related activities. We aimed to simulate roles by placing PhD students into the role of therapeutic service users, encouraging creative thinking, devising new ideas in solving therapeutic problems in the wellness concept as a part of health promotion. **Materials and Methods.** This was retrospective-prospective and control study. A problem of mental health was exposure to a higher stress situation. Sample: One group with 44 participants, 39 female and 5 male, aged 22-45 years and the second or control group had 18 participants, 9 female and 9 male, aged 22 – 55 years. Research instrument: Form of wellness concept of occupational therapy assessment. **Results.** In answers to 273 questions in the section related to occupation, more than 4 activities were reported. In the section related to values, more than 4 responses/activities have been selected as answer to 157 questions; in the section control, for each of the 191 questions, the participants selected more than 4 responses/activities. There is a statistically significant difference between occupation, value and control ($p<0.05$): $\chi 2=$ 70,296 (df=10). Participants expressed a greater readiness to engage in occupation and control activities in relation to the concept of values. **Conclusion.** PhD and Master students expressed a greater readiness to engage in occupation and control activities in relation to the concept of values. By getting to know the new research instrument, students are encouraged to creatively think and develop new ideas in solving the therapeutic problems in the wellness concept of occupational therapy.

Professional Experience
Oral Presentation 06 Acta Medica Academica 2019;48(Suppl 1):41.

Discharge Planning as a Continuity Care Intervention for Persons with Mental Disorders

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Aim of discharge planning is to improve patient's health, reduce the duration of hospital treatment, reduce the readmission rate, reduce costs, ensure continuity of care and improve the coordination of services after hospital treatment. Previous research has suggested that discharge planning is effective in reducing readmission and in improving adherence and continuity of care among people with mental disorders. We have retrospectively analyzed discharge plans, rate of readmission and adherence to the treatment plan after discharge of patients treated in the Department of Psychiatry at our institution in the period from November 2018 to May 2019. In patients with planned discharge, the rate of unplanned re-admission was significantly lower and significantly more of these patients continued treatment in the outpatient services. **Conclusion.** Planning of the discharge from a psychiatric hospital reduces the readmission rate and ensures the continuity of care. It is a dynamic, comprehensive and collaborative process and it involves development of a personalized plan for each patient leaving hospital.

ISSN 1840-1848