"The visual form represents the architecture of Disney Music Hall Los Angeles. The original creator and architect is Frank Gehry, whose concept and philosophy of architecture puts man in the center and humanizes architectural objects, which makes them inextricably linked with the philosophy and mission of medical science."

Umjetnica, Majda Turkić

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Perioperative fluid management

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OBJECTIVE: Perioperative fluid management is a key component in the care of the surgical patient. Intravenous fluid therapy is an integrated and lifesaving part of the treatment of patients undergoing surgery
TOPIC REVIEW: The type of fluid administered in the perioperative period can have a significant effect on outcomes in patients have major surgery. Hypovolemia leads to insufficient circulation with decreased oxygen delivery to organs and peripheral tissues causing organ dysfunction and shock. Fluid overload, on the other hand, leads to interstitial edema and local inflammation and impairs the regeneration of collagen, thereby weakening the tissue healing with increased riskof postoperative wound infections, wound rupture, and anastomotic leakage. The current focus is on fluid therapy guided by an individual patient's physiology. Belief in the existence of a third space loss and the fear of hypovolemia has led to a perioperative fluid practice of giving a large volume of intravenous fluid.
CONCLUSION: Oral fluid intake should be encouraged up to 2h prior to surgery, thereby minimizing the need for intravenous compensation.Preoperative oral or intravenous administration of carbohydrate containing fluids has been shown to improve postoperative well-being and muscular strength and to reduce insulin resistance. Hence, the intake of fluid (preferablycontaining carbohydrates) should be encouraged up to 2 h prior to surgery in order to avoid dehydration. During major abdominal surgery a “zero-balance” intraoperative fluid strategy aims at avoiding fluid overload (and comparable to the so-called restrictive approach) as well as goal-directed fluid therapy (GDT). Both proved to significantly reduce postoperative complications when compared to “standard fluid therapy”. Trials comparing “restrictive” or zerobalance and GDT have shown equal results, as long as fluid overload is avoided.
KEYWORDS: Fluid therapy, Goal-directed fluid therapy, Postoperative complications

Delirium in ICU

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OBJECTIVE: Clinical significance and rapid diagnosis of delirium in intensive care. Determining the etiology of delirium and recognizing clinical presentation. Distinction between delirium and dementia in intensive care and the use of antipsychotics in the treatment of delirium with non-pharmacological treatment.
TOPIC REVIEW: Delirium is defined as a condition with disturbance of consciousness and disturbance of attention and cognition with rapid development of symptoms. It usually manifests as a constellation of symptoms with an acute onset and a fluctuating course. It is mainly caused by a disease of the brain or other organ or organ system that affects the brain. The most common causes are metabolic, inflammatory, structural brain injuries, stroke and toxic causes. Delirium is extremely common in the intensive care unit (ICU), especially among mechanically ventilated patients. Delirium needs to be diagnosed quickly as the prognosis can be poor. Diagnosis is mainly based on clinical presentation. CAM-ICU is the most studied and validated diagnostic instrument. There are three types of delirium: hyperactive, hypoactive and mixed. Non-pharmacological treatment usually includes physical therapy and occupational therapy. Pharmacological treatment includes the use of antipsychotics, typical and atypical in the treatment of delirium.
CONCLUSION: Delirium is a common manifestation of acute brain dysfunction in critically ill patients that is associated with poor short-term outcomes. Timely recognition, determination of the type and non-pharmacological and pharmacological treatment of delirium significantly affects the outcome of treatment critical illness patient in the ICU.
KEWORDS: delirium, critical illness, antipsychotics, intensive care unit

Indications for extracorporeal blood depuration methods in the ICU

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OBJECTIVE: Long-term research and continuous clinical application with the education of medical staff led to the development of extracorporeal methods of blood depuration and that they become available to everyone, as part of an established therapeutic protocol, and often as the first method in the choice of treatment for patients.
TOPIC REVIEW: Extracorporeal blood depuration procedures are therapeutic procedures for the extracorporeal removal of endogenous and exogenous pathogens from the bloodstream. With progress in the understanding of the pathophysiology of acute kidney injury (AKI), new guidelines on indications and treatment modalities have been developed, favoring the achievement of therapy goals such as control of fluid balance, restoration of homeostasis and correction of biochemical disorders with excellent blood depuration, becoming a daily form of therapy in Intensive Care Units. Extracorporeal blood depuration methods include replacement/support treatments for renal function and therapeutic apheresis procedures, and they become an option for the treatment of primarily non-renal disorders being used today in acutely occurring or acutely worsening various pathological conditions.
CONCLUSION: Continuous extracorporeal blood depuration procedures by simultaneously eliminating the cause and controlling the progression of damage: improve survival, contribute to the recovery of renal function and/or function of other organs and organ systems, favorable outcomes of complicated ABI and other clinical disorders in patients. Treatment with extracorporeal methods of blood depuration is individual, specific and complex. Clear definition of the indication area, flexible therapeutic modality, intensive treatment and team work with intensivists are imperative in achieving a good clinical response to treatment.
KEY WORDS: extracorporeal depuration methods, AKI, indications

COVID 19 IN A PATIENT WITH LATE DIAGNOSED C-ANCA VASCULITIS AND DIFFUSE ALVEOLAR HEMORRHAGE

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Objective: Vasculitis associated with cytoplasmic antibodies (ANCA vasculitis) is an autoimmune disease characterized by necrosis of small blood vessels caused by one of two types of autoantibodies present in the blood called pANCA and cANCA. These antibodies target neutrophils, a type of white blood cells, causing them to attack small blood vessels, commonly in the lungs, kidneys and sinuses. The development of diffuse alveolar hemorrhage is a life-threatening symptom and requires an intensive therapeutic protocol.

Case report: A 41-year-old patient first presented with pain and swelling of the joints, followed by a small red rash and occasional hemoptysis. In April 2021, patient was hospitalized at the Clinic for Pulmonary Diseases hemodynamically unstable, with massive pulmonary hemorrhage and decreased kidney function. A nephrologist was consulted and autoimmune disease was confirmed by reviewing patients' history and laboratory findings. Due to the progression of lung infiltrates, PCR for COVID 19 was taken, and when result came back positive, the patient was transferred to Covid hospital, where bolus doses of Methylprednisolone were initiated. Furthermore, the decision to start therapeutic plasmapheresis and an induction protocol with Rituximab was made. This therapy stabilized the patient's condition enough to be transferred to the Department of Nephrology, where a kidney biopsy was performed. During further hospitalization, a radiological regression of lung infiltrates without hemoptysis was objectified followed by normal laboratory findings.

Conclusion: Establishing diagnosis of cANCA vasculitis represents a challenge for clinicians, especially when complicated with acute COVID 19 infection. Accurate diagnosis is imperative for early initiation of treatment.

Keywords ANCA vasculitis, hemorrhage, COVID19, ICU

Challenges in diagnosis and treatment of increased ICP (brief review)

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OBJECTIVE: Acute diagnosis, monitoring and treatment of cerebral edema and elevated intracranial pressure (ICP) are common issues in neurocritical care. Practical recommendations regarding selection and monitoring of therapies for initial management of cerebral edema for optimal efficacy and safety are generally lacking.
TOPIC REVIEW: Absence of any one physical examination features is not sufficient to rule out elevated ICP. A significant midline shift may suggest elevated ICP, but the absence of shift cannot rule it out. Despite being a gold standard in neurocritical care, invasive ICP monitoring device and its use have not proven beneficial. Proper medication administration for the TBI patient undergoing intubation can be confusing and still not definitive. Though hyperventilation is frequently used in intubated patients with TBI, intracranial hemorrhage, or post craniotomy, its final effects on patient survival have never been confirmed by quality studies. It is encouraged to use either osmotherapy (HTS or mannitol) agents with preference to be given to the agent most quickly obtainable. HTS appears to have a more sustained effect on ICP. Although osmotherapy use may be associated with higher hospital survival, there is no evidence on long term neurologic or mortality outcome benefits. Corticosteroids appear to be helpful in reducing cerebral edema in patients with bacterial meningitis, but not ICH.
CONCLUSION: There is need for high-quality research to better understand optimal options for acute diagnosis, monitoring and treatment of patients with increased ICP.
KEYWORDS: Cerebral edema, neurocritical care, ICP, TBI, osmotherapy

Tracheal intubation in the ICU: life-saving or life-threatening?

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OBJECTIVE: Tracheal intubation (TI) is a routine procedure in intensive care unit (ICU) and is often lifesaving. Life-threatening complications occur in a significant proportion of procedures, making TI perhaps one the most common, but underappreciated airway emergencies in ICU.
TOPIC REVIEW: Studies have shown that strategies planned for TI in the operating room can be adapted and extrapolated for use in ICU. Intubation procedure should include not only airway management but also hemodynamic, gas exchange and neurologic care, which are often crucial in critically ill patients. Therefore, there is necessity for the implementation of the 10 Intubation Bundle components during routine airway management in ICU: I. Pre-intubation: 1. Presence of two operators 2. Fluid loading in absence of cardiogenic pulmonary oedema 3. Preparation of long-term sedation 4. Pre-oxygenation for 3 min with NIPPV in case of acute respiratory failure.
II. During intubation: 5. Rapid sequence induction. 6. Sellick manouvre.
III. Post-intubation : 7. Capnography. 8. Norepinephrine if diastolic blood pressure remains low. 9. Initiate long-term sedation. 10. Initial ‘protective ventilation’.
CONCLUSION: TI can be an acute airway emergency. Unstable hemodynamics and failing oxygenation during emergency intubations can be life-threatening. Developing standardized evidence-based protocols is the need for airway management in ICU environment.
KEYWORDS**:** tracheal intubation, ICU, intubation bundle strategy

Drug susceptibility of Providencia stuartii infections

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Objective: Providencia species are Gram-negative bacilli in Enterobacteriaceae family. P. stuartii is isolated from human secretions, including urine, sputum, blood, stool, and wound cultures. The treatment of choice is based on antibiotic sensitivities, infection source, and comorbid conditions. This study was performed to investigate clinical and drug resistance characteristics of P. stuartii infections in our ICU.
Topic Review: The organism was isolated from patient blood cultures. Multiple drug resistance was defined as non-susceptibility to at least one agent in three or more antimicrobial categories. Extensive drug resistance was defined as non-susceptibility to at least one agent in all but two or fewer antimicrobial categories. P. stuartii was most sensitive to imipenem, followed by meropenem, ceftriaxone, cefotaxime, ceftazidime, amikacin, piperacillin tazobactam and cefepime. P. stuartii is a rare Enterobacteriaceae opportunistic pathogen, that was first isolated in 1904 by Rettger and named in 1951 by Kauffmann. Occurs naturally in soil, water, and sewage; it affects humans and animals, which can lead to outbreaks of hospital infection. In recent years, P. stuartii has been shown to exhibit intrinsic resistance to antibiotics that are considered last-resort treatments, such as colistin and tigecycline.
Conclusion: Prevalence of P. stuartii infection is increasing because of antibiotic resistance secondary to the presence of extended spectrum beta-lactamase (ESBL) enzymes. P. stuartii infections are often difficult to control and have substantial impacts on patient morbidity, mortality, treatment and management costs.
Keywords: Providencia stuartii, ICU, drug susceptibility

Polytrauma with severe brain injury: A Case Report

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Objective: Polytrauma is considered one of the most difficult scenarios in an emergency medicine setting. It requires professional and instantaneous treatment of patients, usually right on the field. Craniocerebral injuries quite often take part in polytraumas. They can be divided into primary (e.g., skull fracture, focal or diffuse brain injury) and secondary injuries (e.g., hypoxia, hypotension, post-traumatic intracranial hematoma, brain edema, and inflammatory complications). This work aims to highlight the importance and positive outcomes of early treatment of polytrauma in patients with severe brain injury.
Case presentation: An 18-year-old male, was admitted to the Intensive Care Unit after an apparent polytrauma injury under unclear circumstances. On admission, he is unconscious, intubated, with Glasgow Coma Scale 3 and no pupillary light reflex in both eyes. He was placed on controlled mechanical ventilation. Urgent CT diagnosis confirmed the presence of a severe brain injury. In consultation with a neurosurgeon, a non-surgical approach with barbiturate sedation and anti-edematous therapy was indicated. After a month of intense treatment, the patient could spontaneously breathe on the cannula and open his eyes without a verbal response. The council of specialists formed a decision in which the transfer of the patient to a competent institution for further physical rehabilitation therapy was indicated.
Conclusion: This case illustrates that adequate and prompt therapy is a foundation for a positive outcome in treating polytrauma with severe brain injury.

Keywords brain injury, polytrauma, Glasgow Coma Scale, intensive treatment

Anesthetic considerations for transcatheter aortic valve implantation (TAVI) - our experience

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OBJECTIVE: Aim of our paper is to specify characteristics and goals which anesthetist should carry out before, during and after TAVI procedure, with special reference to TAVI procedures which has been performed in our Heart Centre.
CASE REPORT: Transcatheter aortic valve implantation (TAVI) is less invasive method to use for aortic valve replacement in high risk or inoperable patients with symptomatic, especially in severe aortic valve stenosis. Since its introduction twenty years ago, the procedure was commonly carried out under general anesthesia for the first decade. Over time improvements in technique, devices, operator experience, pre-procedural planning have allowed anesthesiologist to simplified anesthetic techniques in which TAVI can be safely performed. General or local anesthesia, with or without conscious sedation may be used according to patient characteristics, the presence of comorbidities, severity of AS, technique. The role of anesthesiologist is important for successful outcome.
CONCLUSION: No matter which technique is used anesthesiologist should provide and maintain optimal hemodynamic stability during procedure and be aware of possible peri and post procedural complications.
Keywords Aortic valve stenosis, Transcatheter aortic valve implantation (TAVI), anesthesia techniques, complications

Polytrauma in children: case report

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OBJECTIVE: Several studies showed that pediatric polytraumatized pedestrians have better outcomes and shorter ICU stays compared to older patients, possibly due to factors such as better physiological resilience, fewer comorbidities, and more rapid healing processes, as well as the likelihood of receiving aggressive treatments such as early surgery or aggressive physical therapy.
CASE REPORT: We present a nine-year-old boy who was involved in a pedestrian accident and suffered multiple injuries, including intracerebral hematomas, brain contusions, bilateral lung opacities with pleural effusions, and fractures in several bones. The fractures of the left humerus, right femur and left tibia were surgically repaired the following day. The patient stayed in the ICU for eighteen days and was on mechanical ventilation for twelve days, with an attempted extubation on the tenth day, resulting in generalized seizures. During this time, the progression of lung infiltrations and effusions and a significant increase in the cardiothoracic ratio was reported. After stabilization, on the thirteenth day, the patient was extubated and early physical therapy was initiated, followed by treatment in other clinics.
CONCLUSION: While individual recovery outcomes may vary, researchers show that pediatric polytraumatized pedestrians have better outcomes and shorter ICU stays than older patients, highlighting the importance of tailored care and treatment for each patient based on their individual characteristics and needs.

Keywords: polytrauma, pediatric, pedestrians, ICU, ventilation

Abdominal Compartment Syndrome

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OBJECTIVE: To review the risk factors, measurement, treatment and outcome of abdominal compartment syndrome
TOPIC REVIEW: Abdominal compartment syndrome is an important complication in the intensive care units with high morbidity and mortality. Risk factors include aggressive fluid resuscitation in trauma and burns, intra-abdominal and retroperitoneal bleeding, necrotizing pancreatitis, and massive ascites. Diagnosis is made using bladder pressure measurement in patients with worsening organ failures. Conservative management includes sedation, neuromuscular blockade, gastric and rectal decompression, diuretic and ultrafiltration, avoidance of head of the bed elevation. Timely surgical decompression is necessary in most cases.
CONCLUSION: Abdominal compartment syndrome is serious complication of critical illness. Timely diagnosis and management is essential.
KEYWORDS: Abdominal Compartment, Intraabdominal Hypertension, Acute Abdomen, Shock

Low dose spinal anesthesia in a patient with severe aortic stenosis, case report

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Objective: Severe aortic stenosis (AS) is a major clinical predictor of adverse outcomes perioperatively. Incidence of aortic stenosis increases with age, with prevalence of 1 to 2 percent in individuals 65 to 75 years old, increasing to 3 to 8 percent in individuals ≥75 years old and 18 percent in those >90 years old. Maintenance of normal sinus rhythm, heart rate, vascular resistance, and intravascular volume is critical in patients with aortic stenosis.
Case report: We present a case of a 72-year-old male diagnosed with severe aortic stenosis scheduled for emergency hip fracture surgery. At the preoperative anesthesiologic examination the patient reported a severe limitation of physical activity tolerance (NYHA 3). Transthoracic echocardiography showed severe aortic stenosis with ejection fraction 55-60%. Considering the patient history, we decided to perform fascia illiaca block with 30 ml 0,25% Ropivacaine and low dose spinal anesthesia. Levobupivacaine 0.5% 10 mg combined with Fentanyl 25 mcg were injected into the subarachnoid space at the L4-L5 level. The patient was sedated with midazolam and oxygen was supplied at 6 L/min. Hypotension was treated with 10 mcg boluses of norepinephrine. After the operation the patient was transferred to the post anesthesia care unit (PACU), and later discharged to the ward.
Conclusion: Spinal anesthesia is relatively contraindicated in patients with severe aortic stenosis, however, with low dose spinal anesthesia, close monitoring of hemodynamic parameters, and avoiding mean arterial pressure (MAP) fluctuations spinal anesthesia can be performed safely in patients with severe aortic stenosis.

Keywords: severe aortic stenosis, spinal anesthesia

Quality improvement: The process of introducing the percutaneous tracheostomy procedure in the Intensive Care Unit of the Zenica Cantonal Hospital

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Background: Introducing a new procedure in the Intensive Care Unit (ICU) presents both possibilities and challenges. Percutaneous tracheostomy has several advantages over surgical tracheostomy, including being less invasive, having lower rates of bleeding and infection, a reduced need for sedation, and a lower cost.
Aim: This study aimed to record changes in the ratio of surgical versus percutaneous tracheostomy over a five-year period in our hospital. Additionally, it is used to present the challenges of introducing new procedures, replacing old ones, and the process of staff training.
Methods: The retrospective study included the total of 196 patients who underwent tracheostomy using either of two methods.
Results: In the first year, the percentage of percutaneous procedures performed in relation to the total number of patients who went through tracheostomy in the ICU was 16.21% and 57.5% in the last. Comparing the data of the Otorhinolaryngology Department, the proportion of ICU patients who needed surgical treatment decreased by 34,84% in the final year of the study. The total percentage of specialist doctors trained to perform the procedure was 29%, and 52% of nurses received training.
Conclusion: This article aims to present the process, training requirements, and time involved in adopting a new procedure in our ICU, using percutaneous tracheostomy as an example.
Keywords: quality improvement, percutaneous tracheostomy, staff training

Vazopresin in sepsis.

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OBJECTIVE: To improve the knowledge about the use of vasopressin in sepsis.
TOPIC REVIEW: Vasopressin, also called antidiuretic hormone (ADH), arginine vasopressin (AVP) or argipressin, is a hormone synthesized as a peptide prohormone in neurons in the hypothalamus and is converted to AVP. Some AVP may be released directly into the brain from the hypothalamus and may play an important role in social behavior and maternal responses to stress. Vasopressin infusions are also used as second line therapy for septic shock patients not responding to fluid resuscitation or infusions of catecholamines to increase the blood pressure while sparing the use of catecholamines, producing numerous side effects. Vasopressin levels are elevated but 6 h after the onset of hypotension levels may be inappropriately low for the degree of hypotension. Possible explanations include exhaustion of stores and autonomic nervous system dysfunction. Large doses of norepinephrine are inhibitory to vasopressin release. In sepsis, there is an increased sensitivity to vasopressin. Vasopressin and norepinephrine have a synergistic action when used together. The use of vasopressin is not without side-effects. Both the dosage and timing of the use of vasopressin in sepsis is currently under investigation. It is usually started when increasing norepinephrine doses are being used to maintain arterial pressure.
CONCLUSION: There is growing evidence that vasopressin infusion in septic shock is safe and effective. Several studies published this year support the hypothesis that vasopressin should be used as a continuous low dose infusion and not titrated as a single vasopressor agent.
KEYWORDS: Vasopressin, Sepsis, Noradrenaline

Perioperative pain management

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OBJECTIVE: Effective perioperative analgesia is essential for optimal surgical outcomes and patient satisfaction. Inadequate pain control and dissatisfaction with analgesia are persistent challenges, particularly in limited resources countries.
TOPIC REVIEW: This paper focuses on the implementation of a procedure-specific postoperative pain management protocol (Prospect) and the integration of multimodal analgesia strategies in countries with limited healthcare resources like Bosnia and Herzegovina. Insufficient access to analgesic medications, limited healthcare infrastructure, and inadequate pain management training contribute to the prevailing issues of insufficient analgesia and patient dissatisfaction. Multimodal analgesia, which combines different analgesics and techniques targeting multiple pain pathways, has emerged as an effective approach to improve pain management. Furthermore, Prospect protocols offer evidence-based recommendations for postoperative pain management tailored to specific procedures, optimizing analgesia and improving patient outcomes. Implementing these protocols in countries like Bosnia and Herzegovina poses unique challenges, including resource limitations, limited awareness and training, and inadequate data collection systems. Overcoming these challenges necessitates adapting protocols to local resources, promoting education and training programs, and establishing robust data collection and analysis systems. These measures will enhance perioperative care, alleviate patient suffering, and improve surgical outcomes and patient satisfaction in underdeveloped healthcare settings.
CONCLUSION: Effective perioperative pain management is critical for patient satisfaction and recovery after surgery, by addressing the barriers to effective perioperative analgesia and embracing multimodal analgesia strategies, along with the integration of Prospect protocols, healthcare providers can enhance pain management practices and ultimately improve patient experiences in limited resources countries.
KEYWORDS: perioperative analgesia, ERAS protocols, multimodal analgesia, Prospect protocols

LABORATORY MONITORING OF COVID-19 PATIENTS ON MECHANICAL VENTILATION IN INTENSIVE TREATMENT UNITS

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Background: The connection between the new coronavirus and cardiovascular diseases (CVD) is undoubtedly present, although the complications of the COVID-19 infection in patients are mainly respiratory. Elderly subjects over 65 years of age, primarily patients with hypertension and diabetes mellitus, are at risk of cardiac complications from the COVID-19 infection, often leading to myocardial lesions and worsening existing CVD.
Aim: To look at the biochemical and hematological markers of COVID-19 subjects who are on mechanical ventilation (MV) and to see the differences by gender, age and comorbidities.
Methods: A retrospective study including 151 respondents was conducted in the period of February, March and April 2021.
Results: The results of the study indicate that 64,4% of men were over the age of 65 and 35,6% of women. The leading comorbidity in all respondents was hypertension with 27,2%, which is more common in men with 58,5% compared to women 41,5%. Among the analyzed biochemical and hematological parameters, a statistically significant difference was recorded for erythrocytes, hemoglobin, hematocrit, urea, creatinine and ALT in all subjects on MV, with the mean values significantly higher in men than in women. In subject with hypertension as an accompanying comorbidity, significantly higher values for erythrocytes, hemoglobin, hematocrit, urea, creatinine, ALT, AST, LDH were recorded in men than in women.
Conclusion: Biochemical and hematological parameters of subjects in intensive care units indicate that elderly men and cardiovascular patients are precisely those who have the possibility of developing a severe form of infection and even death.
Keywords: laboratory parameters, cardiovascular diseases, mechanical ventilation, hypertension

SEDATION FOR DIAGNOSTIC PROCEDURES OUTSIDE THE OPERATING BLOCK

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OBJECTIVE: The rapid development of technological advancements, and diagnostic and therapeutic procedures have led to an increased need for adequate sedation of patients outside the operating room, to ensure the safety and comfort of patients and clinicians. TOPIC REVIEW: New locations, often inappropriate with inadequate monitoring devices, combined with a lack of experience and an inadequate understanding of procedures may compromise the quality of patient care during sedation for diagnostic procedures. Anesthesiologists must anticipate potential risk factors during sedation in non-operating theaters and familiarize themselves with standards to improve safe practice. Increasing the depth of sedation, whether intentionally or unintentionally, can lead to respiratory depression and serious cardiovascular suppression, necessitating careful surveillance using appropriate monitoring equipment. Also, such procedures are frequently performed in high-risk patients with severe comorbidities. While the absolute contraindications for sedation are almost non-existent, relative contraindications in high-risk patients are becoming more relevant. Therefore, the preparation and administration of adequate medications and sedation care outside the operating room require careful attention, adequate monitoring, and clinically useful sedation guidelines. CONCLUSION: This topic review addresses proper monitoring and selection of medications for procedural sedation outside the operating room.
Keywords: anesthesia, sedation, procedure, monitoring, anesthetics

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How to deal with ARDS

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OBJECTIVE: To determine proper diagnosis, optimize the treatment and prevent consequences of sepsis induced ARDS. Sepsis induced ARDS, despite amounting similar risk factors as sepsis and ARDS itself, needs further evaluation and understanding the mechanisms of onset.
TOPIC REVIEW: ARDS represents life-threatening condition with high morbidity and mortality rate due to phenotypic heterogeneity induced by pulmonary or non-pulmonary causes despite supportive treatments and lung protective ventilation strategies. Sepsis, as one of the potential causes of ARDS, induces a higher mortality rate compared to other potential risk factors. ARDS originating from direct lung injury is characterized by the lung epithelium injury involving inflammation, increased alveolar-capillary permeability and alveolar edema, while indirect lung injury is characterized with systemic endothelial damage caused by inflammatory mediators. Beyond supportive care, the optimization of fluid management and prone positioning, the application of the noninvasive and invasive mechanical ventilation strategies, the initiation of early treatment with neuromuscular blocking agents and starting extracorporeal membranous oxygenation (ECMO) for the improvement of refractory hypoxemia remain the cornerstone of the overall treatment. The role of corticosteroid in sepsis and ARDS is inconclusive despite many studies.
CONCLUSION: Identification of the potential biomarkers of the lung epithelial and vascular endothelial injury may be useful in understanding the pathogenesis of sepsis-induced ARDS leading to timely and proper treatment options.
KEYWORDS: Sepsis induced ARDS, lung protective ventilation, ECMO

Physiotherapy in ICU

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OBJECTIVE: To present the importance of physical therapy (PT) on critically ill patients in the intensive care unit (ICU).
TOPIC REVIEW: Due to improvements in medical care, the survival rate of critically ill patients has significantly increased over the past decennia. Consequently, an increasing number of patients survive an in ICU stay with long-term profound residual symptoms and restrictions in daily functioning. Physical, mental and cognitive impairments arising after critical illness called “Post-Intensive Care Syndrome” decreasing quality of life. Prolonged stays in the ICU are also associated with impaired quality of life, functional decline and increased morbidity, mortality, cost of care and length of hospital stay. PT interventions can help improve functional outcomes, and minimizing the morbidity associated with critical illness through early intervention in a patient’s ICU stay is of great interest. Activities such as ambulation, positioning, and passive range of motion exercises are reported to be among the most missed inpatient nursing interventions. The most direct effects of PT in the ICU may be on these missed interventions, strength and physical functioning. PT as a part of a multi-disciplinary approach to care is integral in promoting lung function, reducing the incidence of ventilator-associated pneumonia, sensory stimulation, prevention of secondary complications, mobilization and verticalization, facilitating independence in daily life activities.
CONCLUSION: Early-onset PT is a safe intervention in ICU patients that improves strength and physical functioning, may improve delirium, as well as in-hospital and post-hospital healthcare resource utilization.
KEYWORDS: intensive care unit, post-intensive care syndrome, physical therapy.

Anesthetic challenges in patients with a supraglottic mass

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Objective: Patients with a supraglottic mass present the unique challenge to the anesthesiologist due to the potentially serious consequences caused by the inability to secure an airway. Sedation and general anesthesia can cause loss of muscle tone leading to airway collapse, so clinicians should be prepared for every possible scenario and use techniques that avoid airway manipulation whenever possible.
Case report: We present a case of a 95-year-old patient with hip fracture and with a large supraglottic mass. Nasal endoscopy reported a large supraglottic mass occupying almost the entire oropharynx and covering the laryngeal entrance without causing any airway obstruction. In the operating room, all the required measures for potentially difficult airway management were prepared. After premedication with Midazolam 1 mg and Ketamine 5 mg, followed by Fascia iliaca block with 30 ml of 0,25% isobaric Ropivacaine, spinal anesthesia in lateral position with 0,75% isobaric Ropivacaine – 1,5 ml was performed. The operation lasted for 1 hour without using any additional sedation. The patient was hemodynamic and respiratory stable the entire time and was transferred to a post-anesthesia care unit postoperatively.
Conclusion: Careful planning and meticulous preoperative assessment for patients with a supraglottic mass is a conditio sine qua non, a primary airway management plan and the back-up plans need to be prepared. It is necessary to adapt the anesthesia technique to the patient's condition and to choose the type of anesthesia that does not interfere with the airway, i.e., regional anesthesia, if possible.
Keywords Difficult airway management, regional anesthesia

BARIATRIC SURGERY YESTERDAY, TODAY, TOMORROW

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OBJECTIVE: Obesity surgery, i.e., metabolic aspects of this branch of surgery, are subjected to new studies and we can say that an interesting future awaits us in this area. The paradigm of treating obesity was altered with enormous diverse interests at stake.
TOPIC REVIEW: Obesity is the fastest-growing pandemic of the modern age. What is indisputable is that bariatric surgery is the most effective, long-term, best and most profitable treatment for morbid obesity. The first records of obesity date back to the 2nd century. The physician and philosopher Avicena (Ibn Sina) dedicates the entire chapter in “Canons of medicine” to the problem of obesity. Very few surgical branches can boast of such meteor success as the success achieved in the last two decades in Bariatric surgery. Generally speaking, well performed is an operation that has low mortality and few complications, which is effective in terms of loss of excessive body weight and comorbidities, which is reversible and amenable, which is less invasive and improves quality of life. Surgical treatment of pathological obesity is now Open access, Laparoscopic approach, NOTES approach “surgery through congenital vents”, Robotic “da Vinci” system.
CONCLUSION: Around 800000 operations worldwide are carried out annually. In the future we will probably have synchronous effects of bariatric surgeons, Notes surgery, Robotics, Intervention gastroenterologists, Intervention radiologists, endocrinologists, “Surgical strike” on energy homeostasis centers in the brain, Surgical and non-surgical effects on intestinal microbiota. Also, there will be a projection of a surgical treatment model based on the patient's genetic maps.
KEYWORDS: obesity, bariatric surgery

Perioperative point-of-care ultrasound (POCUS)

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OBJECTIVE: Point-of-care ultrasound (POCUS) is a critical skill for all anesthesiologists, intensivists and pain physicians to help diagnose relevant complications related to routine practice and guide perioperative management.
TOPIC REVIEW: This is an ultrasound exam, performed at the patient's bedside, a very useful tool for rapid diagnostic orientation and therapeutic approach. POCUS gives "yes" or "no" answers to the goal-oriented questions, including airway, pulmonary, cardiovascular, and abdominal assessment. POCUS of the airway has been shown to aid identification of difficult airway, detection of the appropriate location of the endotracheal tube within the trachea, and assistance with emergent cricothyrotomy procedures. Lung ultrasound is a very useful tool in evaluation of mechanisms of hypoxia, and lung aeration monitoring. POCUS has superiority to chest-X-ray in detecting pleural and pericardial effusion. Regarding cardiac function, focused assessment of transthoracic echocardiography (FATE) has demonstrated utility for the assessment of pericardial effusions, severe left and right ventricular dysfunction, regional wall motion abnormalities suggestive of coronary artery disease, and gross valvular pathology. Adding an assessment of inferior vena cava diameter and its change throughout the respiratory cycle to the assessment of ventricular function helps evaluation of a volume status. POCUS is used for evaluation of free fluid within the pleural cavity, pericardium, abdomen, and pelvis.
CONLUSION: POCUS has been shown to minimize the delay between onset of symptoms and initiation of definitive therapy, ultimately decreasing morbidity and mortality in critically ill patients and achieving better patient outcomes.
KEYWORDS: Point-of-care ultrasound, POCUS, perioperative care

A MULTIDISCIPLINARY APPROACH TO MANAGEMENT OF A YOUNG DIALYSIS PATIENT WITH MAS/SEPSIS AND A NEED FOR HEART TRANSPLANT

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Objective: Management of patients with chronic multisystemic autoimmune diseases, especially when facing life-threatening conditions, is highly complex and remains a great challenge for clinicians across the world dedicated to care of such patients.
Case report: A 31-year-old male dialysis patient with history of lupus and three organ-threatening relapses, subsequent ESRD and severe heart failure requiring heart transplantation that is not available in our country, presented to the Nephrology Department with clinical manifestations of sepsis and multiple organ dysfunction. Initial diagnostic work-up revealed acute partial respiratory failure due to massive bilateral pneumonia, worsening heart failure and paralytic ileus. Empirical triple antibiotic therapy was initiated and systemic corticosteroid along with oxygen and other supportive therapy. Immunomodulatory therapy consisting of extracorporeal hemoperfusion (Oxiris) and extended daily hemodiafiltration was also introduced. The microbiological and serological tests came back unremarkable. The patient responded well to the conservative and extracorporeal therapy, with his vital parameters and biochemical tests significantly improved. After the initial stabilization, he was started on sacubitril/valsartan, which together with all supportive measures improved his heart function upon discharge. Almost one month after the patient's discharge, the rest of the microbiological and cytological results came back all negative, including bronchoscopy samples. Therefore, the definitive diagnosis is still unclear, but we hypothesize that it was macrophage activation syndrome as a complication of a multisystemic disease and provoked by an infection.
Conclusion: We emphasize the importance of prompt reaction, combined-modality therapy and multidisciplinary approach to patients with multisystemic diseases and life-threatening complications.
Keywords: MAS Sepsis SLE ESRD Dialysis Heart Failure

Acute liver lesion - case report

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Objective: Presentation of a patient with acute liver failure, combined with comorbidities from earlier and current diagnoses during hospitalization, based on the example of multidisciplinary treatment and guiding the patient through clinical guidelines and good organization of the medical team.
Case report: A 48-year-old patient was hospitalized on February 13th, 2023. at the Clinic for Plastic and Maxillofacial Surgery due to discrete dehiscence of the wound. An operation is performed under local anesthesia. In the afternoon of the second day of hospital stay, the patient complains of nausea, vomiting, subicteric, and elevated values of liver enzymes were identified. A gastroenterologist indicates acute hepatitis. The patient is transferred to the intensive care unit, PCR test on hepatitis C virus-it was positive. Whereupon admission
he is conscious, contactable, breathing spontaneously, tachycardic, icteric, abdomen distended, ultrasound signs of ascites, and enlarged spleen. In laboratory findings significant hyperbilirubinemia with high transaminases, hyperammonemia and coagulopathy was identified. Considering the complexity of the clinical status, a conciliar examination is organized. During hospitalization hemodiafiltration with hemoperfusion with a Cytosorb as well as serological and microbiological analyzes were carried out. The clinical course gets complicated by the worsening of the patient's general condition, and inotropic and vasopressor support is included. Aspergillus fumigatus is isolated in the tracheal aspirate. Despite the implemented measures of intensive treatment, exitus lethalis occurred.
Conclusion: The negative flow of inflammatory response and multiorgan systemic dysfunction could not be prevented even by the cooperation of several specialists of different specialties.
Keywords: Acute liver lesion, SIRS, MODS, Hepatitis C virus, comma

Pathogenesis of SEPSIS

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OBJECTIVE: Early goal-directed therapy (EGDT) is a more specific form of therapy used for the treatment of severe sepsis and septic shock. This approach involves adjustments of cardiac preload, afterload, and contractility to balance oxygen delivery with an increased oxygen demand.
TOPIC REVIEW: The systemic inflammatory response syndrome can progress to severe sepsis and septic shock. Along this continuum, circulatory abnormalities (intravascular volume depletion, peripheral vasodilatation, myocardial depression, and increased metabolism) lead to an imbalance between systemic oxygen delivery and oxygen demand, resulting in global tissue hypoxia or shock. An indicator of serious illness, global tissue hypoxia is a key development preceding multiorgan failure and death. The transition to serious illness occurs during the critical “golden hours,” when definitive recognition and treatment provide maximal benefit in terms of outcome. These golden hours may elapse in the emergency department, hospital ward, or the intensive care unit. EGDT promotes prompt recognition of sepsis followed by starting up a treatment “bundle” within the first 3 to 6 hours following diagnosis. EGDT aimed to obtain distinct resuscitation goals [i.e., central venous pressure (CVP) =8–12 mmHg; mean arterial pressure (MAP) =65–90 mmHg; urinary output >0.5 mL/kg/hour; central venous oxygen saturation (ScvO2) >70% within the first six hours].
CONCLUSION: EGDT provided at the earliest stages of severe sepsis and septic shock, has significant benefits which arise from the early identification of patients at high risk for cardiovascular collapse and from early therapeutic intervention to restore a balance between oxygen delivery and oxygen demand.
KEYWORDS: early goal directed therapy, sepsis

MULTISYSTEM INFLAMMATORY SYNDROME ASSOCIATED WITH COVID-19: CASE REPORT

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Objective: Multisystem inflammatory syndrome (MIS) associated with coronavirus disease (COVID-19) is a rare and challenging diagnosis requiring early treatment. MIS can affect children (MIS-C) and adults (MIS-A).
Case report: The patient was admitted to the Clinic of Otorhinolaryngology with a fever, swelling and pain on the left side of the neck and the ear. On the second day of hospitalization due to the deterioration of his general condition, he was transferred to the ICU. Laboratory findings showed high CRP values, hypoalbuminemia, coagulation status disorder, positive IgG antibodies to SARS-Cov-2. CT scan of the thorax, abdomen, and pelvis showed zones of infiltration of the lungs, with pleural effusions. Enlarged mediastinal and retroperitoneal
lymph nodes. Hepatomegaly with periportal edema, edematous wall of the gallbladder, voluminous spleen. The echocardiogram showed mild dilation of the right ventricle, mild mitral and significant tricuspid insufficiency. Included therapy was focused on the multisystem inflammatory syndrome, which involved the use of corticosteroids and intravenous immunoglobulins. Gradual recovery of the patient is seen after fifteen days of treatment in the ICU.
Conclusion. Children with MIS-C usually develop the condition 2 to 6 weeks after being infected with COVID-19. MIS-C is a serious, although rare condition with inflammation of multiple organ systems, which can lead to shock even organ failure. Most of the cases, children either tested SARS CoV-2 positive or had previous infection. Treatment includes both intravenous immune globulin and glucocorticoids. MIS-C is serious and potentially fatal. It requires early recognition and treatment using immunomodulatory strategies to reduce systemic injury.

Keywords MIS-C, SARS-CoV-2, infection

SPECIFICS OF ANESTHESIOLOGICAL TEHNIQUE AND MANAGEMENT OF ANESTHESIA DURING OPERATIVE MANAGMENT OF TRACHEOESOPHAGEAL FISTULA: CASE REPORT

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Objective: Tracheoesophageal fistula (TEF) represents an abnormal junction between the trachea and the esophagus resulting in aspiration of contents into the lungs.
Case report: A 20-year-old female patient is presented with a TEF that is caused by prolonged intubation and surgical tracheotomy. At the beginning of the procedure, the patient breathes through the cannula and induction is done with Midazolam, Propofol and Fentanyl. Maintenance is done with O2/Air, and TIVA with the administration of continuous Atracurium and fractionated Fentanyl. In the first stage of surgical work on the anterior tracheal wall, the patient is ventilated through a cannula. During surgical access to the posterior tracheal wall, access to the airway is changed and sterile hoses and a sterile flexible tube number 7.5 are prepared and placed by a surgeon in the distal part of the trachea. In the further course, moments of apnea follow for up to 60 seconds until the surgeon finishes the operative part on the esophagus and the posterior tracheal side. In the next phase a new approach to the airway is through orotracheal intubation, and closure of the front wall of the trachea and the operative wound follow up. At the end of the operation, the tip of the patient's chin is fixed to the chest, followed by waking up and transport to the ICU.
Conclusion: The specifics of the anesthesiologic techniques is the approach to the airway, which determines the surgical course of the operation and
the period of apnea during the operation.

Key words: Anesthesia, airway approach, tracheoesophageal fistula

Accidental Awareness as a Complication of General anesthesia for Cesarean section

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Background: A caesarean section if performed under general anesthesia is a procedure with an increased risk of accidental awareness.
Aim: The aim of this study was to examine the incidence of accidental awareness under general anesthesia in hospitals in the Republic of Srpska (Bosnia and Herzegovina) where general anesthesia for caesarean section is performed in a significantly higher percentage compared to spinal anesthesia.
Methods: In the period from 2016 to 2018, a multicenter, prospective, observational study was conducted in five medical centers in the Republic of Srpska (Bosnia and Herzegovina). The study included 1161 female patients who underwent elective or emergency caesarean section. The patients were surveyed postoperatively using the Brice questionnaire.
Results: Of 1161 patients included in the study, 12 (1.03%) reported a memory in the period between induction and emergence of anesthesia. Five (0.43%) of them reported definite and seven (0.6%) possible and unlikely awareness. Significant psychological trauma due to pain was reported by two female patients. Dreams during anesthesia were reported by 42 patients (3.61%) and five of them stated that the dreams were unpleasant.
Conclusion: Accidental awareness under general anesthesia during caesarean section has a significant incidence in medical centers in the Republic of Srpska (Bosnia and Herzegovina). According to the findings of this study, it is necessary to create new protocols for general anesthesia when performing cesarean section.
Keywords Awareness during anesthesia; Anesthesia, general; Anesthesia, obstetrical; Cesarean Section; Observational Study

Nutrition in ICU

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OBJECTIVE: The topic of nutrition in the intensive care unit is rarely discussed, many facts are taken for granted and nutrition protocols vary from one ICU to another. Recent randomized control trials and meta-analyses failed to demonstrate any benefit of the nutritional guideline target adequacy during the first weeks of ICU.
TOPIC REVIEW: Patients admitted to the ICU suffer from acute critical illness. This induces major catabolic stress, which may result in severe muscle wasting and prolonged impaired functional outcomes. However, identifying the appropriate timing, amount and route of nutrition support remains a complex challenge for ICU physicians. International guidelines recommend the early introduction of hypocaloric enteral nutrition within the first 48 h, except in cases of uncontrolled shock, hypoxemia or acidosis. Early enteral nutrition showed no benefit compared to delayed enteral in ventilated patients receiving vasopressor or inotropic therapies after adjusting for the illness severity. Patients receiving early nutrition support by any route had significantly longer durations of invasive mechanical ventilation and longer ICU lengths of stay than patients who did not receive early nutrition. Aware of the variability of nutritional practices throughout the hospital stay, future work should also focus on the post-ICU phase to optimize the overall patient pathway and rehabilitation.
CONCLUSION: This topic review combines data form several studies, to emphasize the importance of nutritional recommendations and the connection with the outcome of treatment of patients who require intensive care.
Keywords nutrition, illness, enteral, outcome, catabolism

ICU Acquired weakness

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OBJECTIVE: The objective is to provide a review of intensive care unit-acquired weakness (ICUAW) as a common neuromuscular complication associated with patients treated in the Intensive Care Unit.
TOPIC REVIEW: A substantial number of patients admitted to the ICU due to acute/exacerbation of chronic illness, complicated surgery, severe trauma or burn injury can develop ICUAW. The condition can lead to delayed withdrawal of mechanical ventilation and extended hospitalization. Patients often have poor prognosis, limited mobility, in-ICU, in-hospital and long-term higher mortality. ICUAW will augments healthcare related costs, increases likelihood of prolonged care in rehabilitation centers and reduces physical function and quality of life in the long term. Its pathogenesis is uncertain, with unavailability of specific drugs or targeted therapies. Common risk factors are multiple organ failure, severe infection, major surgery, age, weight, comorbidities, illness severity, exposure to drugs negatively affecting myofibers and neurons, immobility and other intensive care-related factors. The potential treatments for ICUAW will be the homeostatic regulation between protein synthesis and protein degradation in the muscle, minimizing sedation and implementing early mobilization strategies, nutritional strategies, hormone stimulation strategy (using anabolic androgenic steroids and growth hormone), control of hyperglycemia, aggressive treatment of sepsis, increasing physical activity in ICU.
CONCLUSION: Bearing in mind everything mentioned, exploring the pathophysiological mechanism of ICUAW and seeking specific therapeutic drugs and strategies are critical with the aim of reducing morbidity, mortality in patients with ICUAW and their improvement in quality of life after discharge from hospital treatment.
KEYWORDS: critical illness, muscle weakness, risk factors, intervention

Antiepileptic drugs in pregnancy: which one to choose in regard to neurodevelopment?

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Type of presentation: Original research

Title: Antiepileptic drugs in pregnancy: which one to choose in regard to neurodevelopment?

Background:

Many studies suggest that exposure to antiepileptic drugs (AEDs) during critical periods of neurodevelopment may induce transient or long-lasting neurodevelopmental deficits such as lower IQ, autism, language deficits and attention deficit hyperactivity disorder.

Aim: We aimed to find evidence in the literature which are the safest AEDs during pregnancy regarding neurodevelopment.

Materials and methods: For this review, we used PUBMED as our source of information.

Results: Valproate was associated with significantly lower IQ scores and poorer overall neurodevelopmental outcomes compared to an unexposed control group. Children exposed to carbamazepine were not poorer in their IQ than those not exposed. AED polytherapy led to poorer developmental outcomes and IQ compared to healthy controls, epileptic controls and unspecified monotherapy.

Conclussion: Based on our analysis of the reviews, we concluded that women during pregnancy should be put under the careful eye of their physician because of the increased stress, hormonal changes and decreased sleep during pregnancy which likely lowers the seizure threshold and that it is better to use an antiepileptic monotherapy, newer AEDs such as lamotrigine and levetiracetam and lower doses.

Keywords: antiepileptic drugs, pregnancy, neurodevelopment

Effect of long-term carbamazepine therapy on bone health

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Type of presentation: Original research

Background: Recent research reported that prolonged use of AET is associated with changes in bone metabolism, with consequent reduction in bone mineral density (BMD) and increased risk of fractures.

Aim: The aim of our study was to investigate the effects of carbamazepine on serum levels of 25 - hydroxyvitamin D and on biomarker of bone formation and resorption (serum levels of osteocalcin).

Material and methods: We measured serum levels of 25-OHD and osteocalcin (OCLN) in normal controls (n=30) and in epilepsy patients taking carbamazepine (CBZ) (n=50) in monotherapy for a period of at least twelve months. For each participant, mineral density (BMD) was evaluated by dual- energy X-ray absorptiometry method.

Results: The average value of vitamin D in serum was significantly lower in CBZ group than in control group (Vit D 17.03±12.86 vs. 32.03±6.99, p=0.0001). The average value of OCLN in serum was significantly higher in CBZ group than in control group (26.06±10.78 vs. 19.64±6, 54, p=0.004).BMD value in CBZ group was significantly lower than in control group (T. score CBZ: 0.08±1.38 vs. T. score control: 0.73± 1.13, p=0.031; Z score CBZ:- 0.05±1.17 vs. Z. score control: 0.55±0.79, p=0.015).

Conclusion: AEDs are associated with bone disease, as evidenced by biochemical abnormalities and decreased BMD.

Keywords: antiepileptics, carbamazepine, osteoporosis

Factors associated with a holistic approach in young women with multiple sclerosis

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Type of presentation: Original research

Backgorund

Multiple sclerosis (MS) is a chronic, inflammatory, (auto) immunological disease of the central nervous system (CNS). MS is more common in women of reproductive age.

Aim:The aim of the research was to determine the distribution of demographic parameters, degree of clinical disability, depression, cognitive changes and quality of life in women with MS.

Materials and method: The prospective study included 135 subjects suffering from MS in the Neurology Clinic of the University Clinical Center in Tuzla. The respondents were divided into two groups, the first group consists of women (101 respondents) and the second group of men (34 respondents). Clinical assessment instruments were: EDSS, Mini Mental Status, Beck Depression Scale and battery of cognitive function tests.

Results: There were no significant differences in age, level of education, duration of illness, severity of illness symptoms. Cognitive disorders are present in 40-60% of MS subjects. There was no difference in the level of depression in relation to gender. The correlation between depression and EDSS is positive but not statistically significant in both sexes. EDSS score has a significant negative correlation with parameters of cognitive functions in both groups.

Conclusion: The prevalence of MS is higher in women and tends to follow a different clinical course. Cognitive disorders are heterogeneous regardless of gender.

Keywords: multiple sclerosis, cognitive disorders

Transcranial Doppler (TCD) Technology in Patent Foramen Ovale (PFO) Detection and grading

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Type of presentation: Topic review

Background: Patent Foramen Ovale (PFO) is an opening enabling communication between the right and the left atria. In the evaluation of patients who may have a PFO, several methods are available to determine whether a RLS is present: TEE, transthoracic echocardiography, TCD, transcranial doppler and ICE, intracardiac echo. Contrast Transesophageal Echocardiography (cTEE) is considered the gold standard for diagnosing PFO. However, Contrast Transcranial Doppler (cTCD) is increasingly being used for safe, noninvasive, and cost-effective screening. The Consensus Conference of Venice, published in Stroke 1999, outlined some key standards for performing a TCD. Two consensuses are used in TCD study grading: International Consensus for Thoracic Echocardiography Grading and Spencer Logarithmic Scale for Transcranial Doppler Grading. Although TEE is considered the gold standard for diagnosing PFO, studies that compared TEE with autopsy or intraoperative detection of PFO demonstrated that the diagnosis is sometimes missed by TEE.

Conclusion: Comparing to CT and MRI imaging that provides an image of the anatomical configuration, TCD provides physiological information on brain blood supply. TCD and TEE have similar sensitivity and specificity in shunt detection. Therefore TCD should be recommended as the first choice as less invasive study.

Keywords: Transcranial Doppler (TCD), Stroke, Emboli, Transesophageal Echocardiography

Vasovagal syncope- Case report

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Type of presentation: Topic review

Background: Vasovagal syncope is defined as a short-term loss of consciousness caused by interruption in brain structures causing a sudden drop in blood pressure and heart rate.

Topic review

The aim of this paper was to present a younger patient with vasovagal syncope. A 35-year-old female patient E.M., reported to the outpatients Department, Clinics of Neurology due to loss of consciousness accompanied by a feeling of weakness and dizziness without involuntary twitching of the extremities and foaming at the mouth. Decreased values of arterial blood pressure were measured (70/60 mm Hg) and low heart rate (CP 45 per minute). She had a similar crisis during her pregnancy a few years ago. Laboratory findings were made, neurological processing, cardiological processing and Tilt test were done. The performed diagnostic procedures were regular, except for the Tilt test, which was pathologic. The patient used the recommended therapy, after which there were no repeated losses of consciousness.

Conclusion: With syncope at a younger age, we must do all the necessary diagnostic procedures and think about vasovagal syncope.

Keywords: Vasovagal syncope, Tilt test

Idiopathic intracranial hypertension and women

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Type of presentation: Topic review

Objective of review: Our objective is to provide a brief overview of epidemiology, clinical picture and treatment of idiopathic intracranial hypertension

Topic review: Idiopathic intracranial hypertension (IIH) is a disorder of unknown etiology characterized by chronically elevated intracranial pressure (ICP), and the most important neurologic manifestation is papilledema. If left untreated, chronic papilledema can lead to secondary progressive optic atrophy, visual field loss and eventually blindness. It usually occurs in women of reproductive age, with an increased incidence in obese women. The main symptoms are a daily headache and a transient vision disorder that begins peripherally and the patient does not even notice it. The diagnosis is made clinically, and is confirmed by the regular findings of MRI of the brain and LP, which indicate elevated intracranial pressure with regular cerebrospinal fluid chemistry. If vision loss occurs despite a series of lumbar punctures and pharmacotherapy, optic nerve fenestration or lumboperitoneal drainage may be indicated.

Conclusion: Idiopathic intracranial hypertension is a specific headache entity characteristic for female patient. If left untreated, it may cause serious neurological consequences.

Keywords: women, headache, lumbar puncture

AMPA Encephalitis- case report and review of topic

Amra Sakusic[1]

[1] Mayo Clinic Florida

Type of presentation: Topic review

Objectives: to present AMPA Encephalitis- case report and review of topic.

Topic rewiev: AMPA-R (alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptors) autoimmune encephalitis is an extremely rare disease. It is associated with catastrophic decline and has remarkable potential for recovery following treatment with immunomodulatory agents. We present the case of a 22-year-old female without past medical history, who was admitted to the hospital for evaluation of psychiatric symptoms. At presentation, the patient avoided answering questions, had aversion to eye contact and appeared confused. Five days after admission, she became nonverbal with worsening encephalopathy and required intubation for airway protection. Brain MR showed extensive cortical ribboning and multifocal cerebral and cerebellar cortical diffusion restriction. MR venogram and angiogram ruled out venous sinus thrombosis and primary CNS vasculitis. Initial CSF analysis performed in a community hospital were unrevealing. The patient was empirically treated with IVIG and high dose of methylprednisolone for suspected limbic encephalitis. Repeated lumbar puncture revealed positive AMPA-R antibodies. She underwent five sessions of plasmapheresis and high dose methylprednisolone. Follow up brain MR after plasmapheresis showed overall decreased diffusion restriction. The patient was transferred back to the hospital closer to her family with a plan to initiate Rituximab.

Conclusion: AMPA-R encephalitis is associated with a broad clinical phenotype, high treatment-responsiveness, and generally favorable outcomes.

Keywords: AMPA encephalitis

Acute neurological conditions during pregnancy

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Type of presentation: Topic review

Objective of review: This topic review will focus on the relationship between pregnancy and a wide spectrum of acute neurologic illnesses.

Topic review: Anatomical and physiological changes that occur during pregnancy can lead to lesions of both the central and peripheral nervous system. The incidence and severity of Bell's palsy are increased in pregnancy, with most cases arising in the third trimester or postpartum period. Carpal tunnel syndrome is relatively common during pregnancy, with an incidence of 2 to 35 percent. It has not been proven that the incidence of Guillain-Barré syndrome increases during pregnancy. It may be increased in the postpartum period. About 30 out of every 100,000 women experience a stroke during pregnancy. Most pregnancy-related cerebral venous thrombosis occur in the third trimester of pregnancy and puerperium. Bleeding of an arteriovenous malformation is noticeable in younger women (20–25 years-old) and earlier in pregnancy. Aneurysm rupture occurs more commonly in older women (30–35 years-old) and later pregnancy. Occasionally, a woman presents with a first seizure in pregnancy. Shunt malfunction complicates up to 25 to 50 percent of pregnancies in women with ventriculoperitoneal shunts. Functional occlusion of the shunt most often occurs in the third trimester. New-onset migraine arises during pregnancy usually in the first trimester.

Conclusion: Acute neurological conditions during pregnancy require special approaches and represent a challenge for every neurologist.

Keywords: Neurology, pregnancy, acute

Gender differences in multiple sclerosis

Enra Mehmedika Suljić [1]

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Type of presentation: Topic review

Objective of review: In this review, we highlight the key gender differences in approaching the patients with multiple sclerosis, providing an important insight into specific needs of female gender.

Topic review: Multiple sclerosis (MS) is the most common chronic inflammatory demyelinating disease of the central nervous system. Female gender has been associated with specific characteristics of the disease. MS is more common in women than men, and research suggests the proportion of women with MS is increasing. Women with MS appear to have more inflammatory lesions; less neurodegeneration and low risk of developing primary progressive MS. MS treatment of female patients require specific considerations concerning pregnancy, reproductive health and breastfeeding.

Conclusion: Multiple aspects of MS are influenced by sex-based differences. The purpose of this review is to outline a specificity of female gender when it comes to evaluation, prognosis and treatment of multiple sclerosis.

Keywords: multiple sclerosis, sex differences, gender issues

Artery of Percheron infarction: A case report

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[2] Public Health Institute Kalesija Health Center

Type of presentation: Topic review

Objective: to present a case report of Artery of Percheron infarction

Topic review: We report a case of a 43-year-old patient who was brought to the emergency department because of a sudden change of consciousness, his Glasgov coma scale was 4. During hospitalization his state of consciousness improved and his neurological findings revealed paresis of vertical gaze, absence of convergence, asterixis on provocation, positive Babinski sign on the right and aphasic speech. He also showed signs of neuropsychological phenomena in terms of reduction of fluent speech, dysprosody and agraphia. He performed computerized tomography and magnetic resonance, and they revealed bilateral mediothalamic ischemic lesions. On to the prescribed medications, physical and speech therapy treatment, clinical recovery was noted but vertical gaze paresis, lack of convergence, ataxia, hypersomnia, and speech disorders in the sense of Guberman- Struss aphasia remained behind. He was discharged with a recommendation for continuing usage of medications and speech therapy treatment was also recommended.

Conclusion: Ischemic stroke caused by the obstruction of the artery of Percheron is a rare type of ischemic stroke. Depending on the development of symptoms to the time of presentation, prompt diagnosis permits for better treatment.

Keywords: Key words: Artery of Percheron, stroke, diagnosis

Gender differences in stroke risk factors

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Type of presentation: Original research

Objective: Ascertain whether there are differences in conventional risk factors for stroke in comparison with gender.

Materials and methods: We did a retrospective study in UCC Tuzla for the period of 01.07.2022 to 31.12.2022, which included 251 patients with acute stroke.We analyzed differences in risk factors by gender.

Results: The study included 251 patient where 88,4% of patients had ischemic stroke and 11,6% of patients had hemorrhagic stroke. Women had a higher representation in hemorrhagic stroke (55.4 versus 44.6%) compared to ischemic stroke (44% versus 55%). In women, the frequency of both types of stroke was significantly higher (p = 0,001), with diabetes mellitus associated with ischemic stroke (p = 0,037) and atrial fibrillation associated more often with hemorrhagic stroke (p = 0,04). Alcohol as a stroke risk factor was significant often in men (p 0,00). The correlation between smoking, dyslipidemia, and heart disease did not show a statistically important difference between men and women.

Conclusion: Our study showed that hypertension is a more frequent risk factor in women for both types of stroke in comparison with men. Diabetes mellitus is significantly more common at ischemic strokes, while atrial fibrillation is more common in hemorrhagic strokes.

Keywords: stroke, risk factors, female

A healthy life for a healthy brain

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Type of presentation: Topic review

Objective of review: In this review, we summarize current position on recommended actions in order to preserve the brain health.

Topic review: Prospective studies have shown that regular physical activity improves not only physical and cognitive functions, but also protects against neurodegenerative diseases and their faster progression. A larger volume of gray matter was found with greater aerobic activity, and measured by magnetic resonance imaging indicating it´s neuroprotective role. The results of numerous studies have shown the importance of the Mediterranean diet for the prevention of stroke and for the prevention of cognitive disorders, in addition to avoiding smoking, obesity, treating high blood pressure, as well as elevated blood sugar levels. Chronic stress is an important factor because it contributes to the killing of neurons and the deterioration of the brain, but also to the prevention of the creation of new neurons. That is why strategies for coping with stress should be incorporated into our daily lives, as well as "brain fitness" programs in the sense of socializing with others, sharing emotions, acquiring new knowledge and skills.

Conclusion: As Santiago Ramon and Cayal said a long time ago, every man can become a sculptor of his brain ifhe wants to.

Keywords: life, health, brain

Acute neurological conditions during pregnancy

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Type of presentation: Topic review

Objective of review: This topic review will focus on the relationship between pregnancy and a wide spectrum of acute neurologic illnesses.

Topic review: Anatomical and physiological changes that occur during pregnancy can lead to lesions of both the central and peripheral nervous system. The incidence and severity of Bell's palsy are increased in pregnancy, with most cases arising in the third trimester or postpartum period. Carpal tunnel syndrome is relatively common during pregnancy, with an incidence of 2 to 35 percent. It has not been proven that the incidence of Guillain-Barré syndrome increases during pregnancy. It may be increased in the postpartum period. About 30 out of every 100,000 women experience a stroke during pregnancy. Most pregnancy-related cerebral venous thrombosis occur in the third trimester of pregnancy and puerperium. Bleeding of an arteriovenous malformation is noticeable in younger women (20–25 years-old) and earlier in pregnancy. Aneurysm rupture occurs more commonly in older women (30–35 years-old) and later pregnancy. Occasionally, a woman presents with a first seizure in pregnancy. Shunt malfunction complicates up to 25 to 50 percent of pregnancies in women with ventriculoperitoneal shunts. Functional occlusion of the shunt most often occurs in the third trimester. New-onset migraine arises during pregnancy usually in the first trimester.

Conclusion: Acute neurological conditions during pregnancy require special approaches and represent a challenge for every neurologist.

Keywords: Neurology, pregnancy, acute

Cluster Headache associated with hemiparesis: A case report

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Type of presentation: Topic review

Objective: To present a case of cluster headache associated with hemiparesis

Topic review: Cluster headache (CH) is a rare and severe syndrome characterized by the recurrence of unilateral pain attacks of short duration and associated with ipsilateral cranial autonomic symptoms. We describe the case of a 45-year-old male that came into our emergency room complaining on headache. He reported episodes of extremely strong sharp pain that was located in the area of the left eye, also he reported nasal congestion, conjunctival injection, tearing from his left eye, and in few occasions, he lost his consciousness. Attacks lasted up to 60 min. A neurological examination revealed mild left hemiparesis. During headache attacks, we treated him with oxygen, corticosteroids, analgesics, anti-edematous therapy after which a clinical recovery was noted. He performed magnetic resonance imaging (MR) of the brain and magnetic resonance angiography (MRA) on year 2017 but there were no pathological findings. We recommended to do control MR as well as using nonsteroidal anti-inflammatory drugs and oxygen therapy when head pain occurs.

Conclusion: This report reveals the very rare presentation of CH having hemiparesis as an associated symptom, which is commonly seen with migraine

Keywords: Cluster headache, hemiparesis, diagnostic

Can we prevent hyperperfusion syndrome?

Marija Bender[1]

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Type of presentation: Topic review

Aim: to present a review on Cerebral hyperperfusion syndrome

Topic review: Cerebral hyperperfusion syndrome (CHS) is a relatively rare but life-threatening complication following a carotid recanalization procedure. It was first described by Caplan in 1978., and still remains a matter of ongoing debate due to its vague definition, complex pathophysiology, and lack of cut-off points for defining hyperperfusion. The exact mechanism of this phenomenon is unclear, but it is thought that CHS is a result of impaired cerebral autoregulation. In chronic low-flow settings, cerebral autoregulation will result in maximum vasodilatation downstream due to severe carotid stenosis. These vessels will eventually lose their ability to autoregulate and after the restoration of blood flow won't be able to constrict in response to systemic blood pressure increase which would further lead to cerebral hyperperfusion, loss of vessel integrity, disruption of blood-brain barrier end eventually cerebral edema and/or intracerebral hemorrhage. CHS can have catastrophic consequences but it is also potentially preventable in the early stage. Therefore, we need to have a high level of awareness for CHS in every patient undergoing a revascularisation procedure, especially in a high-risk group. Any patient at risk of developing CHS requires an individual approach with vigilant monitoring and careful therapeutic decision-making based on MCA velocity dynamics, BP values, and clinical context.

Keywords: hyperperfusion syndrome, blood pressure, intracerebral hemorrhage

Cerebral Tuberculosis: A Complex Case of Meningoencephalitis with Vasculitis and Retinal Artery Occlusion

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[1] Department of Neurology, University Clinical Center Tuzla, Bosnia and Herzegovina

Type of presentation: Topic review

Objective: To present a complex case of Meningoencephalitis with Vasculitis and Retinal Artery Occlusion

Topic review: Tuberculosis of the central nervous system is the most devastating manifestation of tuberculosis. Tuberculous meningoencephalitis develops in 1-5% of approximately 10 million cases of tuberculosis worldwide. In this report, we describe the case of a 45-years old patient who presented with headache and mental status changes. A comprehensive diagnostic workup, including repeated magnetic resonance imaging (MRI) of the brain and magnetic resonance angiography (MRA) of the head and neck arteries, revealed changes indicative of meningoencephalitis and cerebral vasculitis, predominantly in the middle cerebral artery zone, as well as an abscess in the right mediotemporal region. Further testing confirmed the presence of Mycobacterium tuberculosis in the cerebrospinal fluid sample. Despite the administration of antituberculous agents and corticosteroids, the patient developed multiple complications, including occlusion of the retinal artery and subsequent loss of vision. The presence of complications seriously affects the prognosis of patients with tuberculosis. This condition remains a challenge for clinicians due to the difficulty in early diagnosis and the severe consequences of delayed treatment.

Conclusion: This report reveals the very rare presentation of CH having hemiparesis as an associated symptom, which is commonly seen with migraine

Keywords: tuberculous meningoencephalitis, vasculitis, abscess, retinal occlusion

Specific risk factors for stroke in women

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Type of presentation: Topic review

Objective: In this review, we summarize current data on specific risk factors for stroke in women

Topic review: Women represent more than half of all people who get strokes; they have more risk of stroke and a worse outcome than men. Despite women and men having mostly the same risk factors for stroke, such as high blood pressure, high level of cholesterol, diabetes, and atrial fibrillation, there are some risk factors which are more specific for women:

1. Pregnancy (bad outcome of pregnancy, hypertensive disorders in the pregnancy, gestation diabetes, preterm labor).
2. Exogenous estrogen (oral contraceptive, oral postmenopausal hormonal therapy)
3. Exposure to endogenous estrogen (early and late menstrual cycle, early menopause natural menopause, surgical menopause).

There is a number of gender differences on impact of conventional factor risks in stroke, which indicates that optimal management risk factors for stroke can distinguish between men and women. Research about the basic mechanism responsible for these gender differences in conventional risk factors, and especially in risk factors for stroke specific for women, as pregnancy, level of endogenous estrogen, and exogenous hormonal therapy are justified and necessary.

Conclusion: Optimal evaluation risk factors for stroke in women and adapted preventive strategies are of enormous impact.

Keywords: stroke, risk factors, female

Restless legs syndrome

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[1] Cantonal Hospital Dr Irfan Ljubijankić Bihać

Type of presentation: Topic review

Objective of review: Our objective is to provide an overview of restless legs syndrome

Topic review: Restless legs syndrome is a disease from the spectrum of movement disorders. Women suffer twice as often as men, and the frequency in the standard population is 4-10%. In their description of the disease, patients most often mention a feeling of growing restlessness in the lower extremities, pain, itching, and a flow through them. It is characterized by an urgent and urgent need to move the extremities. Dopaminergic dysfunction of the central nervous system is considered a possible cause of symptoms, as well as dysfunction of the neurotransmitters GABA and adenosine. There is a primary form of the disease that is genotypically and phenotypically determined, occurs at an earlier age, and has a slower course of the disease and an easier onset of symptoms. The secondary form of restless legs syndrome occurs as part of another illness or disease, such as pregnancy, thyroid disease, diabetes, or kidney failure, as well as some other cardiovascular, endocrinological, neurological, and psychiatric diseases.

Conclusion: The pathogenesis of restless legs syndrome is still completely unclear, and numerous studies support a possible lack of iron in the brain as a potential cause. Treatment of the secondary form of this syndrome primarily involves adequate treatment of the underlying disease.

Keywords: Restless legs syndrome, Women, Dopamine, Genetics, Iron

Neurosarcoidosis: A Case Report

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[1] Department of Neurology, University Clinical Center Tuzla, Bosnia and Herzegovina

[2]Department of Radiology, University Clinical Center Tuzla, Bosnia and Herzegovina

Type of presentation: Topic review

Objective: To present a complex case of Meningoencephalitis with Vasculitis and Retinal Artery Occlusion

Topic review: Tuberculosis of the central nervous system is the most devastating manifestation of tuberculosis. Tuberculous meningoencephalitis develops in 1-5% of approximately 10 million cases of tuberculosis worldwide. In this report, we describe the case of a 45-years old patient who presented with headache and mental status changes. A comprehensive diagnostic workup, including repeated magnetic resonance imaging (MRI) of the brain and magnetic resonance angiography (MRA) of the head and neck arteries, revealed changes indicative of meningoencephalitis and cerebral vasculitis, predominantly in the middle cerebral artery zone, as well as an abscess in the right mediotemporal region. Further testing confirmed the presence of Mycobacterium tuberculosis in the cerebrospinal fluid sample. Despite the administration of antituberculous agents and corticosteroids, the patient developed multiple complications, including occlusion of the retinal artery and subsequent loss of vision. The presence of complications seriously affects the prognosis of patients with tuberculosis. This condition remains a challenge for clinicians due to the difficulty in early diagnosis and the severe consequences of delayed treatment.

Conclusion: This report reveals the very rare presentation of CH having hemiparesis as an associated symptom, which is commonly seen with migraine

Keywords: tuberculous meningoencephalitis, vasculitis, abscess, retinal occlusion

Moyamoya disease in young female patient

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Type of presentation: Topic review

Objective: We present a case of Moyamoya disease in young female patient without risk Nermina Klopić factors.

Topic review: The Moyamoya disease is a vasculopathy caused by chronic progressive stenosis and occlusion of the large blood vessels of Wills' hexagon which can lead to brain ischemia and less often to hemorrhagic stroke. We showed a 37-year-old patient with an ischemic stroke which was caused by a possible case of the Moyamoya disease. The presentation shows us the main aspects of the Moyamoya disease through definition, etiology, clinical picture, and diagnostic testing (DSA blood vessels of the head and neck indicate signs of the Moyamoya disease (puff of smoke)). This case report is significant because the patient did not have any of the risk factors that would lead to advanced atherosclerotic changes.

Conclusion: Optimal evaluation risk factors for stroke in women and adapted preventive strategies are of enormous impact

Keywords: Moyamoya disease, stroke, young patient, women

Screening women for thrombophilia in neurological disorders

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Type of presentation: Topic review

Objective of review: In this review, we summarize current knowledge on the appropriate indications for testing female neurological patients for thrombophilia.

Topic review: Virchow's triad explains the pathogenesis of arterial and venous thrombotic disease in three broad categories: hypercoagulability, stasis, and endothelial damage. These categories may be the result of acquired or genetic risk factors that predispose patients to the development of thrombosis. The most common causes of hereditary hypercoagulable state are: 16910 G>A FV and 20210 G>A F II polymorphisms, protein S, protein C and antithrombin deficiencies. Acquired risk factors include antiphospholipid syndrome (APS) among other medical conditions. Recent guidelines point to special significance of thrombophilia testing in cerebral vein thrombosis and arterial thrombosis in young adults; however it seems that female patients are at higher risk of these conditions.

Conclusion: Testing for thrombophilia in neurological disorders is often being performed inappropriately and non- selectively. The purpose of this review is to outline an evidence based approach to testing female patients for thrombophilia.

Keywords: thrombophilia, polymorphism, antiphospholipid

Hormone-related migraine in women

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Type of presentation: Topic review

Objective of review: In this review, we summarize current knowledge on characteristics of migraine in women.

Topic review: Migraine is a primary headache and a complicated neurological disorder with sensory and autonomic abnormalities. It is the fourth leading cause of disability in women. Menarche, menstruation, pregnancy, and menopause, as use of oral contraceptives and of hormone replacement treatment (HRT) may influence migraine occurrence. Onset of migraine in women increases during the menarche, with peaks in prevalence in the late 30s, and a rapid decline after menopause. Although the prevalence is highest in the reproductive life period, the frequency of headache may also worsen during midlife and the menopausal transition period. Data suggest that hormonal factors may trigger headache attacks and influence onset and remission and also might have impact on cerebrovascular function in migraineuors. Migraine is also a multifactorial disorder, with hormonal, genetic, environmental, nutritional and psychological factors that contribute to its onset and development. Mood disorders are very often comorbid with migraine with significant contribution to migraine associated disability which may be one of the main causes of burden that contributes to poor quality of life (QOL) .

Conclusion: Causal relationship between migraine and sex hormones is present in women with migraine especially in the reproductive and perimenopausal phase of their life. The effect of estrogen is important with significant role of estrogen withdrawal hypothesis as only a part of the mechanisms in the pathogenesis of this complex neurological disorder

Keywords: migraine, sex hormones, women

Psychological Evaluation and Treatment Planning for Children with Developmental Disabilities – a Case Report of the Evaluation and Eye Movement Desensitization and Reprocessing Treatment of a Girl with Sensory Integration Disorder

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Pediatric Clinic, Clinical Center University of Sarajevo, Sarajevo, BiH

Introduction: Many studies show that early identification and adequate treatment of children with developmental disabilities significantly contribute to the reduction of symptoms and lead to favorable long - term outcomes.

Aim: The objective of this report is to present psychological evaluation of children with developmental disabilities and to emphasize the importance of data integration in the diagnosis and treatment of children.

Case report: Collaboration between parents, pediatricians, psychologists and other professionals working with children who have developmental disabilities is necessary for timely diagnosis and comprehensive treatment. The report presents a case study of a girl with primary sensory integration disorder that was not recognized and treated in the early stages. The psychological evaluation showed that the girl's intellectual potentials were within the average range, with significantly better verbal than nonverbal intellectual abilities. Additionally, associated emotional difficulties, deficient social skills, limited coping strategies, and poor self-concept were noted. The result of these deviations in the girl's development were various learning difficulties, behavioral problems, and social interaction issues. Based on the assessment, the psychologist developed a treatment plan that was based on eye movement desensitization and reprocessing (EMDR) therapy in combination with cognitive behavioral therapy (CBT) and other psychological interventions. The effects of the treatment are evaluated based on cognitive retesting, observation, self - assessment scale, parents' and school staff evaluations.

Conclusion: Evaluation of the psychotherapy effects shows that EMDR treatment of the girl facilitated processing and integration of sensory information. With the cooperation of parents and school staff, the treatment resulted in significantly reduced difficulties and improved quality of life.

KEYWORDS: sensory integration disorder, psychological evaluation of children, psychotherapy, EMDR

Coil Embolization of the Pulmonary Artery – a Case Report

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Introduction: Patent ductus arteriosus (PDA) accounts for the 6-11% of all congenital heart defects. Transcatheter closure of PDA has largely replaced surgical ligation in different age groups. Common complications of transcatheter closure of PDA include residual shunt, left pulmonary artery (LPA) obstruction, protrusion of the device into the aorta, and embolization of the device.

Case report: A 5-year-old girl with moderately large asymptomatic PDA underwent transcatheter ductal occlusion. According to the measurements, we decided for a Coil with 5 loops. After the release of the occluder, embolization in the left pulmonary artery occurred, and the ductal shunt was present on the follow up aortography. We performed the CT angiography of the pulmonary circulation in order to accurately localize the position of the coil. After 3 days, in the angio room, the device was removed using the snare technique with a 10-mm Nitnol snare catheter. Amplatzer Duct Occluder was implanted. Follow up angiography after implantation showed excellent position, without residual shunt.

Conclusion: PDA closure in the present era has a very low rate of complications, although these are higher in younger children. Technical intervention-related complications are more common in coil procedures than in device procedures. It is important to have the necessary equipment and experienced team prior to performing the procedure in order to deal with possible complications.

Keywords: PDA, coil, embolization

Overview of Primary Care Pediatric Specialist Role in the United States

Amina Smajlović

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Topic review: In the US, primary care pediatricians (PCP) provide most of the pediatric care for children and youth 0-21 years of age. Per American Board of Pediatrics (ABP), there are 47,733 board certified general pediatricians and 12,541 pediatric subspecialists in the US. Their main roles are to perform regular well/physical/sports exams, immunizations, developmental/mental health/maternal depression screenings, contraception, common pediatric disease care and ill care. PCPs diagnose and treat in the outpatient setting: asthma, attention deficit hyperactivity disorder (ADHD), developmental delays, depression, anxiety, constipation, enuresis, growth problems and many other conditions. Acute illnesses commonly treated include upper respiratory tract infections, otitis media, streptococcal pharyngitis, urinary tract infections and pneumonia. Families develop long term relationships and trust their doctors in primary care setting. In addition to above, pediatric clinics serving majority Medicaid population pediatricians perform screenings for food, housing, and transportation insecurity. Nurses, social workers, psychologists, and care navigators are integrated members of our multidisciplinary team. Some clinics provide developmental therapy, psychiatry care and most are moving towards adding the community workers. Objective To review the role of primary care pediatric specialist in the United States (US).

Conclusion: PCP’s work with patients, families, and clinic team members to improve health and safety of the pediatric population.

Keywords: primary care pediatrics, USA, role of pediatrician

The Role of Sensory Integration in Understanding Children Behavior

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Topic review: Sensory integration is a natural neurologic process that refers to the mechanisms of processing information that a person receives through senses from their body and surroundings. Sensory integration means integration of all individual sensual experiences in a one unique whole thus enabling efficient interactions with physical surroundings and persons. With most people it happens automatically, in the same manner as other autonomous processes. According to Jean Ayres, child learns to feel its body and surroundings within the first seven years, to straighten up and consciously move, to understand the meaning of different sounds, face physical forces and this all requires a regular function of sensory integration, which is the basis for further development of motor, cognitive and socio-emotional skills. Nevertheless, the disfunction of the sensory integration affects 10-15% of children, which may lead to the manifestation of different challenges in these children, with both typical and atypical development. Children with sensory integration disorder are included in the treatment implemented by trained therapists in sensory rooms. Goals of the treatment in the sensory room are activation of the afore inhibited sensory capacities, creating balance and building the mechanism of self-regulation and behavioral organization. Furthermore, the goals are to achieve the sensory regime that satisfies the sensory needs of every child. The aim of this abstract is to point out the importance of early detection and treatment of sensory integration disorder, while using the practical examples to correlate the difficulties in the adaptive functioning and specific behavioral patterns with the sensory integration disorder.

KEYWORDS: sensory integration, children, behavior

Desmoid Tumor of the Rectus Abdominis Muscle in a 2-year-old Boy - a Case Report

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Introduction: Aggressive fibromatosis, also known as desmoid tumor, is a locally invasive soft tissue lesion arising in connective tissues. Although these lesions infiltrate into the surrounding normal tissues, they do not metastasize to distant sites. It may present as intra-abdominal tumor usually affecting the mesentery of the intestine or it could be an extra-abdominal where it may affect the popliteal region, the chest wall or the anterior abdominal wall. Cases in children less than 10 years old are rare.

Case report: We report a case of a desmoid tumor located at the medium and lower third of the left rectus abdominis, in a 2 years old boy. Partial resection of the muscle segment and simultaneous reconstruction of the abdominal wall by abdominal fascia was done. The patient had an uneventful recovery. Follow up after one year showed neither recurrence nor functional or aesthetic complications.

Conclusion: Primary surgery with negative surgical margins was found to be the most successful primary treatment modality for children with desmoid tumor. A long follow-up is necessary to pick any recurrence.

Keywords: desmoid tumor, aggressive fibromatosis, reconstruction

Initial experience in Bosnia and Herzegovina with usage of phenol in treatment of pilonidal sinus in children

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Introduction: Pilonidal sinus is a common disease with rising incidence in adolescence. Multiple surgical options are utilized in our country: excision with secondary healing, flap surgery, primary excision with closure, minimal invasive - endoscopic pilonidal sinus treatment. Patients and surgeons are still looking for better treatment options. Goals include lowering the rate of recurrence, decreasing the hospital stay, reducing discomfort for the patient, decreasing morbidity and wound complications.

Aim: Assess phenol`s solution efficacy as the least invasive intervention, with a faster return to normal activity as a new approach in our country.

Methods: Phenol treatment was performed as nonsurgical treatment. Sinus openings less than 3 mm in diameter was widened with local anesthesia, and hair was removed. The anus was protected with a swab or cotton wool, and the rest of the area was liberally coated with Garamycin ointment. Liquid phenol was applied, and left in situ for approximately 9 min. The patients were allowed to return to their normal daily activities immediately after the procedure. The first follow-up visit took place after 7 days. If the patient's wound had no leakage, then no further procedures were undertaken. Closure of the sinus openings was accepted as healing. Recurrence was defined as reappearance of the sinus and leakage after healing had been reached.

Results: A total of 14 children ages 13 to 18 were treated with 90% phenol solution, without recurrence, minimal complications and average healing time of 6 weeks.

Conclusion: Phenol usage is an excellent treatment option for pilonidal sinus that has less complications and lower recurrence rate in the pediatric population. It is performed with local anesthesia as a same day surgery procedure.

Keywords: Non-surgical treatment, phenol, pilonidal disease, pediatric

The Role of Psychology in Pediatric Rheumatic Diseases

Diana Milojević

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Topic review: The understanding of pathophysiology of pediatric rheumatic diseases and availability of more targeted treatments has evolved tremendously over the last 20 years. The scenes from the twentieth-century pediatric rheumatology clinics of children in wheelchairs with severe musculoskeletal deformities affecting basic activities of daily living are largely gone. The diagnosis of a rheumatic disease in a child today is no longer a sentence to a life with a severe psychical disability or an early death. However, it is still a life with a chronic disease, most commonly without a promise of a cure. The chronic nature and unpredictable disease course despite the patient's and providers' best efforts can be difficult for both the patient and their family to accept and can cause significant life disruption. Integration of pediatric psychologist into interdisciplinary care can assist in addressing psychosocial concerns and holistic disease management with concerns such as pharmacotherapy and adherence, cognitive impairment, pain management, functional disability and mood disruption. Psychological interventions should be adapted to a patient's unique psychosocial needs, functional impairments, disease trajectory, and age.

Keywords: pediatric rheumatology, psychology, behavioral modification

Updates on Management of Neurofibromatosis type 1

Dušica Babović-Vuksanović

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Topic review: Neurofibromatosis type 1(NF1) is a rare genetic condition with prevalence of 1 in 2000 individuals. This disorder is characterized by multisystemic involvement and age-dependent complications. Management of NF1 should include multidisciplinary team consisting of pediatrician/internist, ophthalmologist, neurosurgeon, neurologist, plastic surgeon, dermatologist, orthopedic surgeon, endocrinologist, oncologist, phycologist, physical therapist, social worker and other specialists, as needed.

The update on management and surveillance recommendations for NF1 patients will be discussed

Keywords: Nf1, neurofibroma, breast cancer, learning disability

Outcomes of an Undescended Testicle Surgery Based on Pateint Age: a Single Center Experience in Tuzla

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Objective - To evaluate age at surgery and outcomes of undescended testis (UDT) of boys who underwent surgical treatment at our institution.

Methods - The retrospective study was conducted from December 2006 until December 2021 analyzing the medical records of boys with UDT who were treated with orchiopexy. Age of boys at the time of diagnosis, age at which orchiopexy was performed, results of intraoperative findings and treatment complications were analyzed.

Results - Orchiopexy was performed in 748 boys with UDT. The median age at the time of orchiopexy was 50.5 months (IQR22 – 117). Orchiopexy was the most frequently performed between the ages of 4 and 6 in 31.28% (234/748) boys, while the least number of boys 4.27% (32/748) underwent orchidopexy during the first year of life. The most common form was unilateral UDT with the prevalence of 91.9 % (688/748), out of which 46.2 % (346/748) was on right side, 42.5 % (318/748) was on the left side, and 11.3 % (85/748) was on the both sides. Orchiopexy was performed in all cases. Complications such as retraction of testis out of scrotum, testicular atrophy, postoperative hernia and wound infection were observed in 1.7% (10/562), 0.53% (3/562), 1.2% (7/562) and 0.88% (5/562), respectively. The efficacy of orchiopexy was 96.6%.

Conclusion - Although the most boys included in the study had surgery at a later age than recommended, the success rate of orchiopexy was significant with the small number of complications. Our findings support that orchiopexy is both the standard and the option for the successful management of UDT.

Keywords: undescended testis, orchiopexy

Familial Hypercholesterolemia in Children: Detection and Treatment

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Topic review: Familial hypercholesterolemia (FH) is one of the most common genetic disorders, affecting 1/200 to 1/250 people, with autosomal dominant inheritance. Both homozygous and heterozygous type results in markedly reduced hepatic capacity to clear cholesterol-rich low-density lipoproteins (LDLs) from the circulation. Starting in fetal period, sustained exposure of the arterial wall to elevated LDL-C levels accelerates cholesterol deposition and vascular inflammation. As a result atherosclerosis and premature coronary heart disease (CHD) develops. Familial hypercholesterolemia is diagnosed either by phenotypic criteria or genetic testing. An LDL-C ≥5 mmol/L (190 mg/dL), or an LDL-C ≥4 mmol/L (160 mg/dL) with family history of premature CHD and/or high baseline cholesterol in one parent, provides the phenotypic diagnosis. If a parent has a genetic defect, the LDL-C cut-off for the child is ≥3.5 mmol/L (130 mg/dL). Children who are heterozygous for the FH should be treated with a fat-modified, heart-healthy diet and begin statins at age 8–10 years. In homozygous FH, pharmacologic treatment should start at the time of diagnosis. Simvastatin, lovastatin, atorvastatin, pravastatin, fluvastatin and rosuvastatin with addition of ezetimibe may be required to achieve the target goal LDL-C. These medications are approved in the USA and Europe for use in children with FH. Target LDL-C is <3.5 mmol/L (130 mg/dL) for children older than ten years, or ideally 50% reduction from baseline.

Conclusion: We need to increase awareness of FH, optimize early identification, and start treatment from childhood in order to reduce cumulative LDL-C burden and prevent early cardiovascular events.

Keywords: Familial hypercholesterolemia in children, LDL-C, Statin, Ezetimibe

Ischemic Stroke in Children – a Case Report

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Introduction: Ischemic stroke is characterized by a decrease of blood flow to part or all of the brain. It most frequently occurs due to thrombosis, embolism or systemic hypoperfusion. Ischemic stroke is divided into arterial and venous stroke. Infants and young children with ischemic stroke may have focal weakness, but more commonly present with seizures and altered mental status. Older children usually present with hemiparesis or other focal neurological signs such as aphasia, visual disturbance, or cerebellar signs. Immediate assessment and neuroimaging are important to confirm the diagnosis of acute ischemic stroke, which can be mimicked by a number of other conditions. The diagnosis of stroke is often delayed due to lack of recognition. Prompt interventions after the diagnosis of ischemic stroke is established requires timely treatment in order to improve the stroke outcome.

Case report: Ischemic stroke caused by a venous occlusion is rare, and in the past seven years at our institution we have had only one proven case. In this abstract we will present the case of an adolescent girl who had an ischemic stroke caused by thrombosis of the right subependymal vein. A known risk factor was a liver transplant in childhood and the use of immunosuppressive medications. Additional risk factor was mutation of the MTHFR gene for thrombophilia.

Conclusion: The diagnosis and treatment of ischemic stroke requires accuracy and speed in order to avoid mortality and minimize disability.

Keywords: ischemic stroke, pediatric patient, thrombophilia

Case report: Hyponatremia after brain injury

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Introduction: Disturbance of sodium balance is common finding in patients with brain injury and is associated with mortality increases of up to 60%. Sodium is the major extracellular cation and central nervous system has a big role in the regulation of sodium and water. Hyponatremia is defined as serum sodium levels less than 133-135, Eq/L. It is more common in those patients who are critically ill, and usually develops between 2 and 7 days after the injury. It can lead to serious complications including death. The symptoms and signs are related to the severity of hyponatremia and also to the rate of change of the serum sodium concentration. After brain injury hyponatremia occurs because of the syndrome of inappropriate anti-diuretic hormone secretion (SIADH) or cerebral salt wasting syndrome (CSWS). Treatment is indicated in the symptomatic patients. The correction of hyponatremia can itself lead to neurological sequelae, such as central pontine myelinolysis.

Case report: In this article, we describe a case of a 11-old male child who presented in our institution with brain injury. During the observation of patient, 72 hours after the trauma he developed sings of encephalopathy with a hyponatremic seizure. The patient's laboratory findings were compatible with SIADH. The hyponatremic convulsion was treated with a hypertonic saline infusion and the SIADH was treated with fluid restriction. After 1 hours, serum levels of sodium increased, slowly. After 8 hours, serum levels of sodium were normal, and all the symptoms disappeared.

Conclusion: This case shows vulnerable example of clinical manifestation of hyponatremia after brain injury and successful effects of conservative treatment.

Keywords: hyponatremia, brain injury, syndrome of inappropriate anti-diuretic hormone secretion (SIADH, cerebral salt wasting syndrome

Child Neurology and Developmental Medicine in Countries with Limited Resources: A Single Tertiary Center Study in Bosnia and Herzegovina

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Introduction: Pediatric neurological diseases and neurodevelopmental disorders include very heterogenous group of disorders. The child neurologists in Bosnia and Herzegovina have been the main specialists involved in diagnosis and treatment serving children with neurodevelopmental disorder. There is no developmental pediatrics as separate specialty in Bosnia and Herzegovina.

Aim: To evaluate trends in admissions at the pediatric Neurology Department of Pediatric Clinic, Clinical Center University of Sarajevo.

Methods: This is retrospective study, conducted at the Department of Neurology, Pediatric Clinic, Clinical Canter of Sarajevo, from 2008 to 2022.

Results: The total number of patients who were admitted at inpatient unit of Pediatric Clinic was: 2008 - 4295, 2017 - 5834, 2022 - 4577. The child neurology inpatient department admitted: 2008 – 335/4295 (7.8 %), 2017 -616/5834 (10.5 %), 2022-853/4577 (18.6%) patients. The total number of patients who were seen at outpatient department of Pediatric Clinic was: 2008 – 40 000, 2013 – 50 000, 2022- 42 440 patients. The child neurology outpatient department evaluated: 2008 - 3194/40 000 (8%), 2017 -3705/50 000 7.4%), 2022- 3293/42 400 (7.8%) patients.

Conclusion: The number of patients referred to the pediatric neurology departments is increasing. It is important to define the role of primary care pediatrician and reduce to need for tertiary canter referrals. Primary care pediatricians should take a more active role in the process of diagnosing the children with neurodevelopmental disorders.

KEYWORDS: child neurology, neuro developmental, limited resources

Transverse Colon Volvulus in a Neurologically Impaired Girl

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Introduction: Transverse colon volvulus (TCV) in children is a rare entity. 40 cases have been reported in the worldwide literature. It presents with abdominal pain and vomiting and a history of chronic constipation. Intellectual disability can be predisposing factor for the TCV.

Case description: Transverse colon volvulus is an extremely rare cause of bowel obstruction. We present a case of TCV in a 14-year-old girl with mental retardation. On admission the patient presented with abdominal pain, vomiting and constipation for the 4-5 days. Vomiting was once a day. She was sub febrile up to 37.6 °C. Her abdominal examination revealed distended, tense, diffusely painful abdomen. Operative findings showed a 360-degree TCV. After the reduction of volvulus, loop ileostomy was performed the closure of the ileostomy and biopsy of the rectum were done on the 20th postoperative day. Biopsy showed the presence of ganglia cells. The patient was discharged 1 month after the surgery.

Discussion: It is a great challenge to make an accurate diagnosis of transverse colon volvulus. Majority of cases are diagnosed intraoperatively. Transverse colon volvulus represents only 1.5% of volvulus in children. Chronic constipation in neurologically impaired patients was a risk factor predisposing to volvulus.

Conclusion: Pediatric patients with neurological conditions and intellectual disability have an increased risk of transverse colon volvulus due to chronic obstruction.

Keywords: Transverse colon, mental retardation, bowel obstruction, volvulus

Comparison of Different Methods of Superior Vena Cava Flow Measurement in Preterm Infants

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Echocardiographic assessment of hemodynamic status is a determining factor in the adequate treatment of patients in the neonatal intensive care unit. Superior vena cava (SVC) flow represents surrogate marker for systemic blood flow.

Aim: We hypothesized that superior vena cava flow velocity measurements obtained by using a suprasternal or high parasternal view are comparable with those obtained from a subcostal long and short axis views, as well as using modified method including SVC area measurements. We also hypothesize positive correlation between SVC flow and flow on middle cerebral artery.

Methods: A prospective, single center, observational study in Pediatric Clinic, Center of Canton (CCU) Sarajevo that included 50 preterm infants. The enrolment period was from June 2021 to June 2022. Accepted permissible variability of the SVC flow value between individual measurement methods was +/-20ml/kg/min.

Results: Using the standard protocol flow over superior vena cava median value was 74.3 ml/kg/min (63.1-87.9). Second standard protocol median value was slightly higher at 80.8 ml/min/kg (64.8-100.1). Median flow value for modified method was 75.5 (67.5-99.7) ml/kg/min. Median flow value with second modified technique was 86.5 (68.1-98.6) ml/min/kg. We found positive correlation with middle cerebral artery pulsatility index (rho=0.284; p=0.046), which suggests that when flow in superior vena cava was increasing also was the flow in middle cerebral artery too. We found no correlation with the resistance index. No statistically significant cerebral artery correlation was found.

Conclusion: Different approaches to measuring SVC flow have justification and clinical utility, while there are potential limitations.

Keywords: SVC flow, preterm infant, cerebral blood flow

Supraventricular Tachycardia in Newborns

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Objective: Cardiac arrhythmias in the neonatal period can be found in 1% to 5% of newborns. Advances in monitoring techniques have enabled increased detection of neonatal arrhythmias, with some cases detected in utero. Identifying and treating of those arrhythmias can be challenging, especially in newborns without underlying congenital heart disease. In this review, we will focus on supraventricular tachycardia as the most common arrhythmia in neonates.

Topic review: The most common arrythmia in infants and children in general is supraventricular tachycardia (SVT), with an estimated incidence of 0.1-0.4% in the pediatric population. The first episode of SVT often occurs during the first year of life, mostly in the first 3-4 months. Developmental changes in cardiac electrophysiology result in different pathophysiology of SVT in different age groups. Correct diagnosis is important for treatment and prognosis. Diagnosis is established by taking into account perinatal history, physical examination, electrocardiogram, echocardiography and laboratory studies. Differential diagnosis of common and rare etiologies needs to be entertained. The prognosis depends on the nature of the arrhythmias, but in most cases, they resolve spontaneously or with a short-term medication administration. The complications include congestive heart failure and cardiomyopathies. Neurologic complications are also possible. Approximately one third of SVT may recur later on, especially during adolescence.

Conclusion: Arrhythmias in newborns are common and mostly benign. It is crucial to make a prompt diagnosis. Appropriate treatment and monitoring of children with potentially serious arrhythmias is of utmost importance.

Keywords: newborn, arrhythmia, supraventricular tachycardia

Indications and Results of Renal Graft Biopsy in Children After Kidney Transplantation

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Introduction: Evaluation of transplanted kidney tissue may provide important information for the care of the transplantation patient. Transplanted kidney biopsies can be performed with minimal risks in pediatric patients.

Aim: Analysis of indications and histopathological findings of renal grafts in transplanted pediatric patients treated in a single tertiary pediatric hospital in Serbia.

Materials and Methods: The analysis included patients who underwent renal biopsy between May 2001 and May 2022. All biopsies were performed with biopsy gun and were analyzed with light and immunofluorescent microscopy.

Results: The study group included 48 patients (60% males) who underwent 73 percutaneous transplanted kidney biopsies. Median age was 14.39 years (range 3-22 years). Indications for renal biopsy were increased levels of serum creatinine (86.2%), proteinuria (9.6%), positive results of serum and urine PCR for BK virus (1.4%) and delayed function of transplanted kidney (2.8%). According to histopathological diagnosis, the most common diagnoses were acute cellular graft rejection (28.8%), chronic cellular graft rejection (12.3%), and chronic allograft nephropathy (8.2%). Primary renal disease re-occurrence was observed in 4.1%, minimal kidney changes in 2.7%, primary graft disfunction in 1.4%, and acute vascular graft rejection in 1.4% of cases.

Conclusion: The epidemiology of graft rejection glomerular disease in our single-center report shows that increased levels of serum creatinine and proteinuria as one of the most confident determinants of kidney function are the most common indications for performing renal graft biopsy. Acute cellular graft rejection was the dominant histopathological finding, followed by chronic cellular graft rejection, and chronic allograft nephropathy.

Keywords: renal graft biopsy, kidney transplantation, graft rejection, allograft nephropathy

Antibiotic Resistance in Children with First Febrile Urinary Tract Infection Caused by Escherichia Coli

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Introduction: As the most common indication for antibiotic prescriptions in children, urinary tract infections (UTIs) represent a significant percent of pediatric care medical practice. Usual initiation of antimicrobial treatment is empirical with later adjustment according to the isolated pathogen. However, with intensity of antibiotic use, resistance of pathogens to those drugs becomes more intense.

The Aim: Analysis of antibiotic sensitivity and resistance patterns in children with first febrile UTIs during the period 2005-2022.

Materials and Methods: We conducted a retrospective review of hospital records of patients aged

1-36 months, with a diagnosis of first febrile UTI, who were discharged from the University Children’s Hospital’s Nephrology Department in Belgrade, Serbia. Urine samples were collected and analyzed on admission, during an antimicrobial therapy, and at the end of treatment. Antibiotic resistance rates were analyzed for ampicillin, ceftriaxone, ciprofloxacin, nitrofurantoin, trimethoprim-sulfamethoxazole (TMP-SMX), gentamicin, amikacin, ceftazidime and imipenem.

Results: A total of 747 patients (52.8% boys) were included in the study with a median age of 5.0 months (IQR 2.5-8.5). Escherichia coli was isolated in 644 patients (86.2%). Extended spectrum beta-lactamase (ESBL) was expressed in 43.9% of isolates. Multidrug resistance was observed in 43.2% of cases. Sensitivity larger than 90% was observed to nitrofurantoin, amikacin, and imipenem. Positive clinical response was observed in 94.5% of applied treatment.

Conclusion: There is a high sensitivity of Escherichia coli causing first febrile UTIs in children to nitrofurantoin, amikacin, and imipenem. Slightly less than half of E. coli isolates show ESBL positivity, and similar percent express multidrug resistance.

Keywords: urinary tract infections; antibiotic resistance; Escherichia coli

Distribution of Multi-Resistant Bacterial Species Among Different Pediatric Hospital Departments

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Introduction: Multi-resistance to antimicrobial medications represents a special issue in treating common infections. In-hospital environment is especially prone to developing antibiotic-related resistance and can usually show inter-departmental differences.

The Aim: Distribution analysis of multi-resistant bacterial resistance among different departments within single tertiary pediatric hospital.

Materials and Methods: Retrospective analysis of hospital records provided the data on infective agents detected in various clinical samples of patients up to 18 years of age hospitalized in University Children's Hospital, Belgrade, Serbia during the period January 1st, 2023 – February 28th, 2023. Results: Inter-departmental distribution analysis was performed on 230 samples. Department with highest number of methicillin-resistant Staphylococcus aureus positive samples was surgical intensive care unit (20%); of vancomycin-resistant Echinococcus – neonatal half-intensive care unit (28%); of Acinetobacter species, and Klebsiella species – neonatal intensive care unit (41% and 33%, respectively); while of Pseudomonas species and Escherichia coli – cardiac surgery department (37% and 22%, respectively).

Conclusions: Intensive care units are characterized by highest detection rate of the majority of multiresistant bacterial species, compared to other pediatric clinical departments. Cardiac surgery department is another high-risk department, having the most of Pseudomonas species and Escherichia coli-positive samples, when compared to other clinical pediatric departments.

Keywords: multi-resistance, antibiotics

Lessons Learned From the COVID-19 in Pediatric Rheumatology

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Topic review: The most important lesson that COVID-19 taught us was the power of human immunology. Science tries to get to this problem from the view of a functional immunology. Extremely interesting is the attempt to understand how the virus can induce infection and post infectious complications. Type I Interferon turned out to be the most important cytokine. Abnormality in interferon production and abnormality in the response to interferon partially explain severe COVID-19 cases. Why is COVID-19 so mild in children? “Classical “Kawasaki disease and multisystem inflammatory disease in children connected with COVID-19 (MIS-C) the question is – are they the same disease? MIS-C – is it autoantibody mediated disease or superantigen-mediated T-cell activation? Virus persistence? There is evidence of persistent viral reservoirs in the intestine following COVID-19. That could be a trigger for MIS-C. Special consideration are immune complexes, innate immune cell activation and coagulopathy in MIS-C. There is also energy allocation hypothesis to explain mild COVID-19, viral persistence & MIS-C in kids. A rare disease that we know very little about is the severe acute hepatitis in children following SARS-COV2 infection. Take home messages so far: a) MIS-C hyperinflammation differs from that seen in COVID-19 infection related hyperinflammation; b) “classical“ Kawasaki disease and MIS-C are definitely different diseases; c) IL-17 leads to hyperinflammation in „classical“ Kawasaki that is not case in MIS-C; d) hypothesis of autoantibody mediated disease in MIS-C.

Keywords: COVID-19, infection, post infection disease, MIS-C/A/N/V

Case report: Treatment of Acquired Knee Lymphangioma with Sclerotherapy

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Abstract

Background: Lymphangiomas are benign malformations of the lymphatic system usually treated with surgical excision or laser ablation, with different success rates and often relapses. Besides surgical excision as a treatment standard, viable therapy and non-surgical treatment for lymphangioma is sclerotherapy.

Case description: case of an 18-year-old male patient with a history of 6 years of posttraumatic knee lymphangioma, already unsuccessfully treated with surgery and laser ablation, presented to our medical institution with knee pain, extensive edema, and limited walking possibilities.
Three UGFS (ultrasound-guided foam sclerotherapy) treatments using 1% polidocanol over six months are performed. Results are analyzed using ultrasound and MRI pre-intervention and follow-up exams, the presence of symptoms, and walking improvement.

Discussion: At the follow-up two months after the third and final sclerotherapy treatment, all received within six months, the lymphangioma volume decreased from 149,5 mL to 72,72 mL, with a total volume reduction of 48.64%. No severe complications were reported. Aesthetically, knee edema has shown a significant decline. The patient's walking significantly improved, and he returned to normal activities.

Conclusion. Sclerotherapy is a safe, simple, effective, and inexpensive method of treating lymphangiomas and other vascular abnormalities, even in cases where surgical treatment is contraindicated.

Keywords: lymphatic malformations, lymphangioma, sclerotherapy, polidocanol,

The night shift work influences the general health of employees In the department of emergency medical centre of Canton Sarajevo

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Abstract

Introduction: Night shift work is considered an enemy of positive eating and living habits and affects the overall human health. Night shift work cannot be avoided, but one can try to reduce its negative impact.

Methodology: This study aimed to investigate the effect of night shift work on the general health of workers in the Department of Emergency Medical Centre of Canton Sarajevo (*ZHMPKS*). A randomized observational study was performed. Data were collected using an anonymous questionnaire and measuring blood pressure. The study included 200 samples, of which 100 were the study group, and 100 were the control group.

Results: It was concluded that there are statistically significant differences in most of the examined variables. Some of the conclusions of this paper indicate that results depended on the individually inspected health problems. The study group leads in the number of heart attacks, hypertension, hyperlipidemia, cancer, and sleep disorders, and the variable "other." In contrast, the control group leads in strokes, diabetes, thyroid disorders, digestive disorders, and psychological problems. BMI (Body mass index) was equally high in both groups, although the study group was expected to have a higher BMI. Blood pressure was significantly higher in the study group.

Conclusion: Given the importance of the topic and the growing problems associated with night shift work, it is necessary to explore the case on a larger sample and provide guidelines for reducing the harmful impact of night shift work on human health.

Keywords: night shift work, ZHMPKS, health

Usage of tranexamic acid in trauma: literature review and descriptive analysis of principal themes

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Abstract

Background: Urgent treatment with tranexamic acid (TXA) reduces bleeding as cause of death and all-cause mortality, without increasing the risk of thrombotic adverse events. TXA reduces head injury as cause of death in patients with traumatic brain injury.

Aim: The primary goal is to present tranexamic acid, given that it is a very effective and potent drug that is often used in developed countries, and in our region its use is negligible. More recently, research work has conveyed its effectiveness in the reduction of fatal traumatic hemorrhage when used within 3h of injury onset, especially in individuals aged 18 years and above.

Materials and methods: This study is designed as systematic review, so an extensive literature search of PubMed databases was conducted using a combination of the following words: tranexamic acid, pre-hospital, hemorrhage, trauma, mortality, ambulance, and paramedics.

Results: There has been a lot of association of TXA with trauma patients since the CRASH-2 trial. The results of the CRASH-2 trial are highly generalizable and the benefit from TXA was found despite the effect reduction by the large number of patients that did not receive blood transfusions or surgery.

Conclusion: TXA may be well suited for the management of traumatic hemorrhage in prehospital and early hospital settings. Despite multiple studies on the use of TXA in clinical practice, there is no consensus regarding the use of TXA for the management of hemorrhage in trauma patients in the prehospital environment.

Keywords: tranexamic acid, txa therapy update, crash-2, crash-3, trauma

Clinical characteristics, diagnosis and management of ocular sarcoidosis

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Abstract

Background: Sarcoidosis is a multysistem autoimmune disease presenting with the formation of noncaseating granulomas in different tissues, including the eye. Any structure of the eye and its adnexal tissues can be affected. Ophthalmic manifestations can be isolated, or presenting simultaneously with other organ involvement. A wide range of treatment modalities is available for the management and long-term control of the inflammatory process in ocular sarcoidosis which is critical in order to prevent complications and visual impairment.

Aim: To review the current knowledge on the diagnostic and therapeutic approach of ocular sarcoidosis, with emphasis on the importance of clinical examination, multidisciplinary approach and the role of new therapeutic modalities.

Methods: A thorough systematic literature search was performed in electronic databases using a combination of "ocular sarcoidosis", "sarcoid uveitis", "diagnosis of ocular sarcoidosis", "ocular sarcoidosis AND immunosuppression/biologic agents" search items. We reviewed multicenter studies, large retrospective cohorts and reviews published between 1990 and 2021. Only studies in English were included.

Results: Uveitis is the most common feature of ocular sarcoidosis, followed by conjunctival and lacrimal gland involvement. Complications, such as cataract and glaucoma, may be a result of the inflammatory process or adverse effects from therapy. Diagnosis is based on medical history, clinical, imaging and laboratory examinations, whereas histological confirmation from the affected tissue(s) remains the gold standard. Topical and systemic corticosteroids are used as the first-line therapy for sarcoid uveitis. Biological and immunosuppressive agents serve as an advanced solution in the management of chronic and persistent cases.

Conclusion: The diagnostic and therapeutic modalities for ocular sarcoidosis have evolved over time, providing a more efficient approach. However, the management of disease still remains challenging in several cases. Setting an early diagnosis and starting appropriate therapy are crucial for preventing complications. Future studies should aim to develop more sensitive biomarkers and more effective and safe immunomodulatory agents.

Keywords: Ocular sarcoidosis, granuloma, uveitis, biopsy, immunosuppression

Dynamics And Interaction Between Lower Back Fusion And Total Hip Arthroplasty: A Systematic Review

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Abstract

Introduction: Hip-spine syndrome, which is characterized by the co-existence of degenerative conditions affecting both the hip joint and spine, is successfully treated with total hip arthroplasty (THA) and lumbar spinal fusion (LSF).

Objectives: To understand the interaction between THA and LSF that increases the risk of THA dislocation when performed on the same individual.

Methods: A systematic literature search of PubMed and MEDLINE databases from December 31, 2013, to January 1, 2023, was performed according to the PRISMA statement, emphasizing the relationship between spine fusion and total hip arthroplasty and their interaction.

Results: Out of 86 studies, 17 studies met the inclusion criteria. Four meta-analyses and three review articles were excluded as well. Of 10 themes addressing the interaction between THA and LSF, three studies did not specify the THA approach; 4 four approaches were identified, two only posterior, and one only the anterior approach was used. The patients' mean age was 35.3 to 93 years. Four articles included single and multilevel LSF, 1 had only multilevel LSF, and in 5 pieces, it was not specified. In four studies, the THA was performed before fusion, one LSF was completed before THA, and five articles covered both.

Discussion: Recent studies show an increasing trend of patients undergoing THA and LSF. However, their interaction could affect individual biomechanics, leading to increased post-surgical complications and THA dislocation risks. Careful consideration and collaboration between healthcare providers are crucial to minimize these risks. While some studies emphasized the importance of mobility of the L5S1 segment, the other authors emphasized the importance of the length of fusion and not the L5S1 segment itself. Two surgically associated factors appear to be 1) greater cup inclination and 2) failure to repair the posterior joint capsule, especially with the posterior approach. All cups inclining more than 60° belonged to the dislocated group.

Conclusion: THA and LSF significantly impact the biomechanics of the hip and lumbar spine. Healthcare providers should know the potential risks of performing both procedures on the same patient and take appropriate precautions and surgical techniques. Further research is needed to fully understand the relationship between THA and LSF and their interaction in preventing THA dislocation.

Keywords: Spinal Fusion, Total Hip Arthroplasty, Total Hip Dislocation.

A prehospital presentation of a right common iliac artery rupture in a 61-year-old patient

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Introduction: Isolated iliac aneurysms are rare and usually present with rupture. Chronic iliac aneurysms typically induce chronic back pain that radiates down the lower limb due to compression of surrounding structures and/or thrombotic deposits that limit distal circulation. A secondary acute rupture can happen at any time.

Case description: An emergency medical team was dispatched to a 61-year-old reportedly unconscious male patient. Upon arrival, the team finds the patient conscious, sweating profusely, and complaining of severe pain in the lower abdomen. His wife states that he had gotten up to urinate, and then lost consciousness for a few minutes. His blood pressure was non-measurable, heart rate was 115 beats per minute, and his abdomen was soft to the palpation with tenderness and pain in the suprapubic region. The patient stated that tingling feelings began in his right leg and that he had a partial loss of motor and sensory capabilities. Two intravenous lines were placed and a slow infusion of crystalloids was administered and the patient was transported to a tertiary medical care. Ultrasound imaging and computed tomography revealed major fusiform aneurysms of the abdominal aorta, both common iliac arteries, and a rupture of the right common iliac artery, where all three of them had thrombotic formations.

Conclusion: In prehospital settings, diagnosing this pathology can be exceptionally challenging due to divergent clinical presentations, scarce diagnostic resources, and no screening programs. Incorporating POCUS (Point-of-Care ultrasound) into prehospital care in Bosnia and Herzegovina could enable expeditious identification of significant peripheral arterial pathologies and lead to improvements in clinical management.

Keywords: aneurysm, ruptured aneurysm, common iliac artery, thrombosis, POCUS

Vagus nerve stimulation in the treatment of drug-resistant epilepsy: a pediatric case report and literature review

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Abstract

Background: Electrical brain stimulation provides a non-destructive alternative for patients who usually reach the end of the road with medication treatment and are not candidates for brain resection or ablation. Vagus nerve stimulation (VNS) has been most frequently used and proven to be a safe and effective treatment of drug-resistant epilepsy. The main goal is to show a clinical case with indications for sophisticated subspecialist preoperative diagnostic preparation and become a candidate for minimally invasive neurosurgical treatment (vagal stimulator implantation).

Case description: We present a 19-year-old patient whose seizures were successfully controlled by VNS after an ineffective response to intensive pharmacotherapy. He was diagnosed with drug-resistant epilepsy at the age of 11. In 2015, the VNS was planted after three years of refractory seizures in this patient without evident side effects, which finally controlled the seizure in the acute phase. The device is implanted under local or general anesthesia, and the life of one battery lasts 3 to 4 years. The potential of VNS was shown after the battery was depleted and the seizures started to return. In 2018, he underwent another battery replacement operation, after which we regained control over the attack. Side effects are mainly related to stimulation, and most are reversible. Every six months, he has rules where the device is checked again and possibly adjusted to the patient's requirements. The quality of life of the patient and his family has significantly improved.

Conclusion: Vagus nerve stimulators significantly reduced the number of epileptic seizures and improved the child's and his family's quality of life.

Keywords: Vagus nerve stimulation, drug-resistant epilepsy, pediatric population.

A Rare Indication for Surgical Resection of Focal Nodular Hyperplasia: Hepatoduodenal Ligament Compression

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Abstract

Introduction: Focal nodular hyperplasia (FNH) is the second most common benign hepatic tumor. Although the etiology and pathogenesis remain unclear, it is mostly found incidentally in women aged 25-50. It is usually treated conservatively, and more radical interventions are often not required. In this case report, compression of the hepatoduodenal ligament required surgery.

Case presentation: In 2012, a 47-year-old female patient presented with dull, mild, continuous pain caused by a benign liver tumor. Contrast-enhanced MRI revealed a tumor 8 cm in diameter in the V and VI segments, consistent with focal nodular hyperplasia. The patient has been followed for the past ten years, and the medical history shows pain attacks that affected her daily life and hospitalization due to cholangitis attacks. The last MRI study revealed a nodule progression to segment IVb with compression on the hepatoduodenal ligament and displacement of the right kidney and the gallbladder. Considering indications, surgical removal was performed.

Discussion: In most cases, FNH is an asymptomatic benign liver tumor. Infrequent abdominal pain, nausea, or vomiting can occur. The severity of these symptoms required surgical intervention in only two reported cases. Moreover, if FNH presents unusually, as in our case, surgery is necessary to relieve symptoms and exclude the differential diagnosis of fibrolamellar hepatocellular carcinoma.

Conclusion: We present a clinical case of rare, symptomatic FNH that compressed hepatoduodenal ligament, caused biliary stasis, a disorder in liver blood supply followed by disabling symptoms, and was associated with cholangitis. To our knowledge, there have been only two similar reported cases.

Keywords: focal nodular hyperplasia, compressed hepatoduodenal ligament, benign liver tumor

Psychological distress in people with multiple sclerosisduring COVID-19 pandemic

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Abstract

Background: The COVID-19 pandemic affects people's mental health by increasing the rate of psychological distress, including depression, anxiety, and sleeping problems. Individuals with multiple sclerosis (MS) already have maladaptive coping strategies, making them more sensitive to the psychological effects of the outbreak.

Aim: The aim is to evaluate psychological distress caused by the COVID-19 outbreak in MS patients.

Methods: The search algorithm was obtained by combining the terms „multiple sclerosis, „COVID-19“, “depression,” and „anxiety. “We searched PubMed and found 14 applicable articles published from April 2020 to January 2021.

Results: Studies show that MS patients are more prone to become depressed and anxious during the COVID-19 pandemic, followed by the increased use of antidepressants. Females and the younger population are at higher risk of developing psychological distress. MS patients with somatic and psychiatric comorbidities are more susceptible to severe psychological consequences. Also, patients with MS are reporting poorer sleep quality. The quality of life before and during the lockdown is reduced regarding health changes and emotional problems causing limitations. On the contrary, some patients with relapsing-remitting MS experience better quality of life considering social functioning and sexual satisfaction, especially females. However, people with progressive MS report little or no change in mental health since they are used to taking extra careful preventive measures that are possibly reducing psychological distress. Also, due to considerable physical disability, there are no extreme and forceful changes in the everyday lives of MS patients with progressive disease. They were already socially isolated before the pandemic and have lived with increased uncertainty due to the unpredictable nature of their condition.

Conclusion: MS patients, especially females, younger people, and those with additional comorbidities, are at higher risk of developing psychological distress, while patients with progressive type of disease are less prone to supplemental psychological distress caused by the COVID-19 pandemic.

Keywords: multiple sclerosis, COVID-19, psychological distress, depression, anxiety.

Title: DERMATOPHYTOSIS AMONG OUTPATIENTS IN CANTON SARAJEVO

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Background: Dermatophytes are fungi that infect keratinized tissues causing a disease known as dermatophytosis. The most common clinical manifestations of skin and nail infections are tinea capitis, tinea corporis, tinea pedis, and tinea unguium (onychomycosis). Transmission of dermatophytes may occur by contact with infected humans, animals or a contaminated environment. Fungal culture, although being time-consuming, is still considered the „gold standard“ to confirm the diagnosis. Collecting the appropriate clinical samples increases diagnostic accuracy.

Aim: To show the rate of isolation and most common pathogens of dermatophytosis among outpatients in Canton Sarajevo in a one-year period.

Materials and methods: This is a descriptive epidemiological study. We used outpatient reports of samples analyzed for dermatophytes in the Microbiology Laboratory of the Institute for Public Health of Canton Sarajevo in the period from 01.03.2022- 01.03.2023. The samples were examined under microscope for hyphae and conidia, and cultured on Sabouraud dextrose agar and Dermatophyte agar (Liofilchem).

Results: A total of 275 skin, scalp and nail scraping samples were analyzed in this one-year period. The predominant sample was nail scraping (N=195) with 38,7% (N=76) of positive cultures. Skin scrapings were positive for dermatophytes in 44,2% (N=23) and scalp scrapings in 32,1% (N=9) of specimens. The predominant pathogen in skin and scalp samples was Microsporum canis while Trichophyton spp. was the most common isolated dermatophyte in nail scrapings.

Conclusion: Our study gives an insight into the prevalence of dermatophytosis among outpatients in Canton Sarajevo. An accurate diagnosis is critical for early treatment and to reduce transmission.

Keywords: dermatophytosis, dermatophytes, outpatients

Title: Diagnosis and treatments of primary cutaneous lymphomas- review of existing guidelines

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Background: The diagnosis of primary cutaneous T-cell lymphomas (CTCL) can be problematic and is usually delayed, especially in the early stages of the disease. The majority of CTCLs are indolent and only a small group has an aggressive course.
Aim: The goal of this presentation is to review existing guidelines for the diagnosis and treatment of primary cutaneous lymphomas.
Material & methods: A review of existing international guidelines in combination with own experience of the treatment modalities used at the Sahlgrenska University Hospital in Gothenburg, Sweden.
Results: The diagnosis of CTCL is based on the clinical picture and pathological, immunohistochemical and molecular findings. Despite the obvious clinical picture, in many cases it is necessary to repeat the skin biopsy to confirm the diagnosis. CTCL therapy is mainly aimed at relieving symptoms since there is no curative treatment other than allogenic stem cell transplantation. The treatment targeted the skin, the so-called skin directed therapy (SDT) includes topical corticosteroid therapy, phototherapy, and radiation. SDT is usually used in the early stages of the disease, while systemic therapy with retinoids, methotrexate and immunomodulatory treatments are used in more severe forms of the disease. Diagnostics and treatment of more severe forms of the disease require a multidisciplinary team engagement based on the close cooperation of dermatologists, pathologists, hematologists and oncologists. This indicates the importance of a qualified healthcare system to enable centralized and professional monitoring of patients with this diagnosis.
Conclusion: In order to standardize the care of patients with CTCL, it is necessary to know and follow international guidelines for the diagnosis and treatment of these patients. Since the disease is rare, it should be treated and monitored in expert clinics with good experience and knowledge of CTCLs.

Keywords: primary cutaneous lymphoma, diagnostics, treatments

Malignant Melanoma: Norwegian Guidelines

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Background and aims: Malignant melanoma causes 90% of skin cancer mortality and its incidence is on arise. The diagnosis of melanoma can be made clinically and be confirmed with dermatoscopy. If a melanoma is suspected, a histopathological examination is always required.
Method: The Guidelines are multi-disciplinary collaboration of experts from dermatology, oncology, plastic surgery, genetic, ophtalmology and pathology and was formed to make recommendations on malignant malanoma diagnosis and treatment, based on systematic literature reviews and the experts' experience.
Results: Melanoma shall be classified according to the 8th version of the American Joint Committee on Cancer classification. A stage-based follow-up scheme is proposed to detect relapses and secondary primary melanomas as early as possible. It will be presented Norwegian National action program with guideline for diagnostics, treatment and follow-up of malignant melanoma with mentioning of European interdisciplinary guidelines for melanoma, American Join Committee on Cancer classification and UK guidelines.
Conclusion: the aim of guidelines is to help standardise practice in management of malignant melanoma across the country in the spirit of best evidence based medicine and are subjected to periodical revisions.

Keyword: malignant melanoma, guidelines, follow-up, treatment, staging, menagement

Evolving Treatment of Psoriasis, Testimony from a Norwegian Dermatologist

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Introduction: Psoriasis is a chronic, inflammatory, immune mediated cutaneous disorder that affects around 2% of the Caucasian population but can affect all ethnical and racial groups. It has a complex immunopathological basis with influence of environmental factors and genetic factors. During the last few decades, basic research focusing on the pathogenesis of the disease has lead us to development of new therapies which has revolutionized the daily management of psoriasis.
Methods: search through the journal system of one clinician who has been working with psoriasis patients for 30 years.
Results: Cases presentation with demonstration of recorded visual and anamnestic data.
Conclusion: The impact of new treatments options on daily dermatological practice will be demonstrated. Clinical practice has been fully changed.

Keywords: psoriasis, treatment, systemic therapy

ADJUVANT THERAPY OF MALIGNANT MELANOMA

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Objective: To present current advancements in adjuvant immunologic therapy in treating malignant melanoma.

Topic review: Malignant melanoma is one of the most dangerous skin cancers. Adjuvant therapy means utilisation of various forms of systemic therapy after complete surgical excision of melanoma. It includes immunotherapy, cytokine therapy, chemotherapy and other non-specific forms of adjuvant therapy. Introduction of new immunologic drugs, used as monotherapy or combined with other agents, has improved overall survival rate, even in patients with advanced metastases.

Conclusion: Significant success so far and rapid development of new immunologic drugs leads us to believe that soon may be even more successful options in treatment of this dangerous disease.

Keywords: melanoma, adjuvant therapy, immunotherapy

Title : The sequence of diagnostic procedures in Incontinentia pigmenti

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Introduction

Incontinentia pigmenti (Bloch-Sulzberger syndrome) is a rare X-linked genetic disorder with an estimated prevalence of 1.2/100.000 (Orphanet report series, 2020). It appears almost exclusively in females and is usually lethal in males (Landy and Donnai, 1993). It is caused by a mutation of the *IKBKG* gene localised on the X chromosome, an intragenic deletion of *IKBKG* exons 4-10, which is the only gene known to be associated with IP. This mutation is present in 75.1% of IP cases (Fusco et al, 2014). The *IKBKG* gene product activates the nuclear factor kappa B (NF-κB) transcription factor which regulates the expression of hundreds of genes in almost all cells. Clinical manifestations of IP occur as a consequence of enhanced apoptosis due to this mutation (Abe et al, 2011). The most prominent clinical manifestations of IP are considered to be skin changes, which represent major IP diagnostic criteria (Minic et al, 2014, Clin Gen). Skin changes in IP occur along the lines of Blaschko throughout four stages: vesiculobullous (I), verrucous (II), hyperpigmented (III), and atrophic or hypopigmented stage (IV) (Minic et al, 2014, Clin Gen). The skin changes are usually combined with dental, ocular and central nervous system (CNS) anomalies considered as minor criteria (Minic et al, 2014, Clin Gen).

Aim of the study

Non-skin changes can be of great prognostic and diagnostic value in cases where skin changes are discrete from the very beginning or during their evolution. In order not to overlook any of them and their correlation with this rare disease, establishing a precise sequence of diagnostic procedures would be a crucial element in diagnosing IP.

Materials and methods

The life span of the patients depends on minor criteria, extracutaneous manifestations. CNS anomalies usually occur from neonatal through early infantile period and represent the most important threat to normal life of patients with IP. This is why Magnetic resonance imaging (MRI) is recommended even for the patients without obvious neurological findings.

Alongside clinical examination, dermoscopy is used as a complementary method (Minic S, et al. Dermatol Pract Concept. 2022), followed by skin biopsy and subsequent histopathological results. The clinical examination is followed by genetic analyses: the *IKBKG* gene analysis, the X-chromosome inactivation assay, Next Genome Sequencing (NGS) analyses, and Whole Exome Sequencing (WES) analysis. In the Covid-19 times, analyses of the autoantibodies including IFN-α2a and IFN-ω are suggested as well.

Conclusion

In diagnosing rare diseases, such as IP, establishing and following a default sequence of examination procedures is of equal importance as the existence of precise diagnostic criteria and their timely recognition.

Keywords : Incontinentia Pigmenti, IKBKG gene, diagnostic criteria, examination procedures, X - chromosome inactivation, WES, NGS

Title: Bioequivalence of topical preparations in dermatology

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Introduction: Bioequivalence (BEq) represents the similar bioavailability of two preparations, innovator and generic drug, within the framework of legal regulations. In other words, a similar amount of the same active substance reaches the systemic circulation from two preparations at the same rate. Of note, BEq differs from therapeutic equivalence.

Aim: We will present how the BEq of topical preparations is determined to clarify an important stage in the development of dermatological drugs.
Methods: Pubmed search covers a period of ten years, and the keywords are: bioequivalence, dermatological drugs, and skin.
Results: For preparations for oral use, we compare their pharmaceutical characteristics (the type of active substance, dose, pharmaceutical formulation, and the route of administration) and pharmacokinetic properties (the rate and extent of absorption and availability at the site of drug action); their Cmax and AUC may differ between 80 and 125%. However, it is necessary to apply other methods for topical dermatological preparations that are complex and challenging. There are cases when these tests are not necessary (a waiver): There are cases when these tests are not necessary (a waiver): the drug is in the form of a solution; they have the same active substance, concentration, and dosage form; there are no other ingredients that would significantly change the release of the drug. The methods determining BEq of local dermatological preparations include classic pharmacodynamic studies (e.g., blanching assay for dermatosteroids) and newer methods (e.g., dermatopharmacokinetic studies - tape stripping, dermal microdialysis, and spectroscopy studies - near-infrared spectrometry and confocal Raman spectroscopy). The topical drug classification system includes four classes of preparations depending on their qualitative and quantitative composition and the speed of in vitro release.
Conclusion: The BEq of dermatological preparations for topical use is significantly different from the BEq of drugs for systemic use and requires special analytical techniques.

Keywords: bioequivalence, dermatological drugs, and skin.

Topic: Pruritus in hemodialysis patients: Results from Fresenius dyalisis center, Banja Luka, Bosnia and Herzegovina

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Introduction: Uremic pruritus is a common and distressing complication of end-stage renal disease. A global cross-sectional study of 18,000 hemodialysis (HD) patients reported a 42% prevalence of moderate or extreme UP, which was strongly associated with sleep disturbance, depression, impaired quality of life, and mortality. Pruritus is commonly encountered in individuals with end-stage renal disease on hemodialysis.

Materials and Methods: This cross-sectional study. The data were analyzed by descriptive statistics- Wilcoxon Signed Rank Test and Chi-square test with Yates correction factor.

Results: Sixty and two patients with ESRD free from systemic, skin or psychiatric disorders and other secondary causes attributable to pruritis, undergoing maintenance HD at Fresenius dialysis center, Banja Luka, Bosnia and Herzegovina were evaluated for pruritus. Pruritus has been discovered in 21 out of 34males (54,8%) and 6 out of 28females (22,2%). Our study as many others showed that pruritus is very common (45.2%) in HD patients. Applying c2 test with Yates correction factor is highly statistically significant by gender. Research of the gender revealed that pruritus appeared more in men analysis. There were no significant differences between other measured markers: to age, duration of hemodialysis in months per patient, serum levels of phosphate, PTH, KT/V (index of dialysis dose) in patients with pruritus and in patients without pruritus.

Conclusions: This first cross-sectional study describes key features UP in Republic of Srpska (Bosnia and Herzegovina) and results that the UP is significantly more common in men. This study demonstrates that the serum level of PTH and phosphate isn’t associated with the incidence of pruritus in HD patients.

Keywords: uremic pruritus, ESRD, hemodialysis

Prehospital cardiopulmonary resuscitation outcomes of the Emergency medical service Zenica

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Background: Sudden out-of-hospital cardiac arrest (OHCA) is the most time-critical medical emergency. Successful resuscitation relies on a strong chain of survival with the community, dispatch center, ambulance, and hospital working together. If the community response does not restart the heart, resuscitation is continued by emergency medical services staff.

Aim: This study aimed to present an overview of current information on OHCA incidence and survival rates. The incidences are discussed in various populations, along with the factors affecting the prognosis and outcomes of these patients.

Materials and methods: Data was collected using archived reanimation protocols and reports during a five year period, from January 1st, 2017 to December 31st, 2022. Collected data was analyzed using descriptive and comparative statistical methods.

Results: Data for the observed period showed that there were 209 patients with OHCA, with the gender distribution of 70,81% men and 29,19% women. The average age of observed patients was 64,54. Bystander reanimation was present at 19,62% of patients, and bystander reanimation was qualified as quality at 58,54%. The most frequently recognized initial rhythm was ventricular fibrillation (37,79%).

Conclusion: OHCA is a major public problem because though the process is potentially reversible, the probability of recovery is small. The chain of survival starts with immediate recognition and rapid access so the effective outcomes can be expected only by effective training the community in early identification and initiation of CPR.

Keywords: out-of-hospital cardiac arrest, emergency medicine service, OHCA outcomes, survival rate, chain of survival

Effects of the COVID-19 pandemic on incidence and outcomes of OHCA: Field experience of the Institute for emergency medical assistance of Canton Sarajevo

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Background: The COVID-19 pandemic caused death and suffering worldwide, pushing healthcare systems to their limits. While we're still picking ourselves up, the aftermath of the pandemic is glooming over us and the effects on incidence and outcomes of out-of-hospital cardiac arrest (OHCA) are still unclear.

Aim: Our aim with this study was to present and compare the incidence and outcomes of OHCA before and during the COVID-19 pandemic that were resuscitated by teams of the Institute for emergency medical assistance of Canton Sarajevo.

Materials and Methods: We collected data from the official reports of resuscitation efforts of the Institute for the 2017-2022 year period. That included the number of resuscitation efforts for OHCA, their initial rhythm and outcomes. The outcomes are considered successful based on achieving a return of spontaneous circulation (ROSC).

Results: Our results showed a noticeable dip in the number of initiated resuscitations for OHCA cases, a drop of 25% with a decrease of successful outcomes by 1.7%, from 20.3% to 18.6%.

Conclusion: We believe the difficulty of resuscitation in out-of-hospital cases with respect to adhering to safety protocols, lack of personnel, chronic fatigue and stress led to fewer initiations of resuscitation and decreased chances of achieving ROSC. Further research considering these pitfalls should lead to more practical guidelines for safer resuscitations in OHCA cases during a pandemic.

Keywords: COVID-19, OHCA, pre-hospital, resuscitation, pandemic

Attitudes of students and teaching staff regarding the importance of first aid training

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Introduction. The need for education on providing first aid in school is important due to the events that require the provision of assistance.

Aim. To examine the level of first aid knowledge and interest in first aid education among students and teachers, examine their attitudes about the need to introduce first aid education into curricula.

Methods. This paper is an observational cross-sectional study with analytical-descriptive methodology. The research was conducted on a sample of primary and secondary schools in Zenica. An anonymous questionnaire with closed questions was used.

Results. The research included 160 students and 50 teachers. All respondents thought they knew what first aid is. 70% of students have never attended a first aid class, and 86% of teachers have attended at least once. 62.5% of students have never been in a situation where someone needed first aid, and neither have 36% of teachers. 20.6% of students would not know how to provide first aid, as well as 14% of teachers. 83.7% of students and 42% of teachers never provided first aid. 67% of students and 96% of teachers agree that first aid should be taught at school. On a scale from 1 to 5, the rating for the usefulness of knowing first aid for 59.3% of students and 62% of teachers was 5. 39.3% of students did not know the emergency number.

Conclusion. Guidelines on first aid change, so knowledge must be updated. Respondents believe that first aid should be taught at school.

Keywords: first aid, school, education, students, teachers

A case of massive pulmonary thromboembolism and its relations to COVID19 and hereditary thrombophilia

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Introduction: Pulmonary thromboembolism (PTE) occurs when a thrombus becomes lodged in an artery in the lung and blocks blood flow to the lung tissue. Pulmonary embolism symptoms can vary greatly, depending on how much of the lung is involved, the size of the clots, whether the patient has an underlying lung or heart disease.

Case description: A 35-year-old man stated that he had been getting very tired in the last 20 days, he could hardly bear physical activity, and he felt palpitations often. He stated that he had COVID-19 twice. During the physical examination, the auscultation of the lungs and heart revealed normal breathing sounds bilaterally and normal heart sounds. His blood pressure was 120/85mmHg; ECG: sinus rhythm, heart rate:80/min, negative T waves from V1-V4 leads; spO2: 94%. The patient was sent to the laboratory to check the values of serum D-Dimer and CKMB (D-Dimer: 1.63 mg/l (<0.5 mg/l); CKMB: 12.4 U/l (0-24 U/l), and also for an X-ray of the lungs, which revealed prominent bronchovascular markings. CT of the thoracic organs showed a bilateral massive PTE. A cytogenetic test for thrombophilia confirmed a factor V (Leiden) mutation.

Conclusion: The most important aspect for diagnosing PTE is a well taken medical history which can give information about fatigue and dyspnea that last a longer period, changes in physical activity, and previous COVID-19 infections. ECG changes are highly unspecified, with this patient having negative T-waves in precordial leads. The diagnosis does not often correlate with symptoms, which usually leads to undiagnosed pulmonary thromboembolism.

Keywords: pulmonary thromboembolism, COVID19, Leiden thrombophilia

The increasing burden on emergency departments

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Background: Over the last years there has been a dramatic increase in the number of patients admitted to emergency departments (EDs) around the world.

Aim: To retrospectively evaluate yearly reports of the ED of General hospital “Prim dr Abdulah Nakaš” Sarajevo for the period 2015-2022.

Methods: The number of patients admitted to the ED and treated by emergency physicians in the period from 2015 to 2022. For the same period, the patient-to-doctor ratio and number of patients admitted for inpatient hospitalization after initial evaluation in the ED were evaluated.

Results: According to the correlation analysis, there was a statistically significant linear increase in the number of provided services ($r=0.682$; $p=0.033$) and the number of treated patients ($r=0.717$; $p=0.015$) in the ED for the period. However, the linear increase in the number of inpatient hospitalizations after initial ED evaluation was not significant ($r=0.518$; $p=0.131$). There was a significant increase in the patient-to-doctor ratio (1: 2.5), ($p<0,01$). There was a noticeable drop in the number of provided services, treatments and hospital admissions during 2020 due to the COVID-19 pandemic.

Conclusion: During the 2015-2022 year period, there was a constant increase in the number of patients admitted to the ED without a proportional rise in the number of physicians working in the ED. Improvement of coordination between the primary and emergency care physicians is recommended in order to facilitate a better selection of patients who are referred to the ED.

KEYWORDS: Emergency department, Emergency physicians, Patients

Cerebral contusions in patients admitted on Emergency department of Zenica Cantonal Hospital- athree year retrospective study

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Background: Cerebral contusions originate from the impact between the cerebral cortex and the inner skull surface. They can cause permanent damage to brain tissue through primary and secondary injury. The degree of primary brain injury is directly related to the value of absorbed kinetic energy in the moment of impact. On the other side, secondary brain injury is connected to the physiological response to brain trauma.

Aim: The goal of this study is to review a few important topics in relation to cerebral contusions which include the most common mechanism of injury, variety of clinical presentations, evaluation of GCS value on admission, most common localization, and diversity of related head injuries.

Methods: In this retrospective study data was collected from the Emergency department of Cantonal Hospital Zenica in the period from January 1st, 2020, until December 31st, 2022. Descriptive and comparative statistic methods were used in the analysis of gathered data.

Results: The study included 40 patients with cerebral contusions of which 77.5% were male, and 22.5 were female. The most common mechanism of injury was fall, 67.5% and 37.0% fell from a standing position. The most common localization was the frontal lobe, and the leading related head injury was subarachnoid hemorrhage, 45%. The highest percentage, 35.0% presented with retrograde amnesia. Only 15% presented with coma.

Conclusion: Emergency clinicians are always involved in the initial care of patients with cerebral contusions. However, it is essential to promptly consult an interprofessional team of specialists that include a neurosurgeon and an intensivist to improve outcomes.

KEYWORDS: Cerebral contusion, brain contusion, brain trauma, subarachnoidal hemorraghe, frontal lobe

Open vascular surgical treatment on gigantic symptomatic/ruptured abdominal aortic aneurysm

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Background: An arterial aneurysm is defined as a permanent dilation of the vessel by at least 150% compared with the relatively normal adjacent diameter of that artery.

Case report: A 63-year-old male was admitted to the hospital for suspected AAA (abdominal aortic aneurysm). Physical examination revealed painful pulsating gigantic mass of the abdomen, tachycardia 100 bpm, and hypertension (BP 189/120 mmHg). ECG showed sinus rhythm, ST deviation in leads II, III, and AVF up to 0.5 mm. CT showed aneurysmal dilation 6 cm distal to the renal arteries, wide prebifurcation with 13x8.5 mm with circulating lumen 57x57mm. Both CIA (common iliac artery) were aneurysmally enlarged with thrombotic masses located in the left wall area with a length of 10 cm. Right CIA was 77x78 mm in diameter with a circulating lumen of 25 mm; left CIA was 82x74 mm with a circulating lumen of 26 mm. The patient was admitted without signs of rupture. Blood pressure was lowered to 110/70 mmHg with furosemide and urapidil intravenously. The rupture occurred despite stabilization of the patient, whereupon the patient was placed under general anesthesia and urgently operated. Postoperative findings showed a tender abdomen, dry wounds, passable graft, pulsations at predilection sites, and no visible edema. Postoperative BP: 130/80 mm/Hg, with pulse 88 bpm. Subjectively, the patient felt good.

Conclusion: AAA remains a serious cardiovascular disease with a high mortality rate. Researchers and clinicians are investigating whether the stabilization of cardiovascular status is worth the risk of threatened aneurysm rupture

Keywords: Vascular surgery, Artery, AAA, CIA, HTA

The Role of Endometrial Microbiome and Lactobacillus genus in Women Fertility: Meta-Analysis

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Background: In the last decade, studies have shown that endometrial microbiome composition is related to women's reproductive health: it is strongly related to fertility potential. Endometrial dysbiosis is a whole new microbiological field of significantly high importance; Namely, Lactobacillus-dominated microbiota plays an important role in fertility, whereas the presence of pathogenic bacteria affect fertility in a negative manner and alter the endometrial microbiome.

Aim: This review tends to summarize and analyze the results of 30 most cited articles in the last decade (2013-2023) targeting the role of endometrial microbiome, with the accent on Lactobacillus genus, in female fertility.

Materials and methods: Meta-analysis has been done using the articles searched through databases: PubMed, Scopus, Embase. All of the articles were written in English language.

Results: Scientific articles are proving the importance of balanced endometrial microbiome in fertility and conceiving: if dysbiosis is present, it is crucial to include eligible therapy, such as antibiotics, as well as the supportive therapy, such as probiotics.

Conclusion: It is of immense importance to understand the correlation between balanced endometrial microbiome and fertility, especially in assisted reproductive therapies, because it could potentially lead to personalized approach to endometrial microbiome and treatments for potentially present dysbiosis that might affect chances for conceiving.

Keywords: Endometrium, Fertility, Microbiome, Lactobacillus, Dysbiosis.

THE SIGNIFICANCE OF MOLECULAR ANALYSIS IN DIFFERENTIATION BETWEEN ADULT GRANULOSA CELL TUMOR AND CELLULAR FIBROMA – A CASE REPORT

Cerkez Ivana

Objective: The purpose of this case is to emphasize the necessity of molecular analysis in diagnostics of sex-cord stromal tumors with overlapping morphological and immunohistochemical features but dissimilar biological behavior.

Case report: A 26-year-old nulliparous patient presented with a cystic right adnexal lesion measuring approximately 10 cm in diameter. Pelvic examination demonstrated tenderness on palpation of the right adnexal structures. The lesion was laparoscopically removed and sent for histopathological analysis. Histomorphology features were indicative of highly cellular sex-cord stromal tumor which created a diagnostic dilemma between adult granulosa cell tumor and cellular fibroma.

Conclusion: Sex-cord stromal tumors are heterogeneous group of benign and malignant neoplasms with different biological potential. While in most cases the morphological features and immunohistochemical markers are sufficient for making the correct diagnosis, sometimes they present a diagnostic challenge. Molecular testing, in this instance for FOXL2 mutation, is necessary in order to make the correct diagnosis between adult granulosa cell tumor (FOXL2 positive) and cellular fibroma (FOXL2 negative), and subsequently choose adequate treatment strategy.

A case of Mayer-Rokitansky syndrome in an 18-year-old patient

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Objective: To asses MRKH syndrome, also known as Müllerian aplasia, a congenital disorder where the uterus and upper vagina are underdeveloped or absent in females with normal secondary sex characteristics and karyotype (46,XX). It is typically diagnosed during adolescence in case of absence of menarche, and has a prevalence of 1 in 5000 births. MRKH is categorized into two types: type I, which is characterized by isolated uterovaginal aplasia, and type II, which is associated with extra genital manifestations.

We present a case of a 17-year-old female referred to a specialist at age 16 due to absence of menstruation. Her endocrine status and secondary sex characteristics were normal, and she underwent two transabdominal ultrasound examinations which showed normal pelvic anatomy with follicular ovaries and a smaller-than-normal uterus in place. At age 18, an MRI was performed, revealing a visible initial part of the vagina but an unvisualized cranial part. In the expected projection of the uterus, a rudimentary uterus measuring 3 cm in length was observed, with no zonal anatomy present, indicating Mayer-Rokitansky-Küster-Hauser syndrome. Further abdominal MRI is pending, but based on the scans so far, it appears to be type A.

Conclusion: Although there is no official data, the prevalence of MRKH syndrome in Bosnia and Herzegovina appears to align with global statistics. However, the form of MRKH syndrome that includes total absence of the uterus is rare. It is important to consider MRKH syndrome in the differential diagnosis of primary amenorrhea.

Keywords: MRKH; primary amenorrhea; uterovaginal aplasia; MRI

Correlation of cervical canal infection and the presence of insulin -like growth factor-binding protein-1 (IGFBP-1) in threatened premature birth

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Background: Premature birth is one of the leading problems of modern perinatology and of neonatology, and because of the possible consequences on the future life of the child.

Aim: To examine the presence of cervical canal infection in threatened premature birth, to examine the presence of IGFBP-1 values > 10 μg/l in pregnant women with proven cervical canal infection, and to determine the correlation between positive IGFBP-1 values (> 10 μg/l) and the presence of cervical canal infection.

Materials and Methods: Prospective study conducted in the period October 2013 - May 2014 on 50 pregnant women, primigravidas, without previous risks for premature birth, and in whom the condition of threatened premature birth was determined by cervical examination. The control group consisted of 30 pregnant women, primigravidas, without previous risks for premature birth and in whom there are no changes that would indicate a threatening premature birth.

Results: The presence of infection in the cervical canal was found in 70% of all test subjects. Mycoplasma and Ureaplasma were diagnosed in 40% of the cases. Elevated values of IGFBP1 in cervical mucus were detected in 86% of subjects. A correlation between infection and elevated IGFBP1 values was found in 83% of cases. 60% of the respondents had premature birth. Childbirth began with the spraying of the fetal membranes in 52%, and ended with Caesarean section in 57% of the test subjects.

Conclusion: The presence of infection and increased values of IGFBP-1 have a high degree of correlation. Microbiological screening in the preconception period and treatment can reduce the rate of threatened premature birth.

Keywords: prematurity, IGFBP-1, infection.

CORRELATION OF PHYSICAL ACTIVITY AND MENTAL HEALTH OF STUDENTS

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Introduction: According to available data sourcesthe level of physical activity drops significantly, and there is a need to develop better programs for physical activity of the student population. In reducing the symptoms of anxiety, depression and stress, daily exercise of some form of physical activity has proven to be positive.**Aim:** To determine differences in the level of physical activity of students, differences in the degree of depression, and the correlation between physical activity and mental health of students. **Material and methods:** A cross-sectional study was conducted, which included 255 students at the University of Zenica, during December 2022. Research instruments are: General questionnaire and Patient Health Questionnaire (PHQ-9). **Results:**From the total sample in the research, it was determined that the largest number of students, 58.5%, are moderately physically active, 23.1% are constantly physically active, while 18% are physically inactive, with established statistical significance in relation to the faculty ($p<0.05$). During the pandemic, physical activity decreased in 52.5%, remained the same in 28.2%, and increased in 19.2% of students. The state without depression is dominant among respondents of the Faculty of Mechanical Engineering, Law and Polytechnic. The respondents most often had mild depression. Moderate, moderately severe and severe depression was present in the majority of cases in the second year of study. **Conclusion:** Increasing physical activity leads to a lower degree of depression or the absence of depression in students.

Keywords: *physical activity, depression, students*

Systematic Review

PARENTS' DIVORCES AND CHILDREN'S MENTAL HEALTH

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Objective: The paper shows the consequences for the mental health of children and adolescents when they grow up in dysfunctional families, with an emphasis on the influence of the dynamics of parental divorce on the growth and development of children and adolescents.

Topic review: The family should be a safe place for the healthy and successful growth and development of children and adolescents. The basic needs of children are love, a sense of belonging and security. The context of growing up significantly affects the growth and development of each individual. Exposure to constant parental conflicts, uneven parenting and the violation of the child's authority and relationship with the other parent, parental manipulation of children and efforts to alienate the child from the other parent are extreme forms of high-conflict divorces, and are especially harmful to the child's overall emotional and psychosocial development. Regardless of the type of divorce, the consequences are visible. Children are confused, changes in behavior show their emotional state of sadness, anger, rage, insecurity, etc. In the long term, such children often grow into insecure people, who later enter into insecure partner relationships whose marriages often end in divorce.

Conclusion: The negative consequences for children and adolescents would be significantly reduced if parents were able to separate the partner role from the parental role and if a multidisciplinary team of experts from appropriate institutions was involved in overcoming crises in the family.

Keywords: parental divorces, mental health of children and adolescents

ANXIETY DISORDERS OF CHILDREN AND ADOLESCENTS

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Beckgraud: Anxiety usually occurs in early childhood and decreases during adulthood. However, the developmental course of anxiety in the preschool and school period is little known, and it represents a clinically important problem.

Aim: To determine the frequency of anxiety in children and adolescents, to determine the differences in the appearance of anxiety in children and adolescents in relation to gender, to determine the therapeutic treatment of children with diagnosed anxiety.

Material and methods: The research was conducted at the "Dom zdravlja" Zenica, Center for Psychophysical and Speech Difficulties of Children and Adolescents from 6 to 18 years of age. The research was conducted in the period March - June 2020. The research includes 500 respondents of both sexes.

Results: 27% of respondents were diagnosed with an anxiety disorder. Of the total number of respondents with a diagnosed anxiety disorder, 76 (55%) were female, and 61 (45%) were male.

Conclusion: Out of a total of 500 subjects treated at the Center for Psychophysical and Speech Difficulties, 137 were diagnosed with an anxiety disorder. No statistically significant difference was found in the ratio of anxiety disorders in children and adolescents. With an anxiety disorder, 63% of respondents are receiving psychotherapy, 30% of respondents use psychotherapy and medication, and 7% of respondents receive psychotherapy and speech therapist treatment.

Key words:children, adolescents, anxiety disorder, treatment

Review article /presentation

SUICIDAL BEHAVIOR IN CHILDREN AND ADOLESCENTS – AN OVERVIEW

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The main objective:
To give an overview of suicidal behavior in children and adolescents.

Topic review:
Suicidal behavior in childhood and adolescence reflects a severe psychological and environmental disturbance, and these constellations are encountered frequently in child and adolescent psychiatric clinical practice. Early recognition is a crucial component of suicide prevention, and assessment and treatment of suicidality in childhood and adolescence must consider developmental aspects. This presentation further reviews the prevalence of suicide, suicide attempt and suicidal ideation in children and adolescents, risk and protective factors, preventative strategies and treatment modalities.

Conclusion:
Raising awareness about suicidal behavior in childhood and adolescence and its prevention is crucial.

Keywords: Suicidal behavior, children, adolescents

Systematic Review

ALTERNATIVE MEDICINE METHODS IN TREATMENT OF CHILDREN AND ADOLESCENTS WITH MENTAL HEALTH PROBLEMS

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The main objective was to examine the characteristics of Alternative Medicine used among children with mental health issues.

Topic review: Alternative Medicine (CAM) can be beneficial for various mental health issues. Mental health issues in children have become a serious public health concern in the past few decades. Data were collected from studies published with key words: children, adolescents, mental health, CAM, published in last ten years. Methodology of analysis of data was divided in groups by disease, CAM method,, region and country, economic status of parents. The most common disease were: behavioral and developmental conditions (autism, phobia or fears, mental retardation, developmental delay, Down Syndrome, and learning disability). The used CAM were: acupuncture, Ayurveda, biofeedback, chelation therapy, energy healing therapy, hypnosis, massage, naturopathy, traditional healers, movement therapies, herbal and non-vitamin supplements, yoga/tai chi/qi gong, and relaxation.The parents were with high economy status by 65% of them. The reasons why parents of children with mental health issues chose to use CAM therapies primarily are because of CAM's complementary role to disease and symptom relief as well as CAM's natural and holistic approach.

Conclusion: The main reason why the parents chose CAM for their children was because of their desire for a more natural and holistic healthcare approach. Low percentage of CAM use by medical doctors, indicate that educational interventions of equipping medical professionals with CAM knowledge and experience will be conducive to more effective communication and treatment.

Key words: children, adolescents, mental health, CAM

ART THERAPY AND BIBLIOTHERAPY IN THE RE/HABILITATION OF CHILDREN IN THE DEVELOPMENTAL AGE

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Background: The combination of art therapy and bibliotherapy, in which perceptual and motor difficulties are alleviated, develop the cognitive abilities of children without and with developmental disabilities.

Aim: The goal of the study is to show the application of art therapy and bibliotherapy in the rehabilitation of children in the developmental age.

Material and methods: In the project of the Cerebral Palsy Association of FB&H "Sensory sensitivity of preschool children, the role of the family and art workshops", children were offered various possibilities for drawing with watercolors, tempera, felt-tip pens, wooden crayons and collage technique, according to their free choice. The duration of the Art workshop was 90 minutes. Children (age 3-18) drew parts of the story "There is a cat", which was read to them before drawing, and an inclusive picture book was created from ten selected drawings and stories, as a combination of art therapy and bibliotherapy.

Results: In joint study, conducted in Bosnia and Herzegovina and the Republic of Serbia, of the total sample of 121 children (72 girls and 49 boys): 91 children were without developmental disabilities and 30 children with developmental disabilities. In RS study 6 persons were adults (4 mothers, 1 father, 1 grandmother). In BH study 37 persons were adults (12 kindergarten teachers, 8 mothers, 2 painters…)

Conclusion: An integral part of all therapeutic approaches to persons with developmental disabilities should be the training of children/persons and their families for adequate use of free time, especially all types of art therapy and bibliotherapy.

Key words: art therapy, bibliotherapy, re/habilitation, children

Title: Comprehensive intervention approach in the field of juvenile delinquency

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Background: Behavioral disorders refer to those behavioral phenomena, biological, psychological, social-pedagogical genesis that go beyond the generally accepted norms of behavior of a certain environment and refer to endangering oneself or the rights of others and/or to devaluing and non-acceptance of social norms.

Aim: The aim of the paper is to show the results of a comprehensive approach based on transdisciplinary, in working with children and young people at risk, their parents and professionals employed in educational, health and social institutions.

Materials and Methods: The sample for this research consisted of children, young people, their parents and professionals. The modalities of preventive and treatment interventions applied in this research are shown through the implementation of 90 workshops on a sample of 60 students, 47 parents, and the education of 20 experts through 3 cycles of education grouped into modules, through thematic areas: development of life skills, positive values and strengthening of family relationships. The research was conducted in the period from July 2021 to December 2022.

Results: The results show that after the interventions, children and young people were strengthened in terms of prosocial behavior, communication skills and teamwork, social emotional skills were developed, self-confidence and family relationships were strengthened. A protocol on dealing with juvenile delinquency was also signed. The development and establishment of the counseling center at the center for social welfare is also one of the results.

Conclusion: We conclude that the comprehensive support of the family, school and networking of institutions, for children and young people is crucial in solving their behavioral disorders.

Systematic Review

WORKING WITH REFUGEES IN THE GERMAN HEALTH SYSTEM, EXPERIENCES, CHALLENGES

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Objective: Recently, migration has become one of the more dominant aspects of modern civilization. The paper provides an overview of current socio-psychological aspects, related segments from psychoanalytic and psychotherapeutic theories, then spiritual aspects of migration and its consequences.
Good example: The European migrant crisis of 2015, also known as the Syrian refugee crisis, … 1.3 million people came to the continent to seek asylum, the most in a single year since World War II Mostly there in FR Germany. A big challenge for the health system, for psychiatric treatment. The basic characteristics of Germany system are presented, how adapted to the complex task. What were the challenges, problems, measures, successes, and shortcomings?
Topic review: Some of the researches carried out so far are presented. The personal experiences of the author and his colleagues, after 5 years of intensive work, were shared. Then the presentation of the case of a young migrant from Africa with temptations, aspirations, psychopathological statement. Heredity, early trauma, sociocultural, etc. were considered. Some characteristic phenomena, especial traumatic of other migrants were also presented.
Conclusion: With a sensitive approach to treatment, first by gaining ordinary human trust, then with a professional sophisticated approach, it is possible to successfully treat and facilitate the integration of sensitive individuals. Or help in accepting an unfavorable situation and a new solution, possibly from the previously suppressed (archetypal) in depth of personality. Social, economic, spiritual aspects should not be neglected. From the personal side of the author's practical experience, desirable guidelines for more humane and thus more functional behavior were presented. Migration will not stop anytime soon.
Key words: Refugees, Germany, experiences, challenges

TITLE: ADOLESCENT MENTAL HEALTH AFTER THE LOSS OF A FATHER IN THE WAR- RESILIENT AND RISK FACTORS

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Objectives: The aim of this research was to find out the association if the loss of a father in a war during early childhood influenced on their mental health during adolescents.

Subjects and methods: The sample was consisted of 200 participants: 100 adolescents born from 1991 to 1996. Observed group was consisted of 50 adolescents whose fathers were killed during the 1992-1995 war in Bosnia and Herzegovina (war orphan -WO group). Control group was consisted of 50 adolescents raised in two parents (TP) family. Adolescents' mental health was assessed with a Youth Self-Report (YSR) (YSR/11-18), Child Behavior Check List (CBCL) (CBCL/6-18), Child Depression Inventory (CDI); resilience was assessed with Resilience Scale (RS). Additionally, the Prolonged Grief Disorder-13 scale (PG-13), a brief self-report measure, was used to assess symptoms of prolonged grief in paternal orphans and their mothers. Maternal mental health was assessed as follows: current psychological symptoms of mothers were assessed in both groups with Brief Symptom Inventory (BSI); Harvard Trauma Questionnaire (HTQ), Version for Bosnia and Herzegovina, was used for assessment of maternal posttraumatic symptoms; maternal resilience was assessed with the Resilience Scale (RS).

Results: There was no statistical significant difference between war orphan group (WO) and two parents group on total scale score and subscales in YSR and CDI group. The two groups differed on sociodemographic factors, i.e., number of children, family composition, income, school grades and refugeehood. Paternal war orphans did not differ in terms of adolescent mental health and resilience from their non-orphaned peers, controlling for sociodemographic variables. The mothers of orphans had comparably more posttraumatic psychopathology. As for perceived resources for social support, orphans identified those comparably more often among distant relatives and in the community, i.e., religious officials and mental health professionals, and less often among siblings, paternal grandparents, paternal and maternal uncles/aunts, school friends and teachers.

Conclusion: Our findings suggest that contextual factors may play an important role in orphans' postwar mental healt

YOUNG PEOPLE AND GAMES OF CHANCE - FROM FUN TO ADDICTION / CASE REPORT

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Aim: to show, through a case report, how fun "games" among young people can turn into problematic gambling and addiction, frequently associated with the abuse of alcohol and psychoactive substances.

Case report: A 27-year-old patient,employed, lives with his partner. The first substance he started using in high school was alcohol, then he "flirted" with marijuana and cocaine, and soon entered the world of gambling. First he would drink alcohol, then," encouraged by it", he would start gamblingand after losing or winning at the dice, he would "reward himself" with cocaine. This behavior leads him to ever-increasing debts, which he could not repay. Treatment with a series of withdrawal disorders, supported by medication, and intensive psychosocial processes on an individual and group level. After 12 weeks, he manages to establish abstinence in all three areas of addiction, and to improve his relationship with his partner and parents. After discharge, the rehabilitation process continued in the Therapeutic Community. Instruments used in psychological testing: MMPI 201, Cornell index, PIE, Revised beta armi scale RBA. Result: From time to time we receive information about the patient's condition, that he is abstinent, but he sees the only safe way for now in "isolation from city contents". He is dedicated to work on a large estate and has stable family relations.

Conclusion: Preventive work with young people, along with education, support and family monitoring, is a key factor in eliminating the possibility of developing problematic gambling and addiction in general.

Keywords: games of chance, gambling, associated addictions

Mental health of traumatized family after the war in Bosnia and Herzegovina - experiences from Tuzla Canton

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The main goal is to point out the mental problems and difficulties of traumatized families after the war in Bosnia and Herzegovina in the area of Tuzla Canton.
Topic review:Mental illness includes a wide range of problems and disorders that can be the result of difficult,
unpredictable events and difficulties to overcome problems. The family has an essential role in human evolution and personal existence. Many transgenerational experiences of previous families are often embedded in each family, which are often unconsciously defended and passed on. That is why the family contributes to all personal (non) achievements in a very diverse way. The traumatic stress of one family member causes the suffering of other family members and disrupts mutual communication and family dynamics. Post-traumatic stress disorder (PTSD) is a chronic, disabling disorder acterized by a range of long-term symptoms that are resistant to treatment. Traumatized families struggle with the manifestation of their traumatized member's post-traumatic symptoms within the family dynamic, resulting in secondary traumatic stress or burnout and compassion fatigue. Many of them have a direct impact on the patient's behaviour, and particularly are relevant symptoms that interfere with family and social relationships.
Conclusion:
The post-traumatic stress disorder of a family member can be transmitted to the next generation, interfering with the psychological development of children. Problems are manifested in excessive protection or isolation of the spouse, marital distress and spousal violence, sexual problems, and secondary traumatization and trauma transmission

Keywords: mental hellth, traumatized family, Tuzla Canton

Neurosurgery in Bosnia and Herzegovina - 20 Years Late

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Objective: The main objective is to provide a historical review of development of neurosurgery in last 20 years in Bosnia and Herzegovina.

Topic review: Modern history of neurosurgery in Bosnia and Herzegovina begins with the first performed skull surgery in Vakufska bolnica by doctor Karl Bayer for three patients who had an impressive skull fracture with epilepsy in **1891**. But the history of pioneer neurosurgery in our country can be followed to Roman time. One of the most important steps in history of neurosurgery in Bosnia and Herzegovina is founding of Department of neurosurgery in Clinical center Sarajevo in 1970. After the war in Bosnia and Herzegovina during 1992-1995, a neurosurgical center started to renew and reestablish neurosurgical staff and equipment. One of the important historical events was the establishment of The Association of Neurosurgeons in Bosnia and Herzegovina (*Udruženje neurohirurga u Bosni i Hercegovini* – UNUBiH). The Association as non-governmental organization is an official society of neurosurgeon on the State level. The members of UNUBiH are neurosurgeons from all neurosurgical departments in BiH. Association was established on July 15th 2003 in Sarajevo. UNUBiH is member of Southeast European Neurosurgical Society (SeENS), European Association of Neurosurgical Societies (EANS) and World Federation of Neurosurgical Societies (WFNS). Today there are seven neurosurgical departments in the country (Sarajevo, Tuzla, Zenica, Mostar, Banja Luka, Bihać and Foča) with 40 neurosurgeons, which routinely perform almost all neurosurgical procedures. These include operations in the field of general neurosurgery with complex neurotrauma, neuro-oncology, cerebrovascular surgery, endovascular surgery, skull base and pituitary surgery, complex spine surgery, pediatric neurosurgery, functional neurosurgery, peripheral nerve surgery, epilepsy, classic and frameless stereotactic neurosurgery, endoscopic neurosurgery and neurosurgical intensive management. The number of operations is increasing significantly every year. If we analyze the qualitative aspects of operations during the past few years, there is a trend of increasing complex operations and the introduction of new sophisticated and professionally demanding operative techniques. During last 20 years the national neurosurgical society UNUBiH, organized or co-organized many academic events like 14 yearly from 2009 neurosurgical symposiums, the 2nd Congress of SeENS, *Giant of neurosurgery* meeting in 2018 and etc. Neurosurgeons from Bosnia and Herzegovina are also working as teachers for medical students at universities and neurosurgical residents not only in the country but also worldwide, Otherwise, UNUBiH became widely recognized as very prominent “small” neurosurgical community.

Key words: neurosurgery, history, Association of neurosurgeons in Bosnia and Herzegovina, UNUBiH, education.

The pCR Rate in Patients Preoperatively Treated with Trastuzumab Biosimilars: Single Center Experience

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Background: Biosimilars are biological products that have no clinically significant differences from an existing FDA-approved reference product. Trastuzumab is a monoclonal antibody indicated for the treatment of HER2 overexpressing breast cancer. It was first approved in 1998 for the treatment of metastatic breast cancer, but throughout the years it has become the standard of care in the metastatic, adjuvant, and neoadjuvant setting of HER2-positive breast cancer. In 2017 the first trastuzumab biosimilar was approved.

Aim: This paper aims to demonstrate our center's experience with trastuzumab biosimilars in the preoperative treatment of patients with HER2-positive breast cancer.

Materials and Methods: We analyzed clinical characteristics and the rate of pathologic complete response (pCR) in patients with HER2-positive breast cancer, who were preoperatively treated with trastuzumab biosimilar.

Results: From October 2020 to October 2022 nineteen patients received one of the trastuzumab biosimilars in a neoadjuvant setting. All the patients were Caucasian females, with a median age of 53.6 years. In 94.7% of patients, the invasive ductal carcinoma was confirmed, while in one patient (5.3%) the invasive medullary carcinoma. The median Ki67 was 27 and 52.6% were ER-positive tumors. Most of the patients, 73.7%, had cT2 tumors and 73.7% of the patients had clinically detectable pathologic axillary lymph nodes. Patients received on average 4.5 cycles of trastuzumab biosimilar preoperatively. The chemotherapeutic partners were taxanes in all the patients, while 36.8% of patients received pertuzumab as well. 63.2% of all the patients had pCR defined as ypT0ypN0 and 58% of those who received trastuzumab biosimilar without pertuzumab. No severe adverse events were noted.

Conclusion: The pCR rate in patients with HER2-positive breast cancer in our center is comparable to the results in randomized controlled trials.

Keywords: breast cancer, HER2-positive, trastuzumab biosimilar, pCR

Title: Advanced stage of Classical Hodgkin lymphoma – Approach to first line of treatment

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Background: Advanced stage of classical Hodgkin lymphoma (CHL) requires systemic treatment. Aproximately 10% of patients due to residual disease after systemic therapy requires radiotherapy. According to the latest ESMO, EHA and NCCN Guiedelines patients ≤ 60 years of age in advanced stage may be succesfully treated in first line of treatment with either ABVD (6 cycles) (adriamycin, bleomycin, vinblastine, dacarbazine), or escalated BEACOPP (4-6 cycles) (escalated bleomycin, etoposide, adriamycin, cyclophosphamide, oncovin, procarbazine, prednisone) or with 6 cycles of A + AVD (Adcetris - brentuximab vedotin + AVD) (with obligatory G-CSF support).

Aim: To analyze the effectiveness and toxicity of regimen A + AVD in first line of advanced stage of CHL.

Materials and Methods: We present a case of 34 years old female patient diagnosed with CHL in stage IV with bulky involvement of mediastinum and infiltration of lung treated in first line of treatment with 6 cycles of A + AVD.

Results: Our case has shown effectiveness of 6 cycles immunochemotherapy A + AVD and acceptable and menageable toxicity.

Conclusion: A + AVD (Adcetris – brentuximab vedotin + AVD) represents the third treatment option for advanced CHL with efficacy and toxicity between ABVD and eBEACOPP.

Key words: Classical Hodgkin lymphoma, advanced stage, efficacy, toxicity.

Liquid Biopsy - breakthrough in diagnosis and therapy

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Early diagnosis and treatments remain one of the main challenges in cancer care. The main point is to give an overview of all the advantages of personalized medicine, as well as the progress in diagnostics achieved in recent years, which enabled the application of precision medicine.

Topic Review: Selecting the right treatment for patients with cancer is a complex decision based on sophisticated molecular diagnostics and better understanding how gene and genomics drive health, disease and response to therapy. Modern medicine tends to get more with less. So, personalized or precision medicine is moving closer to more precise and more individualized health care that are tailored for each person. Therapeutic options are increasingly conditioned by diagnostic advances. The liquid biopsy (LB) has recently and rapidly emerged as a method to minimize the amount of tissue needed for testing, and according to College of Pathologist, is less invasive and safer alternative to more traditional procedures. LBs mostly involve blood sampling, although other body fluids like mucosa, pleural effusions, urine, and cerebrospinal fluid (CSF) are also analyzed. A "liquid biopsy" does not replace a tissue-based diagnosis, but rather provides alternate sampling for (typically) molecular testing purposes. Mutations undetected by conventional tissue sampling could be screened using circulating tumors DNAs from LBs. The major limitation of LB is the lack of sensitivity and precision to identify various tumor types compared to tissue biopsy. **Conclusion:** In recent years LB is accepted as a minimally invasive diagnostic tool for the early diagnosis, monitoring of therapeutic response, cancer screening in high-risk populations, assessment of tumor heterogeneity, and detection of novel cancer driver mutations.

Keywords: liquid biopsy, personalized medicine, circulating tumors DNA

The three-dimensional conformal radiation therapy technique of prostate cancer with seven photon fields

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Aim: In this paper the technique of the three-dimensional conformal radiation therapy of a prostate cancer with seven photon fields was presented. The aim is to ensure as much as better isodose distribution of a prescribed dose for a target volume and, in the same time, maximally spares the organs at risk.
Methods: The CT simulation of a patient was performed on the Philips Briliance 64 CT simulator. Delineation of the planning treatment volumes and organs at risk has been done on the FOCAL planning system. A three-dimensional conformal treatment plan was made on the XiO treatment planning system using six partially opposite fields: APOL – PAOD, APOD – PAOL and LLAT – DLAT, and a one direct AP field. The margins of 1 cm on the treatment planning volumes for all treatment fields were added. For all treatment fields, the photon beam energy of 15 MV has been used, 80 Gy/40fr. For adjusting a shape of the treatment fields according to the treatment planning volumes, the system of the multi leaf collimators was used. The radiotherapy plan was valued qualitatively – a visual inspection of the 95 % isodose lines, and quantitatively – an analysis of DVH: a dose analysis for the target volumes and organs at risk and calculating homogeneity and conformity index.
Results: from the qualitative analysis of the 95 % isodose lines for every of the three treatment volumes it is evident that 95 % isodose lines are fitting the contures of the treatment volumes. On the basis of DVH's analysis for every of the three treatment volumes was calculated: homogeneity index with a value of about 1 for every of the three treatment volumes; conformity index with a value equal to 1 and 0.82 for the first and the second treatment volume, respectively, and the value equal to 0.34 for the third treatment volume. For organs at risk the following values were obtained: rectum V70 = 2.84, V65 = 23.24, V60 = 38.58, V50 = 64.21; bladder: V70 = 10.39, V65 = 24.18; femoral heads: right - V50 = 0, Dmax = 45.98, left - V50 = 0, Dmax = 46.80.
Conclusions: according to the obtained results: a homogeneity of the prescribed dose distributions in the treatment volumes and the protection of the organs at risk (HIs have the values of about 1), a conformity of the dose delivering to the treatment volumes (CI values are about 1 in the case of 95 % of the prescribed doses), the advantages of the using the three-dimensional conformal technique with the seven treatment fields for a prostate cancer irradiation is evident.

Keywords: prostate cancer, three-dimensional conformal radiotherapy

KEYWORDS Prostate carcinom, 3 – three dimensional conformal radiotherapy, treatment volume, organ at risk.

A Review of Molecular Diagnostics and Current Targeted Therapy Options in the Treatment of Biliary tract cancer

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Objective: Biliary tract cancers (BTCs) are a heterogeneous group of aggressive, rare malignancies with limited standard chemotherapeutic options for advanced disease. The purpose of this article is to review the available data of novel clinical trials, which support the role of molecular diagnostics and targeted therapy options in the treatment of patients with this disease.

Topic Review: As the understanding of the genomic landscape of BTC is growing, therapies targeting actionable alterations are being evaluated in numerous clinical trials. In the ClarIDHy trial, Ivosidenib, an inhibitor of the mutant IDH1 enzyme, significantly improved progression-free survival and overall survival in patients who progressed on first-line therapy. After identification of fibroblast growth factor receptor (FGFR) 2 fusions and rearrangements as BTC drivers, FGFR inhibitors showed significant efficacy in the treatment of these patients. Different agents have been investigated and currently only three are recommended for the treatment of patients with FGFR2 fusions: pemigatinib, infigratinib and futibatinib. Other molecular targets that showed a remarkable role in the treatment of BTCs are HER2 amplifications, BRAFV600E mutations and NTRK fusions. In regard to immune checkpoint inhibitors, treatment of BTC with pembrolizumab has demonstrated clinical benefit in BTC patients with deficient proteins in the mismatch repair, supporting the use of immunotherpay in patients who lack other therapeutic options.

Conclusion: Conclusion. BTCs, particularly iCCAs are enriched for actionable targets and molecular analysis should be carried out in patients with advanced disease suitable for systemic treatment. Current evidence support the use of NGS panel, which should include FGFR2, IDH1, HER2/neu and BRAF, NTRK and c-MET. The rapidly evolving landscape of drug targets and predictive biomarkers may require broader panels in the future.

Keywords: biliary tract cancer, molecular diagnostic, targeted therapy

Innovative treatment of HR-positive, HER2-negative metastatic breast cancer - our experience: a case report

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Cyclin-dependent kinase 4/6 (CDK 4/6) inhibitors have been proven to improve progression free survival in women with advances-stage hormone receptor HR- positive, HER2-negative breast cancer, resulting in approvals of three different agents (palbociclib, ribociclib, abemaciclib) and, in combination with endocrine therapy, in both first-line and second-line indications. Given the fact that the only available CDK4/6 inhibitors for treatment of metastastic HR+, HER2- breast cancer, in our country, was Ribociclib at the time, here we present a case of patient who was treated with CDK4/6 inhibitos, Palbociclib and Ribociclib, with long period of stable disease.

Case presentation: In December 2019, a 50-year-old premenopausal female was first diagnosed with early-stage breast cancer of the right breast. Breast-conserving surgery and disection of lymph node was performed and pathology report confirmed invasive ductal carcinoma of grade 3, HR-positive, HER2-negative with Ki67 of 80%. The patient received adjuvant chemotherapy CMF followed by postoperative radiotherapy and endocrine therapy with Tamoxifen and LHRH agonists. PET/CT showed proggresion disease in the liver, manubrium of sternum and left supraclavicular lymph node, 4 months after the treatment. The biopsy of the liver was performed and pathology report confirmed breast cancer liver metastasis. Patient started the first-line of treatment for metastatic breast cancer with Palbociclib followed by Letrozol and LHRH agonists. Patient received 5 cycles of Palbociclib and continued with Ribociclib in full dosage when available. PET/CT showed regression in liver and the new findings in lymph nodes in left axillae. FNAB was perforemed and followed by liver metastasectomy. After 6 months a comparative PET/CT showed progression disease in sternum and radotherapy was conducted. The patient tolerated the treatmeant with Ribociclib very well with no side effects. The next staging after 10 months showed progression disease in all metastatic sites apart from the liver and with new metastasis in L5 vertebrae followed by palliative radiotherapy and surgery. Patient continued the treatment with recommended therapy for another 3 months when definitely declared a progression disease with new focal liver metastasis. The previously recommended therapy has been discontinued and other lines of treatment are being considered today.

Conclusion: Here we presented a patient who has invasive breast cancer HR-positive, HER2-negative and with early reccurence after adjuvant therapy with liver metastasis. Patient received both CDK4/6i, Palbociclib and Ribociclib. This therapy was contribute to maintaining a stable disease but also quality of life was preserved. Today we considering a Fulvestrant with radiotherapy of metastatic sites as the next course of treatment, but also testing for PIK3CA mutations and considering possible therapy with alpelisib and fulvestrant.

Keywords: CDK4/6i, Metastatic Breast cancer, Liver metastasis

Title: Acute promyelocytic leukemia (APL) – Approach to risk-adapted treatment and stem cell transplantation

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Background: APL is a unique subtype of acute myeloid leukemia (AML) characterized by coagulopathy and high risk of early death if not promptly diagnosed and treated. The combination of ATRA and ATO has become the standard of care for newly diagnosed APL. Gemtuzumab ozogamicin (GO), an anti-CD33 antibody-drug conjugate remains an alternative for anthracycline ineligible patients in combination with ATRA and ATO. ATO can be used as a salvage therapy for patients who relapse after initial treatment with ATRA and chemotherapy.

Aim: To analyze the effectiveness of ATO + ATRA in relapse of high risk APL.

Materials and Methods: Our case presents 25 years old, female, high risk APL patient with FLT3itd mutation at diagnosis, in first MRD negative CR, who relapsed 9 months after completion of two years of maintenance therapy with ATRA, MTX and 6-mercaptopurine (6-MP). Clonal evolution has been confirmed at the time of relapse. Induction treatment with ATO and ATRA has been conducted in early relapse of APL with ATO consolidation.

Results: It has been achieved MRD negative second CR.

Conclusion: Induction with ATO + ATRA and consolidation treatment with ATO in early relapse of high risk APL is an effective treatment option for patients who haven't been treated with ATO in first line of treatment and who are candidates for an allogeneic SCT.

Key words: APL, ATRA, ATO, gemtuzumab ozogamicin, relapse.

Title: 12-year old male patient presented with orbital lymphangioma

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Introduction: Lymphangiomas are multi-cystic, localized malformations that involve the lymphatic and vascular systems. Orbital lymphangiomas have a prevalence of 1.1 to 5.3 cases per 10,000 live births with an equal incidence between males and females.

Aim: Case report of 12-year old male patient presented with orbital lymphangioma

Case report: Patient presented with proptosis of a right eye. He had trauma while playing a football. VOD: sc 1.0, VOS: sc 1.0, TOD: 26 mmHg, VOS: 14 mmHg, Exophthalmometer by Hertel:oc dex: 26 mm, oc sin: 12 mm. CT showed multiple cysts and air fluid levels. MRI showed completely changed retrobulbar space of a multilobulated heterogeneous lesion with altered signal intensity, isointense on T1-weighted images and hyperintense on T2 images with a presence of internal septations within the lesions. The diagnosis was made on imaging, and he went under treatment with an intravenous corticosteroids, but with no results. Patient was treated with rapamycin (sirolimus), a class of immunosuppressants, which reduces vascular endothelial growth factor production and reduces IL-2. After treatment the proptosis withdrew.

Conclusion: Orbital lymphangioma is a benign tumor that should be considered in any case of childhood proptosis. Imaging methods, as noninvasive technique, helped us in diagnosis.

Keywords: orbital lymphagioma, CT, MRI, sirolimus

Ankyloblepharon filiforme adnatum associated with a cleft lip and palate: a case report

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Introduction: Ankyloblepharon filiform adnatum (AFA) is a rare but potentially ambylogenic congenital Anomaly characterized by a partial or complete fusion of the eyelid margins.

Case report: We report a rare case of a full term female infant born by vaginal delivery, referred to our institution to assess her bilateral eyelids at four days. Ocular examination showed bilateral partially fused eyelids by broad central bands of tissue arising from the grey lines. The bands of tissue were dissected with scalpel blade no. 15 under sterile conditions at the age of four days. The postoperative course was uneventful, and the ophthalmic follow-up six and twelve months after surgery showed normal ocular findings. The lip and palate clefts were surgically corrected at the age of ten months.

Conclusion: Timely diagnosis and treatment of AFA prevent a stimulus deprivation amblyopia that can cause a devastating effect on the visual acuity of the neonate.

Keywords: Ankyloblepharon filiform adnatum, amblyopia

Title: Pediatric laser assisted refractive surgery and its role in the management of amblyopia

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Objective: Pediatric amblyopia is a common vision disorder that affects the development and function of the visual system in children. Refractive errors, such as myopia, hyperopia, and astigmatism, are often the underlying cause of amblyopia. Laser-assisted refractive surgery (LARS) has been shown to be effective in treating refractive errors in adults, but its safety and efficacy in pediatric amblyopic patients are still under investigation.

Topic review: This review article aimed to evaluate the current evidence on the use of LARS in pediatric amblyopic patients with refractive errors. The literature review included studies published in English from 2000 to 2020. The results showed that LARS can be a safe and effective treatment option for pediatric amblyopic patients with refractive errors. However, the long-term outcomes and potential risks of LARS, such as regression, loss of best-corrected visual acuity, and induced higher-order aberrations, need to be carefully evaluated.

Conclusion: In summary, LARS can provide significant benefits in improving visual acuity and reducing amblyopia in pediatric patients, but close monitoring and follow-up are essential to ensure optimal outcomes.

Keywords: pediatric amblyopia, refractive surgery, laser-assisted refractive surgery, refractive errors, visual acuity, amblyopia treatment

Title: Uveitis and juvenile cataract - correlation, diagnostic, therapeutic and operative approach

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Objective: Uveitis is a serious complication of juvenile idiopathic arthritis (JIA).

Topic review: Approximately 6% of all cases of uveitis occur in children, and up to 80% of all cases of anterior uveitis in childhood are associated with JIA. Although remarkable progress has been made in the management of patients with uveitis associated with oligoarticular JIA, a large number of patients still develop blindness in the affected eye. Cataract is one of the most common consequences of uveitis associated with JIA and very often results in significant visual impairment. Risk factors for the formation of cataracts are the presence of posterior synechiae as well as long-term ocular inflammation. Prevention of cataract development and its maturation is crucial through appropriate control of uveitis. However, often not all preventive measures are successful, so further management consisting of medical and surgical techniques is required. Various factors should be considered in the decision, including the timing of surgery and placement of the intraocular lens.

Conclusion: Good postoperative results can be achieved by strict control of the condition of uveitis, its regression and rehabilitation, especially 3 months before surgery and the use of systemic immunomodulatory therapy. Despite this, the presence of an IOL can still induce an inflammatory response, necessitating reoperation. Alternatively, pars plana lensectomy with anterior vitrectomy and subsequent aphakia may be an effective management method complicated cataract caused by uveitis.

Keywords: Juvenile idiopathic arthritis, Uveitis, Cataract, Aphakia

Title: Pediatric ophthalmology in Bosnia and Herzegovina - Lifestyle challenges

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Aim: Identifying the unmet needs in ophthalmology care for pediatric patients in Bosnia and Herzegovina with regards to lifestyle related ophthalmological diseases.

Introduction: Official statistic data shows that 66% of 262.134 children aged 0-18 in Bosnia and Herzegovina, who attend primary school, are included in periodic ophthalmological examinations. Others visit ophthalmologists mostly on as needed basis. Although lifestyle affects child ophthalmological health in many various ways, there is no unique approach among specialists on providing eye care for children.

Material and method: We conducted a survey to collect data from ophthalmologists in Bosnia and Herzegovina, who are involved in pediatric ophthalmological examinations.

Results: The results indicate that the modern way of living is a potential cause of eye problems in children, which is a growing concern among ophthalmologists (92%). Among lifestyle ocular diseases in children, the increase in myopia was identified as the most concerning eyesight problem by 92% of the participants, followed by asthenopia (40%), dry-eye disease (40%), and allergies (24%). It is worth noting that eye injuries were not considered a relevant problem by any of the participants.

Conclusion: Guidelines for lifestyle pediatric ophthalmological diseases would be useful for both professionals and the public in order to provide quality eyecare for children in Bosnia and Herzegovina.

Keywords: lifestyle diseases, pediatric, eyecare, guidelines

Title: Congenital Cataract Surgery

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Aim: Congenital cataract is a significant cause of blindness and visual impairment in children. Cataract surgery is the mainstay of treatment for pediatric congenital cataract. In this case series, we aim to describe the indications, risks, and outcomes of cataract surgery in pediatric congenital cataract.
Methods and results: We present a case series with congenital cataract who underwent cataract surgery at our institution. The mean age at the time of surgery was 1 to 2 years. The indications for cataract surgery in all children were significant visual impairment, nystagmus, and amblyopia. All patients underwent phacoemulsification with intraocular lens implantation under general anesthesia. Postoperative follow-up ranged from 3 to 12 months. There were intraoperative complications. In all cases we did not have a typical finding for cataract. There were various specificities that required application of additional techniques and instrumentation. All complications were successfully managed. Visual acuity improved in all patients postoperatively.
Conclusion: Cataract surgery is an effective treatment option for pediatric congenital cataract with significant visual impairment, nystagmus, and amblyopia. Although there are risks associated with the surgery, the benefits of improved visual acuity and quality of life for the child often outweigh these risks. Different specificities of congenital cataract require application of additional techniques and instruments. Close postoperative follow-up is necessary to manage any potential complications.

Keywords: congenital, cataract surgery

Management of congenital ptosis

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Objective: The main objective is to provide a review of surgical approaches to congenital ptosis uses in Canton Hospital Zenica, Ophthalmology Department.

Topic review: Congenital ptosis refers to an upper eyelid inferior displacement present at birth or during the first years of life. Localized dysgenesis of levator palpebrae muscle or innervational tract disorders during embryogenesis result with an infiltration and deposition of fibrous and adipose tissue in the normal striated muscle and consequent abnormal muscle contraction and relaxation. Condition can be unilateral or bilateral presenting as an isolated finding or in association with a specific syndrome. The majority of cases are sporadic, but several genes have been implicated in various familial inheritance patterns. Clinical presentation is a mainstay for current congenital ptosis correction recommendations. Observation is reserved for patients with mild ptosis that does not interfere with visual axis. Nevertheless, every child should be closely monitored for amblyopia risk and chin-up head posture as those present the main indications for surgical intervention. Surgical techniques may be divided into levator muscle surgery and direct or indirect frontalis sling suspension. Main parameters that determine a choice of the surgical technique are the ptosis severity and levator function along with surgeon experience and preferences.

Conclusion: The correction of congenital ptosis is one of the most challenging surgical interventions in ophthalmology that very often requires repetition in order to obtain desired results. Even so, the surgery outcomes still offer a predominantly high level of satisfaction for both patient and surgeon.

Keywords: congenital ptosis, muscle and innervational dysgenesis, amblyopia, surgical technique

Principles and Paradigms of Pediatric Cataract Surgery

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OBJECTIV: Most of aspects of cataract surgery in pediatric population differ from those in adult population.

TOPIC REVIEW: Issues of special concern are appropriate intraocular lens choice, surgical technique, complications and their management. Performing an intact continuous curvilinear capsulorhexis is challenging in children even for experienced surgeons. Management of posterior capsule (primary posterior capsulotomy and anterior vitrectomy) is important to maintain the long-term clear visual visual axis. Early, intermediate and late complications of this kind of surgery should be managed with special patience.

CONCLUSION: The surgery plays a significant role in the treatment of childhood cataract, but this process includes whole team dedicated to final success.

Keywords: pediatric cataract, surgery

Title: Unresolved case of unspecific granulomatous hyperplasia in a young female triggered by pregnancy

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Objective: To present an unresolved case of inflammation of upper respiratory tract, paranasal sinuses, periorbital tissues, and eye adnexa.

Topic review: We present a case of a young female with clinical presentation of Granulomatosis with polyangiitis (GPA), not proven on biopsy. The patient presented in March 2022 to the oculoplastic unit with upper left eyelid swelling, entropion/lash abnormalities and conjunctival hyperplasia. Biopsy was performed showing unspecific granulation and inflammation. On IHH CK was negative, LCA was positive on infiltration, and CD 34 painted proliferated blood vessels. History was positive for Ascaris lumbricoides, Candida detected in stool, hemorrhagic acute enterocolitis, cystitis with microhematuria, and prepatellar bursitis. During pregnancy, the patient suffered from sudden sinus lining hyperplasia and deformation of nasal septum with a resultant saddle nose. ANCA, C3c, and C4 were negative. Chest X-ray was clean. Sinus biopsy showed chronical exacerbating and ulcerating inflammation of the nasal mucosa without elements of GPA.

She sustained fulminant keratitis, descemetocele, managed with conjunctival flap and resulted in leucoma and decreased vision. Steroids were initiated with MTX for several months. During steroid treatment, conjunctival/nasal swabs were positive for MRSA and Klebsiella. Steroids were tapered quickly and MTX was discontinued after a FESS biopsy that did not prove GPA. WHO trichiasis surgery for trachoma was obtained resulting in resolved lid problems.

Conclusion: The underlining cause of this case was not proven, although the clinical presentation is strongly associated with GPA. Although eye problems were managed, the patient is still experiencing sinus discharge and recurrence is likely.

Keywords: Granulomatosis with polyangiitis, trichiasis, distichiasis, unspecific granulation, inflammation

Title: Sturge-Weber syndrome and congenital glaucoma

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Introduction: Sturge-Weber syndrome has been included in the group of phacomatoses that is characterized by hamartomas involving the brain, skin and eyes. The most frequent ocular comorbidity is glaucoma with a prevalence rate ranging from 30%- 70%. Glaucoma is related to anterior chamber malformations, high episcleral venous pressure (EVP), and changes in ocular hemodynamics. Glaucoma can be diagnosed at birth, but the disease can also develop during childhood and in adults. The management of glaucoma in Sturge- Weber syndrome patients is particularly challenging because of early onset, frequently associated severe visual field impairment at the time of diagnosis, and unresponsiveness to standard treatment. Several surgical approaches have been proposed, but long term prognosis for both intraocular pressure control and visual function remains unsatisfactory in these patients.

Case presentation: A five-month-old male with Sturge - Weber syndrome was referred for evaluation of glaucoma. The patient had developed elevated IOP in his right eye at the first month of age. At the time of this presentation, the patient was taking Cosopt/ Glaumax for his right eye.

Keywords: Sturge-Weber syndrome, congenital glaucoma, case report, management

Topic: Results of surgery for horizontal strabismus in the period 2017 to 2023 at the Clinic for Eye Diseases Tuzla

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Objectives: To evaluate the results of the operative procedure and to identify the factors that influence the surgical success.

Material and method: Medical documentation of 144 patients who underwent the first operation for horizontal strabismus at the Clinic for Eye Diseases in Tuzla between February 2017 and February 2023. The main measure of the success of the operation is defined as the deviation of the eye from 10 prisms diopters 2 years after surgery. The results of postoperative binocular vision and visual acuity improvement were analyzed. Preoperative deviation, diagnosis, binocular function, visual acuity and age were analyzed as factors affecting the success of the operation. Patients were divided into two groups up to 7 years (48.6%) and after 7 years (51.4%). In order to verify the research objectives, the Chi-square test, the Wilcoxon test of equivalent pairs and the logistic regression analysis with the forced entry method were applied.

Results: The average age of the subjects was 9.67±4.15 years (med. 8, mod. 7, min. 5 and max. 20), while 69 (47.9%) had esotropia, and 75 (52 .1%) exotropia. The average preoperative deviation was 6.62±42.28 PD, median 0, mode 60 PD, while the minimum and maximum deviation ranged from – 60 PD to +35 PD. The average postoperative deviation is 5.46±10.06. The success of the operation for esotropia is 49.3%, while for exotropia 97.3%. Binocular vision before surgery was present in 13 (9%), while postoperatively it was present in 80 (55.6%).

Conclusion: The surgical success rate of the operation in subjects up to 7 years of age was 67.1%, while in subjects over 7 years it was higher and amounted to 81.1% and did not show a statistically significant improvement in visual acuity after surgery.

Title: TOTAL HIP ARTHROPLASTY IN FEMALE PATIENT WITH KYPHOSCOLIOSIS-CASE REPORT

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Total hip arthroplasty (THA) is one of the most succesfull surgery procedures in Orthopedic. Functional, pain and social improvement are well known after THA. More than 300 000 THA cases performed annually worldwide.
The authors present a case of 75-old female patient with kyphoscoliosis and significant comorbidities in which THA at Medical Institute Bayer in Tuzla performed due to pathological right neck femur fracture caused by severe osteoporosis and minor trauma. After the surgery patient did well and she was discharged from hospital in good health condition with no significant pain. She was educated for independent walking by use of walking aids and tolerated weight bearing on right hip. Two weeks after the index surgery while twisting on right leg in her bathrom posterior hip prosthesis dislocation occured. Patient addmited in hospital after failed attempt of closed reduction. Open reduction performed and she was immediatelly after the surgery included in rehab protocol. After 1 month and minor backward movement on her bad recurent dislocation of right hip prosthesis again occured. During open reduction 52 mm polietilen lipped inlay inserted. The stability of the prothesis tested several times in all directions and we declared it as a stable one. 3 weeks later prosthesis again dislocated.

Key words Total hip arthroplasty, kyphoscoliosis, hip dislocation.

Title: RISK FACTORS IN SPINE CARE DURING COVID-19 PANDEMIC

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Introduction
Covid-19 disease declared by WHO as pandemic on March 11th 2020. Devastating consequences on health care systems worldwide suddenly occured and medical staff faced with broken standard rules in medical treatment of specific medical condition. The aim of this paper was to analyze risk factors in patients treated for various spine condition during Covid-19 pandemic.
Materials and methods
In this cohort study we analyzed medical records of 141 patients that have been operated at spine surgery department in Clinic for orthopedic and traumatology in Tuzla, Bosnia and Herzegovina between March 11th 2020. and April 1st 2021. Elective, trauma and emergency tumor or infection cases were included in this study.
Results
Between March 11th 2020. and April 1st 2021, we have performed 141 spine surgeries of which most of it were elective cases (80). There were also 46 fractures, 10 tumors and 5 spinal infection cases. We analyzed different variables such an age, length of stay in hospital, type of surgical procedures, as well as comorbidities (diabetic, pulmonary and heart diseases).
Conclusion
Following specific hospital admission measures (absence of clinical signs of Covid-19 infection and negative PCR test) and with reducing length of hospitalization it is possible to organize spine unit satisfactory even in cases with significant comorbidities.

Key words: spine, Covid-19, risk factors.

The use of antibiotics at the Orthopedics and Traumatology Ward in the post-COVID19 period

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Surgical site infections (SSI) rank third among all cases of intrahospital infections, according to the US CDC. Regardless of perioperative antibiotic prophylaxis and preoperative skin antisepsis, SSIs remain an unsolved problem because they increase the risk of morbidity and mortality and have significant economic consequences for the healthcare system. Orthopedic operations are often classified as clean interventions (Class I), considering the expected pathogens (Gram-positive bacterial flora of the skin). However, when bone and joint infections occur as postoperative complications, treatment is complicated. Antibiotic therapy usually lasts long, bringing considerable patient problems and costs for healthcare institutions. The annual incidence of SSIs after orthopedic procedures in the USA is 31,000 to 35,000. The COVID-19 pandemic has increased the risk of resistance to antimicrobial drugs due to their uncritical use in recent years. Analysis of the consumption of antibiotics in UMC "Bežanijska kosa" in the post-COVID-19 period (April-December 2022) shows that these drugs were mainly used rationally at the Orthopedics and Traumatology Ward. Despite a large number of surgical interventions, the costs for antibiotics in that department contributed to the hospital budget by 1-3%. However, the antibiotic choice shows that those intended to treat Gram-negative infections (e.g., gentamicin, ceftriaxone, and ciprofloxacin) predominated. The analysis should consider the total number and type of operations, microbiological findings, and extended empiric antibiotic therapy rate. Better epidemiological measures, improved diagnostics (e.g., next-generation sequencing), and the application of new surgical and other therapeutic procedures may improve infection control in orthopedic patients.

Keywords: Orthopedic surgery, bone and joint infections, antibiotic use

Title: Surgical treatment of pressure sores with musculocutaneous flaps

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Introduction: Pressure sores are pathology that can be seen daily in health institutions across Bosnia and Herzegovina, they mostly appear with bedridden patients and are most commonly associated with paraplegic and tetraplegic patients. Treatment of this disturbingly common health problem is mostly conservative with I. and II. grade pressure ulcers, and very often not proficient enough so we have progression in to III. and IV. grade that hardly ever heal on their own, and often require surgical intervention.
Case presentation: This observational study concentrates on surgical treatment of pressure sores in our clinic with musculocutaneous flaps from femoral region. A total of four patients were treated. Two patients had more than one procedure and all patients were male and were paraplegic.
Results and conclusion: Musculocutaneus flaps from femoral region are excellent choice for the reconstruction of, especially, recurrent pressure sore defects of the pelvic region.

Keywords: pressure sore, pelvic defect, musculocutaneous thigh flaps

Title: Lower eyelid reconstruction in a patient with coloboma

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Introduction: Coloboma of the eyelid is a congenital unilateral or bilateral defect of the eyelid that can affect the entire thickness of the eyelid in the area from one third to three quarters of the surface of the eyelid. This defect more often affects the upper eyelid, while the coloboma of the lower eyelid occurs in only 7% of all cases of eyelid defects. Although a rare clinical manifestation, lower eyelid coloboma occurs in 69% of diagnosed cases of Treacher Collins syndrome.
Case presentation: In this case a secondary reconstruction (after few primary failed attempts) of the coloboma in a patient with Treacher Collins syndrome that affects three quarters of both lower eyelids was performed using Hughs tarso-conjunctival flap and skin graft with excellent postoperative result. After the procedure the patient had only 1-2mm residual scleral show, without clinically significant ectropion and without any signs of previously frequent exposure conjunctivitis.
Results and conclusion: Use of Hughes tarso-conjunctival flap with skin grafting in reconstruction of lower eyelid full-thickness defects proves to be go-to reconstructive procedure in cases of extensive congenital lower lid coloboma.
Keywords: coloboma, eyelid reconstruction, Hughs flap, skin graft, Treacher Collins Sy

Title: An Overview of Laser Applications in Aesthetics, Dermatology and Surgery

Authors

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Introduction: The use of lasers in aesthetics, dermatology and surgery has become increasingly popular in recent decades, and there are many reasons for this. Lasers are used in aesthetic medicine for hair removal, pigmentation, tattoo removal and skin rejuvenation. In dermatology there are many indications for laser treatments which includes rosacea, acne, warts, psoriasis, scar removal and onychomycosis. In surgery we used lasers for various procedures such as tumor removal, laser lipolysis, varicose vein treatment. Laser technology is an important component of modern surgery. Vascular lesions such as hemangioma and port-wine stain are often a cause of concern for the patients. They cause huge physical and psychological impact on the patients, especially the females.

Case presentation: A Nd:Yag laser is the treatment of choice for capillary hemangioma and venous malformations, as shown through few personal cases.

Results and conclusion: There were no significant complications, and there was also only very small percentage of cases that needed some kind of secondary procedure. This proves that laser use in treatment of capillary hemangiomas and venous malformations should be strongly considered for most cases.

Keywords: lasers for hemangioma, hemangioma, nd:Yag laser, vascular lesions

Title: Paramedian forehead flap for subtotal and total nasal reconstruction

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Introduction: The paramedian frontal flap is considered the best option for the treatment of extensive nasal defects. The aim of this paper is to present the experiences of using the paramedian frontal flap for total and subtotal nasal reconstruction at the Plastic and Maxillofacial Surgery department of University Clinical Center Tuzla. We reviewed our experience in the repair of nasal defects using the paramedian forehead flap through data from medical records at our clinic. We describe the surgical technique, complications, and results.
Case presentation: Five patients were treated using this flap. Due to the significant size and aggressive subtype of the skin cancer, removal of the skin, muscles, cartilage and bone was required in order to acquire a tumor free margin. The reconstruction of supportive nasal structures was performed using titanium mesh on top of which the paramedian forehead fap was placed.
Results and conclusion: The most common complications were marginal necrosis and wound dehiscence. The paramedian forehead flap continues to be one of the best solutions for the closure of external nose surgical defects greater than 2 cm in diameter and should be readily considered when opting for extensive nasal defect reconstruction.
Keywords: Paramedian forehead flap, nasal reconstruction.

Title: The development of squamous cell carcinoma (SCC) as a consequence of a chronic ulcer

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Introduction: To review squamous cell carcinoma (SCC), the second most common skin cancer, which arises from metaplasia of keratinocytes in the skin or mucosa. SCC typically occurs on sun-exposed areas like the lower lip, auricle, neck, sternal region, and upper extremities, presenting as ulcerated nodules or superficial erosions.
Case presentation: A 60-year-old male presents with pain and itching in the right lower leg, initially suspected to be an insect bite. Upon examination, a hyperemic ulcer, with a darker surrounding area, size 10x5 cm, with clear secretion was observed. Swabs reveal Escherichia coli and later Klebsiella species, but antibiotic treatment based on antibiogram yields no improvement. A biopsy was done and the first pathohystological result showed eosinophilic granulomatosis. Despite dailiy dressings, for 9 months there was no progress. Diagnostic imaging, Color doppler and CT scan of the right lower leg were normal. The patient did not have any chronic diseases and that the LAB findings were normal.
Results: The second pathohistological result confirms the diagnosis of squamous cell carcinoma. Excision of the defect was performed by plastic surgeon, which eventually lead to regression.
Conclusion: The clinical presentation of squamous cell carcinoma (SCC) varies depending on tumor depth and location, typically appearing as erythematous hyperkeratotic papules or plaques on sun exposed skin. SCC is more common in middle-aged men and individuals over 55, and advanced cases may exhibit ulceration with associated itching and soreness. Malignant transformation should be suspected in chronic non-healing ulcers or scars, and sudden growth of an ulcer requires further evaluation.

Keywords: SCC, chronic leg ulcer, malignant transformation

Title: The use of pericranial flap in scalp and face reconstruction

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Introduction: Squamous cell carcinoma (SCC), the second most common skin cancer, arises from metaplasia of keratinocytes in the skin or mucosa. SCC typically occurs on sun-exposed areas like the lower lip, auricle, neck, sternal region, and upper extremities, presenting as ulcerated nodules or superficial erosions.
The benefits of pericranial flaps have been described in many maxillofacial and plastic surgery literature. They are due to the pericranial flaps´ unique characteristics including good flexibility and mobility, very rich blood supply from several arterial sources and access to sufficient bulk of the flap without any need for distant surgical sites. Using pericranial flaps to repair the local defects of the head and face region in three patients has been reported in this case presentation.
Case presentation: Two female and one male patient, 60-75 years old, were presented with large malignant tumors in frontotemporal, parietooccipital and frontoparietal region. After removing tumors calvaria bone was exposed and vascularized tissue had to be moved into the area of the defect to provide a reliable coverage. Due to the anastomosing blood supply to the scalp, large axial patterned pericranial flaps were elevated and rotated to cover non-vascularized defects thus providing thin, yet effective calvaria bone coverage.
Results and conclusion: The use of a pericranial flap is a simple, quick, cost-effective and safe method for repair of head and face defects. This straightforward reconstruction method has been considered as an ideal method to repair scalp defects.
Keywords: SCC, chronic leg ulcer, malignant transformation

Title: The effect of implant choice on postoperative joint movement range in treatment of metacarpal and/or phalangeal fractures

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Introduction: Phalangeal and metacarpal fractures are the second most common upper extremity fractures. Due to the anatomical complexity of the hand, surgical treatment may cause significant complications. Since there are no standardized treatment protocols for most hand bone fractures, the optimal treatment method should be chosen based on thorough inspection of each individual injury, while factoring in important risk factors such as age, activity and vocation of the patient.
Patients and methods: For this research 31 patients with surgically treated hand bone fractures were analyzed post-treatment. All patients were treated at the UKC Tuzla Clinic of Orthopaedic Surgery and Traumatology between January 1st 2018 and December 31st 2018. The collected data was processed using biostatistical methods.
Results and conclusion: Decreased hand movement range is one of the most common complications of plates and screws or Kirschner wires implantation. In this research, MCP and PIP movement range was analyzed after the implantation of both plates and screws and Kirschner wires. Biostatistical analysis showed that the implantation of plates and wires resulted in a wider finger movement range post-implantation compared to Kirschner wires, 71% and 44% respectively.

Keywords: phalangeal fracture, metacarpal fracture, plate and screw, Kirschner wire, MCP ad PIP movement range

Can we treat Obesity? A Discussion on Lifestyle vs Medical Treatments for Patients with Obesity in Swedish Primary Health Care Centers

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Obesity is a non-communicative progressive disease and a major causer of cardiometabolic disorders worldwide. In Sweden, the prevalence of individuals with overweight (BMI 25-29.9 kg/m2) or obesity (BMI >30kg/m2) is estimated to account for 46-60 % of BMI groups in Swedish adults with a minor difference in prevalence according to gender. Similar results are presented globally with few exceptions. According to updated European and Swedish guidelines, a great majority of patients are to be assessed, diagnosed, and treated by their family doctor. However, due to lack of time, stigmatization and disordered structure within the primary health care, individuals with obesity have often had an inadequate treatment plan causing continuous decline in health and further medical complications. Furthermore, the alternatives with medical drugs have been scarce. In recent, newer oral and subcutaneous anti-diabetic medications have been presented and are now applied for treatment of obesity. They have shown similar effects on weight loss with smaller economic and time related overload on family doctors when compared to intensive lifestyle alternatives. Although, these medications are still relatively new to the medical drug market and long-term effects are still to be.

The aim of this project is to disclose important key factors about treatment alternatives in patients with overweight and obesity in primary health care. Moreover, I aim to discuss benefits and risks with medical drug treatment.

KEYWORDS: OBESITY, PRIMARY HEALTH CARE, TREATMENT, GUIDELINES

INFLUENCE OF DIFFERENT THERAPEUTIC PROTOCOL ON EXPECTED POSTOPERATIVE COMPLICATIONS IN OUTPATIENT SURGERY OF THIRD MOLARS

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Background The interactivity of analgesics and corticosteroids suggests that joint therapy can provide a more significant reduction of expected complications compared to individual therapy after third molar surgery.

The aim of the research is to determine the effects of combined and individual therapy with nonsteroidal anti-inflammatory analgesics and corticosteroids after the removal of an impacted third molar on the level of postoperative pain, swelling and trismus.

Materials and Methods. Using the method of random selection, adult patients (60) of both sexes, with an indication for surgical extraction of an impacted mandibular third molar, were divided into three groups at the oral surgery department of the Zenica Health Center. Group I - 15 mg meloxicam, nonsteroidal anti-inflammatory analgesic/1h preoperatively and the following two days) Group II 32 mg methylprednisolone, glucocorticoid/1h preoperatively and 12 h postoperatively), Group III - combined th. With 15mg meloxicam/1h preoperatively and the next two days) and 32 mg methylprednisolone/1h preoperatively and 12h after surgery). We monitored the parameters on the 2nd and 7th postoperative day. We used the VAS to assess postoperative pain; swelling was assessed with a cephalometer by measuring certain points on the face, and to determine trismus we measured the interincisal distance of the teeth.

Results and Conclusion. The application of individual therapy with methylprednisolone alone and with meloxicam alone compared to combined therapy with the mentioned drugs, proved to be less effective in relation to the monitored postoperative parameters after third molar surgery. ($p<0.05$) Swelling and trismus were more intense with meloxicam therapy, and pain with corticosteroid therapy ($p<0.05$). T-test showed a difference between the monitored groups of patients ($p<0.05$). A correlation was established between all parameters on the 2nd and 7th postoperative day ($p<0.05$).

KEYWORDS: analgesics, corticosteroids, primary health care

VITAMIN B12 DEFICIENCY IN PATIENTS WITH DIABETES MELLITUS TYPE 2

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Objective: The aim of the review is to collect and analyze data that indicate the connection between

Topic: Metformin is the first drug of choice in patients with diabetes. Patients taking metformin have a significantly higher risk of vitamin B12 deficiency and significantly lower serum vitamin B12 concentrations, depending on the dose and duration of treatment, compared to non-diabetics. The obtained results suggest that patients using metformin for more that 5 years and patients older than 65 years have an increased risk of vitamin B12 deficiency. Since metformin most likely interferes with vitamin B12 absorption in the small intestinal through various mechanisms, infusion or sublingual routes of administration may theoretically be better than oral supplements for the treatment of metformin-induced vitamin B12 deficiency because they bypass the gastrointestinal tract and intestinal absorption. Vitamin B12, also known as cobalamin, is a water-soluble vitamin. It is primarily obtained from foods of animal origin such as a red meat, fish, poultry, shellfish, milk, eggs and other dairy products, or from food fortified with vitamin B12.

Conclusion: Although definitive recommendations or guidelines on the treatment of metformin-induced vitamin B12 deficiency are lacking, patients using metformin with concomitant vitamin B12 deficiency should take cobalamin supplements to correct deficiency and prevent the associated risk of peripheral nerve damage and other clinical consequences and adjust their diet to thein condition.

KEYWORDS: vitamin B12, diabetes, supplements, nutrition

Appointment system in Family Medicine Mostar, BH

Melida Hasanagic

Introduction: An appointment system in Family Medicine has a lot of advantages such as reduction of crowds in the clinics, guarantee time of slot and it is time saving for patient as well for the Family Medicine team. Objective: To explore opinions and satisfaction of health care providers in Primary Health Care units with the existing appointment system in Family Medicine Clinics.

Results: The main organizational advantages and disadvantages perceived by providers were related to follow-ups of chronic patients, number of clients registered for Family medicine Teams which are not Standard followed, lack of doctors, too many clients per one doctor, too many services which should be done by family medicine not recognized by Policy Makers, appointment system in Hospitals. Discussion: Too many registered clients, too much administrative work, too many papers, not enough family medicine specialists per insured clients, lack of skilled nurses,

Conclusion: Every Family Medicine Team should have well skilled nurses, specialists of family medicine in clinic, not more than 1500-1700 registered clients per team, not more than 4 clients per hour to achieve goals defined by Standards of Health Care Quality and client safety. New Standards of Health Care should be introduced.

KEYWORDS: quality, family medicine, standards

Lyme borreliosis in Federation of Bosnia and Herzegovina

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Background: Vector borne diseases are very important around the world and account about 17% of the burden of all infectious diseases. Over half of the current population, are exposed to these diseases. The two most important insects, reservoirs and carriers of infectious diseases are mosquitoes and ticks. In Federation of Bosnia and Herzegovina diseases transmitted by ticks are common,

Aim: To present the data about the Lyme borreliosis in the territory of the FB&H

Material and Methods: We used data on infectious diseases from the Federal Institute of Public Health for the period 2017-2021. This is retrospective descriptive-analytical epidemiological study.

Results: At the territory of the FB&H there are important vector-borne diseases for which ticks are hosts and reservoirs. Lyme borreliosis occurred in all observed years with incidence from 0.4/100,000 to 1.1/100,000. The highest number of patients was registered in 2018, and the lowest in 2021. The disease was registered in seven cantons in the FB&H. The highest average incidence was recorded in the Central Bosnian Canton (1.51/100,000). The disease was registered throughout the year, but seasonality is evident, with the highest number of patients from May to August. The disease is registered in all age groups, the most often in the 50-64 age group, which accounts for 34% of all patients.

Conclusion: Lyme borreliosis is an important vector-borne disease in the FB&H, so it is important to pay more attention to this disease in primary health care

KEYWORDS: Lyme borreliosis, Federation of Bosnia and Herzegovina, incidence

Drug safety: Who, what, when and why

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According to the current national and international legislation, pharmacovigilance is defined as "a procedure applied to identify, collect, monitor, analyze and react to new data regarding the safety of the drug and the assessment of the relationship between risk and benefit when using the drug or interacting with other drugs." (Law on Medicines and Medical Devices of Bosnia and Herzegovina). In brief, the pharmacovigilance system refers to drug-related problems, whether it is an adverse drug reaction (ADR), overdose, or medical error, and it applies to both medicines (with or without a prescription), supplements and everything that the patient uses in order to treat the disease or improve health. Healthcare workers report suspected NRL to the Main Office in Mostar, whether it is voluntary or mandatory reporting. The spontaneous reporting of ADRs is the basis of the pharmacovigilance system, but there is also a more active approach to data collection. There are three methods of ADRs causality analysis, of which global assessment is the most widely used, and algorithms can help clarify unclear cases. The pharmacovigilance system links national offices with the WHO Center in Uppsala, Sweden (who-umc.org) and the European Medicines Agency in Amsterdam, the Netherlands. Finally, ADR reporting does not mean admitting a medical error, but it increases patient safety and significantly reduces healthcare costs.

KEYWORDS: pharmacovigilance, drug related problems, reporting of adverse drug reactions, causality assessment

USE OF HFNC AND NIV IN RESPIRATORY FAILURE TREATMENT

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Objective: Acute and chronic respiratory failure treatment remains a challenging issue despite the different noninvasive (NIV) and invasive mechanical ventilation (IMV) strategies. Understanding the causes and mechanisms of onset of different types of respiratory failure (RF) would lead to the most appropriate treatment option selection and avoidance of the invasive ventilatory strategy use.

Topic review: Considering the causes of acute hypoxemic respiratory failure (AHRF), in cases of cardiopulmonary edema, timely use of NIV reduces the intubation and mortality rate. However recent guidelines in cases of de novo AHRF recommend the use of high flow nasal cannula (HFNC)treatment over NIV in immediate postoperative and post-extubation period as well as in high risk and/or obese patients following cardiac/thoracic surgery. NIV is considered as a therapy of choice in the management of acute exacerbation of chronic obstructive pulmonary disease (COPD). Moreover, HFNC application in the treatment of acute exacerbation of hypercapnic respiratory failure (AEHRF)refers to the improvement of ventilation and oxygenation and the delivery of the precise oxygen concentration allowing its proper and timely management. HFNC reduces partial pressure of carbon dioxide by using the flushing effect of high flow and adjusting the flow of oxygen to avoid the respiratory depression. In cases of mild and moderate acute RF undergoing flexible bronchoscopy, HFNC is preferred over conventional oxygen therapy, while in cases of severe acute hypoxemic RF, NIV is preferred over HFNC.

Conclusion: Proper and timely use of noninvasive respiratory strategies will lessen the use of invasive ventilatory patterns in RF treatment.

KEYWORD: SHFNC, NIV, respiratory failure, flexible bronchoscopy

CHALLENGES IN THE MANAGEMENT OF NON-TUBERCULOUS MYCOBACTERIAL LUNG DISEASE

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ABSTRACT:

Objective: The frequency of non-tuberculous mycobacterial lung disease (NTM) has recently increased. The reasons for this increase can be multiple, such as better recognition of the pathology, increase in the number of patients at risk and lifestyle modification. The clinical, radiological characteristics and treatment options of NTM are presented.

Topic review: The main pulmonary clinical and radiological features are the fibrocavitary form that mimics tuberculosis, then the form of both nodule and bronchiectasis. Sometimes multiple nodules can be seen, especially in pulmonary infections with M. xenopi. A rare presentation is a unique nodular form that presents a problem of differential diagnosis with a tumoral lesion and additionaly the patient is often asymptomatic and the diagnosis is established after biopsy due to negativity of bronchial samples on microbiology. Some general predisposing factors are alcoholism, diabetes, chronic liver disease and immunocompromised patients. Isolation of NTM in respiratory samples does not add to the certainty of pulmonary infection with NTM. Some species are almost exclusively pollutants. The response to treatment is quite slow, either radiologically or microbiologically.

Conclusion: Proper and timely NTM diagnosing and treating is very important and thus more because the treatment of these infections differs from those caused by M. tuberculosis complex. Systemic treatment of NTM is long-term and requires a combination of multiple antibiotics. Relapses and re-infections are not uncommon as well.

Key words: Nontuberculous mycobacteria (NTM), predisposing factors, diagnosis, treatment

Cutaneous tuberculosis

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ABSTRACT:

Background: Cutaneous tuberculosis is a rare form of tuberculosis. Considering the numerous skin manifestations that differ not only in the clinical features, but also in the way the infection reaches the skin, cutaneous tuberculosis is a great challenge for diagnosis.
Aim: We present a case of cutaneous tuberculosis in a 21-year-old male migrant from Pakistan, hospitalized at the University Clinic of Lung Diseases and Tuberculosis due to recurrent abscesses, furuncles and carbuncles of the left thigh and right forearm, that have lasted for the past year and had been treated with various antibiotics.
Methods: Pus obtained by abscess incision, wound swabs of left tigh, skin tissue obtained by biopsy were sent for microbiological and Mycobacterium tuberculosis analysis, but skin tissue for pathohistological analysis as well. Wound swabs and skin tissue culture were positive for Mycobacterium tuberculosis. Sputum smear and culture for Mycobacterium tuberculosis were negative. Chest X-ray also without active pathomorphological changes. Antituberculous therapy was started with four drugs (isoniazid, ethambutol, pirazinamid, rifampicin). In addition to antituberculosis therapy, there was also a need for surgical treatment of the wound of left tigh.
Results: The patient was successfully treated with antituberculous therapy along with surgical treatment of skin changes and their healing**.**
Conclusion: The diagnosis of cutaneous tuberculosis in our patient was established after a long period of time and after the failure of antibiotic treatment. Proper diagnosis of cutaneous tuberculosis is very important since it can be well treated with common antituberculous therapy.
Key words: cutaneous tuberculosis, diagnosis, treatment

Foreign body removal by flexible bronchoscopy

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Background: Foreign bodies (FB) in the tracheobronchial tree are not uncommon, especially in children.

Aim: We present a case of successful foreign body removal from the left upper lobar bronchus by flexibile bronchoscopy in a 65-year-old man admitted at the University Clinic of Lung Diseases Sarajevo due to dyspnea that have lasted two months before admission to the hospital.

Methods: A left parahilar inhomogeneous patchy shadow was observed on the chest X-ray. Chest CT scan revealed luminal obturation of the left upper lobar bronchus with altered density, primarily suspicious of a foreign body and less likely of an intraluminal tumor. A bronchoscopy revealed the bronchus for the left upper lobe was completely obstructed by a smooth, white tumor formation from which a forceps biopsy was taken. There were no signs of tumor in the pathohistological finding. Repeated bronchoscopy after one month revealed in the left upper lobar bronchus an irregularly shaped mass seemed to grow into the bronchus, that was surrounded with granulation tissue. The mass was caught with forceps after several attempts and taken out together with the endotracheal tube. It was a piece of bone and cartilage grown into granulation tissue. Already formed granulation tissue with a discrete stenosis was visible by bronchoscopy performed after the foreign body removal.

Results: Seven days after foreign body removal the bronchoscopy revealed only chronic bronchial inflammation.

Conclusion: In case of suspicion of foreign body presence in the tracheobronchial tree, extraction of the foreign body by bronchoscopy is an urgent indication.

KEYWORDS: Key words: foreign body, flexible bronchoscopy, extraction.

Clinical inertia: Focus on education

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Cardiovascular diseases (CVD) are the leading cause of death globally, taking an estimated 17.9 million lives each year. Diabetes, hypertension and dyslipidemia are well-known risk factors for CVD and we have resources to manage these conditions and eventually prevent premature deaths. But decade after decade, no significant reduction in prevalence and outcomes is evident. It's been observed that roughly half of all people with type 2 diabetes are not diagnosed; half of those diagnosed do not receive care; half of those who receive care do not achieve their treatment targets; and half of those who reach their targets do not achieve the desired outcomes. Also, there is similar "Rule of halves" for the people with hypertension and for the patients achieving the goal level of LDL cholesterol. All these are partially caused by clinical inertia. It has many faces, and we should be able to recognize it and act. By the definition, clinical inertia is failure to initiate therapy or its intensification.

Consequently, cardiovascular complications develop and life expectancy shortens. Multiple factors contribute to clinical inertia. Frequently, medical workers point out large workload and/or short time dedicated to a single patient. Though, it is true, changing it, is beyond our capacity. Instead, we should direct our attention to factors we can change by our own effort, such as, not being familiar and/or updated on guidelines, effectiveness and safety of therapy. The way to turn inertia into action is continuous education focused on guidelines, goals and therapy.

Keywords: cvd, diabetes, hypertension, ldl, inertia

BARIATRIC SURGERY YESTERDAY, TODAY, TOMORROW

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Obesity is the fastest-growing pandemic of the modern age. What is indisputable is that bariatric surgery is the most effective, long-term best and most profitable treatment for morbid obesity. The first records of obesity date back to the 2nd century. The physician and philosopher Avicena (Ibn Sina) dedicates the entire chapter in “Canons of medicine” to the problem of obesity. Very few surgical branches can boast of such meteor success as the success achieved in the last two decades in Bariatric surgery. Obesity surgery, i.e. metabolic aspects of this branch of surgery, are subjected to new studies and we can say that an interesting future awaits us in this area. The paradigm of treating obesity was altered with enormous diverse interests at stake. Generally speaking, good is an operation that has low mortality and few complications, which is effective in terms of loss of excessive body weight and comorbidities, which is reversible and amenable, which is less invasive and improves quality of life. Surgical treatment of pathological obesity is now Open access, Laparoscopic approach, NOTES approach “surgery through congenital vents”, Robotic “da Vinchi” system. Around 800000 operations worldwide are carried out annually. In the future we will probably have synchronous effects of bariatric surgeons, Notes surgery, Robotics, Intervention gastroenterologists, Intervention radiologists, endocrinologists, “Surgical strike” on energy homeostasis centers in the surgical and non-surgical effects on intestinal microbiota. Also, there will be a projection of a surgical treatment model based on the patient's genetic maps.

KEYWORDS: obesity, bariatric surgery

HYPERSENSITIVITY PNEUMONITIS AFTER COVID-19 INFECTION

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Background: Hypersensitivity pneumonitis (extrinsic allergic alveolitis) is a complex syndrome with different intensity of clinical presentation and nature of origin. There is an acute, subacute and chronic form.

Aim: We present a case of hypersensitivity pneumonitis in a 53-year-old woman admitted to the University Clinic of Lung Diseases Sarajevo due to dyspnea and cough as well as chest CT scan verified diffuse ground glass opacities.

Methods: Dyspnea and cough persist after recovering from covid-19 infection in the last year. Diffuse areas of ground glass opacities and thickening of the interlobular septa were seen on the chest CT scan, which was unchanged compared to the CT scan performed during the Covid-19 infection. Atypical resection of the right 6th lung segment was pathohistologically proven to be subacute hypersensitivity pneumonitis. Prednisone treatment was started with a successive dose reduction, and the patient was also monitored radiologically.

Results: The radiological regression of the previously described changes was confirmed.

Conclusion: All changes in the lung parenchyma with slow radiological regression should be accurately diagnosed pathohistologically after lung biopsy.

Key words: hypersensitivity pneumonitis, chest CT scan, pathohistological diagnosis, corticosteroids

ASPIRATION PNEUMONIA IN PATIENT WITH BRAIN ASTROCYTOMA

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Background: Aspiration pneumonia occurs when food or liquid is breathed into the airways or lungs, instead of being swallowed.
Aim: We present a case of aspiration pneumonia in a 49-year-old woman with a history of prior brain surgery for astrocytoma, admitted to the University Clinic of Lung Diseases and Tuberculosis Sarajevo due to cough, fever, right chest X-ray infiltration.
Methods: Upon admission to the hospital the patient was unconscious, immobile, with difficult feeding and history of brain astrocytoma surgery and irradiation as well as chemotherapy five years ago. Due to respiratory failure oxygen supplementation of 10/l via oxygen mask was administered. Chest X- ray showed patchy infiltration of the right lower lobe. In laboratory findings increased inflammatory parameters were notified. The combination of amoxicillin and clavulanic acid and metronidazole were administered.
A nasogastric tube was placed for adequate nutrition and hydration as well as airways protection.
Results: Follow-up chest radiograph showed satisfactory partial infiltration resolution as well as a decrease in inflammatory parameters in the laboratory findings. The state of consciousness varied from somnolence to short-term alertness. Arterial gas analysis remained within reference ranges.
Conclusion: Aspiration pneumonia is relatively common in the patients with limited consciousness and can cause severe complications with even fatal outcome. Preventive measures include early placement of a nasogastric tube or PEG (if the condition is prolonged or permanent), proper positioning of the patient with the head elevated.

Key words: aspiration pneumonia, unconsciousness, treatment

A Case Report of Severe Chronic Thromboembolic Pulmonary Hypertension in a Patient with antiphospholipid syndrome

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Background: Antiphospholipid syndrome (APS) is an acquired autoimmune thrombophilic disorder that is characterized by a high incidence of thrombosis. The resulting severe chronic thromboembolic pulmonary hypertension (CTEPH) is a complication of recurrent pulmonary embolism (PE) and the main cause leading to right heart failure and death.

Aim: We present a case of CTEPH as a complication of recurrent PE in a 40-year-old male with APS.

Methods: On repeat CT chest scan there was massive bilateral pulmonary artery thrombosis more pronounced on the right side, with dilatation of the right side of the heart. In the upper right lung, infarction was also present. On echocardiography, there was massive dilatation of right-sided heart cavities, ASD typ secundum with bidirectional, but more L-R shunt, and severe pulmonary artery hypertension of 87 mm Hg. Immunological laboratory findings showed elevated values of Cardiolipin antibodies IgG, Cardiolipin antibodies IgM, Anti-beta2-glycoprotein IgG, and Anti-beta2-glycoprotein IgM. Pulmonary endarterectomy is the standard treatment for chronic thromboembolic pulmonary hypertension and is the only potentially curative treatment, but the patient refused it.

Results: The patient was treated with enoxaparin, diuretic, oxygen supplementation , and ACE inhibitors and the drug Riociguat 3x 0.5 mg was prescribed.

Conclusion: In case of repeated pulmonary embolism, antiphospholipid syndrome, and another hypercoagulable state should always be suspected, especially in younger people.

Keywords: antiphospholipid syndrome, chronic thromboembolic pulmonary hypertension, pulmonary embolism.

Respiratory physiology of pregnancy and functional diagnosis in asthma

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Aim: During a healthy pregnancy, lung function, ventilation and gas exchange are altered and are a normal phenomenon due to biochemical and mechanical mechanisms. In pregnant women with asthma, these changes might be even more pronounced.

Overview: Female hormones and prostaglandins act as bronchodilators. Progressive uterine distension causes a decrease in functional residual capacity, expiratory reserve volume, reserve volume and total lung capacity, while minute ventilation, tidal volume and respiratory rate increase. In the spirometric findings, almost all parameters except for the predicted forced expiratory volume in the first second (FEV1%) are reduced. Hyperventilation and dyspnea in pregnancy are normal. The greatest danger to the fetus is insufficient therapy and control of asthma. If peak flow (PEF) falls below 80% of its best value, the dose of asthma control medication should be increased. FeNO-based asthma therapy significantly reduces the rate of adverse perinatal outcomes.

Conclusions: In the case of severe dyspnea of a pregnant woman with asthma, it is necessary to perform additional tests to identify the cause. Most diagnostic procedures for evaluating the function of the respiratory system during pregnancy are not harmful to the fetus, but bronchoprovocation tests, ventilation-perfusion scintigraphic scans and cardiopulmonary stress tests should be avoided, as well as forced expiratory tests in later stages of gestation. PEF and FeNO monitoring are useful tool for monitoring asthma control in pregnancy.

Key words: Respiratory physiology, Pregnancy, Asthma

MULTIDRUG RESISTANT TUBERCULOSIS IN A 22-YEAR-OLD MAN

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Background: Multidrug-resistant tuberculosis (MDR-TB) is a form of tuberculosis caused by Mycobacterium tuberculosis resistant to at least two first-line antituberculous drugs, i.e. isoniazid and rifampicin.

Aim: We present a case of mulitdrug-resistant tuberculosis in a 22-year-old man, admitted to the University Clinic of Lung Diseases and Tuberculosis Sarajevo due to cough, weight loss, exhaustion and muscle pain after already started treatment for sputum smear positive pulmonary tuberculosis in another hospital.

Methods: A sensitivity test to antituberculous drugs showed the resistance to isoniazid and rifampicin and therefore he was admitted to our Clinic for further treatment. His chest X-ray revealed multiple cavities and looked like a destroyed lung. His father had died of MDR TB seventeen years ago. Repeated sputum smear and culture for Mycobacterium tuberculosis were positive despite the first-line antituberculous treatment already started earlier. Since we initially did not have available all drugs of the second line for the treatment of MDR-TB in our country, we started treatment with levofloxacin, amikacin, isoniazid and pyrazinamide. After two months with the help of WHO we got other more potent drugs to treat this MDR-TB patient, such as Bedaquiline, Linezolid, Levofloxacin, Cycloserine and Clofazimine.

Results: The sputum smears and cultures for Mycobacterium tuberculosis were negative already 25 days after the administration of the second line of antituberculous therapy.

Conclusion: Accurate and timely diagnosis of MDR-TB is very important since it can be well treated with second-line antituberculous drugs; otherwise it can be fatal.

Key words: multi-drug resistant tuberculosis, sensitivity test, treatment

Primary mediastinal seminoma

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Background: Mediastinal germ cell tumors represent 3-10% of all mediastinal tumors and account for less than 5% of all germ cell neoplasms.
Aim: We present a case of primary mediastinal seminoma in a 28-year-old man admitted in the University Clinic of Lung Diseases and TB because of a CT-verified mass in the anterior mediastinum.
Methods: The patient reported a dry cough that lasted for a month. Chest CT scan revealed an expansive mass in the upper, middle, anterior, mediastinum, which compressed the large blood vessels to the right. Pathohistological finding of CT-guided needle biopsy of the mediastinal mass confirmed a tumor of germ cells-seminoma. Both testicles were without clearly isolated focal lesions at ultrasound examination. Chemotherapy based on platinum, etoposide and bleomycin was started.
Results: After chemotherapy chest CT scan compared with the previous one showed a significant regression in size and the remaining part of the tumor mass was mostly calcified. Then a resection of the right upper lobe and the anonymous vein was performed. Pathohistological findings without signs of tumor with extensive necrosis and three interlobar lymph nodes without tumor. Given the complete response, only further follow-up was determined.
Conclusion: Each tumor mass verified in the mediastinum requires a detailed evaluation, especially because tumors of the mediastinum are most often of metastatic origin. Diagnosis of primary mediastinal seminoma established in time ensures long-term survival of the patient.
Key words: primary mediastinal seminoma, diagnosis, treatment

PULMONARY ECHINOCOCCOSIS IN A 33-YEAR-OLD WOMAN

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Background: Echinococcosis has a worldwide distribution and is endemic in many regions where cattle are raised, including Mediterranean and Balkan countries. Humans are accidental intermediate hosts.
Aim: We present a case of pulmonary echinococcosis in a 33-year-old woman admitted to the University Clinic of Lung Diseases Sarajevo due to a chest CT scan verified infiltration in the left upper lung lobe.
Methods: The patient reported a cough that had lasted for the past two months, with green sputum until five days before admission, when the sputum became extremely abundant, transparent, with a salty taste. She declared she had had surgery for a cyst in her left lung in childhood. Chest CT scan revealed a heterodense infiltration that is centrally cystic and peripherally soft tissue dense as well as multiple micronodules in the left upper lobe. In the serological ELISA test IgG was positive. Bronchoscopic examination revealed only chronic bronchial inflammation. Albendazole therapy was started. Then a thoracotomy was performed with exploration of the pericyst and drainage of the left pleural cavum.
Results: Three months after the operation and albendazole treatment, chest CT scan showed a significant regression in the size of the left upper lobe infiltration. The team of thoracic surgeons made a decision on further monitoring of the patient.
Conclusion: As our country is geographically located in an endemic region, echinococcal infection should be considered in the differential diagnosis of chest infiltrations.

Key words: pulmonary echinococcosis, diagnosis, treatment

Persistent fever in a 24-year-old female - Case report

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Background: Fever develops in various diseases. It is mainly associated with infectious diseases but can also occur Non-infectious conditions.

The Aim: We present difficulties in diagnosing a febrile state in a 24 old patient with lung carcinoma.

Methods: A 24-year-old female was admitted due to prolonged febrility, pain in the area of the sternum and lower back lasts 3 months. In laboratory findings inflammation parameters were elevated with secondary anemia. In the further course, diagnostic tests are carried out that rule out an infectious ethology of febrility. Chest CT showing significantly enlarged lymph nodes in the mediastinum, right hilum and a tumor like change inseparable from the mediastinum with propagation to the right lung. A recommendation was given for a wide diagnostic workup and biopsy of the described infiltration.

Results: In a consultation with a pulmonologist, we transferred the patient to the Clinic of Lung Diseases and TB“ - Clinical Centre of University Sarajevo for the further diagnostic processing and treatment.

Conclusion: Febrility of unclear origin represents a great diagnostic challenge for the clinician. Many infectious and non-infectious diseases are considered in the differential diagnosis. Well taken the anamnesis and clinical status of the patient are very important when planning the diagnostic algorithm. When possible infectious diseases are ruled out, one should always think of a non-infectious ethology of an unclear febrile condition.

Keywords: Fever, malignancy.

THE COMPARISON OF COMPUTER TOMOGRAPHY AND HEART ULTRASOUND PARAMETERS IN THE DIAGNOSIS OF PULMONARY HYPERTENSION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE – SINGLE CENTER EXPERIENCE

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Background: Pulmonary hypertension (PH) as a frequent comorbidity in patients with chronic obstructive pulmonary disease (COPD) often correlates with even more severe cardiac complications.

Aim: To compare computer tomography (CT) and heart ultrasound (HUS) parameters in diagnosis of PH in patients with COPD and to identify the most adequate tool in early diagnosis of PH.

Materials and Methods: The retrospective, cross-sectional study was conducted at General hospital" Prim. Dr Abdulah Nakaš" in Sarajevo during 2021-2023 period. To determine optimal cut-off values of potential biomarkers for differentiation PH and Non-PH patients receiver operating characteristic (ROC) curve and corresponding areas under the curve (AUC) were used. 0,05 value is considered as statistically significant.

Results: Out of 60 patients included in the study 51.66% were males and 48.33% females with overall average age of 73.5 years. Out of all patients identified with PH, mild form of PH was present in42.5%, moderate in 40% and severe in 17.5%. According to the spirometry findings, mild form of respiratory insufficiency (RI) was identified in 7.5%, moderate in 25%, severe in 52.5% and very severe in 15%. Out of all COPD patients with identified PH, diameters of truncus pulmonalis (PA diameter), left pulmonary artery (LPA) and pressure in PA were statistically significantly higher than in Non - PH patients (*$p<0.05$; **$p<0.01$). The cut-off for PA diameter in differentiating non-PH and PH selected by the ROC curve (AUC=0,671, p=0,032) was 30cm (sensitivity 62.5%; specificity 70%, PPV 80.6%, NPV 48.3%).

Conclusion: Early diagnosis of PH favors HUS examination findings.

KEYWORDS: pulmonary hypertension, chronic obstructive pulmonary disease, computer tomography parameters, heart ultrasound.

THE USE OF COMPUTED TOMOGRAPHY AND VENTILATION/PERFUSION SPECT INQUANTIFICATION OF VENTILATION HETEROGENITY IN PATIENTS WITH CHRONICOBSTRUCTIVE PULMONARY DISEASE- ARE WE READY FOR THE NEW APPROACH?

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Background: Relationship between ventilation/perfusion spect (V/P SPECT), spirometry and high resolution computed tomography (HRCT) has been insufficiently studied in patients with chronic obstructive pulmonary disease (COPD). Certain HRCT parameters correlate with lung function decline in COPD, yet its specificity in early COPD remains unclear.

Aim: To determine the most accurate tool for early quantification of airflow limitation in patients with COPD.

Materials and Methods: The retrospective, case series were obtained from records at General hospital "Prim. Dr Abdulah Nakaš" in Sarajevo during 2021-2023 period. The Independent t test and the Mann-Whitney U-test was used to compare normally and non-normally distributed variables, respectively. 0.05 value is considered statistically significant.

Results: Out of eleven COPD patients on admission, spirometry findings for 9.09% resulted with forced expiratory volume in the first second (FEV1)>80%, while in 54.54% resulted with50%<FEV1<80%, and in 36.36% with FEV1<50%. Further evaluation revealed mild form of interstitial lung disease (ILD) on HRCT in 36.36%, moderate form in 18.18% and severe in 9.09%. Emphysematous changes were identified in 36.36% with HRCT. Compared to HRCT, the V/P SPECT analysis was more precise in determination of mildly, moderately and severely reduced ventilation for the right and left lung, respectively. Severely reduced ventilation was detected predominantly in the posterior segment of the right lung and apicoposterior segment of the left lung (45.5%).

Conclusion: Further analysis amounting more patients are needed to determine adequate approach for precise quantification of airflow limitation as primary cause of ventilation disorder in patients with COPD.

KEYWORDS: airflow limitation, V/P spect, HRCT, COPD

SYSTEMIC THROMBOLYTIC THERAPY FOR MASSIVE PULMONARY EMBOLISM – CASE REPORT

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Pulmonary embolism is one of the leading causes of cardiovascular mortality. Patients with high-risk massive pulmonary embolism require aggressive therapy, and if the risk of bleeding is acceptable, systemic thrombolysis should be considered. Thrombolytic therapy is used in patients with acute pulmonary embolism (PE) to rapidly dissolve the embolic burden and improve cardiorespiratory hemodynamics. 72-year-old patient with sudden dyspnea and syncope was admitted to the emergency department. The diagnosis of massive pulmonary thromboembolism was confirmed by echocardiography and computed tomography pulmonary angiography (CTPA). After administration of thrombolytic therapy, the patient's condition stabilized without hemorrhagic incidents. After seven days, the patient was discharged from the hospital in a stable condition with a recommendation for further anticoagulant therapy.

KEYWORDS: Pulmonary embolism, thrombolytic therapy, CTPA

Treatment outcomes of patient with active pulmonary tuberculosis and Covid 19 pneumonia

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Background: COVID-19 was declared a pandemic in 2020, whereas tuberculosis (TB) was declared a global health emergency by the World Health Organization (WHO) in 1993. COVID-19 and pulmonary tuberculosis (PTB) coinfection is associated with increased mortality and presents a diagnostic challenge to the clinician.

Aim: We present a case of COVID-19 and pulmonary tuberculosis (PTB) in a 72-year-old male hospitalized at the Clinic for lung disease and tuberculosis-The Clinical Center University of Sarajevo.

Methods: At the beginning of hospital treatment, sputum was directly microscopic TB positive, all three cultures Lowenstein–Jensen tested was positive. At hospital admission reverse transcription polymerase chain reaction (RT-PCR)-negative. On the fifteenth day of antituberculosis therapy, the patient is diagnosed Covid 19 pneumonia RT-PCR-Positive with already existing active tuberculosis. The challenges associated with diagnosis and management are also explored. Treatment was administered as per local protocols: antibiotics, corticosteroids, fixed dose-combination of antituberculosis treatment along with hydration and anticoagulation.

Results: The patient was discharged after twenty-five days of hospitalization. Chest radiograph taken3 months post-discharge showed resolving opacities.

Conclusion: COVID-19 and TB co-infection should be suspected in immunocompromised conditions, prolonged respiratory symptoms or fever, unresolved radiological abnormalities or dependence on oxygen supplementation.

KEYWORDS: Coronavirus, COVID-19, Mycobacterium tuberculosis, COVID-19 and TB co-infection

Treatment of pulmonary nocardiosis in an immunocompetent patient

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Background: Nocardia is a ubiquitous environmental pathogen that causes infection primarily following inhalation into the lungs. It is generally thought to cause infection primarily in immunocompromised patients. Pulmonary nocardiosis is a subacute or chronic necrotizing pneumonia caused by aerobic actinomycetes of the genus Nocardia and rare in immune-competent patients.

Aim: We report a case of pulmonary nocardiosis in a 72-year-old male, presented with cough, dyspnea and expectoration with episodes of hemoptysis, with purulent sputum.

Methods: The diagnosis of nocardiosis was made by a culture of respiratory samples, such as sputum, bronchoalveolar lavage revealed filamentous Gram-positive bacteria, with subjective and objective symptoms, laboratory test and imaging findings. Chest CT revealed consolidation of the right lung, with cavity along with extensive necrosis. Treatment was administered as per local protocols: antibiotics - Trimethoprim-sulfamethoxazole (TMP-SMZ) along with hydration and anticoagulation.

Results: The patient was discharged after twenty-eight days of hospitalization. The abnormalities in the lungs at the first and second follow-ups after 6 months post- discharge had been gradually absorbed.

Conclusion: Pulmonary nocardiosis is difficult to diagnose and is often confused with other lung diseases, especially in immunocompetent individuals.

Keywords: immunocompetent patient, nocardia, nocardia infections, nocardiosis

Title: Abscopal Effect From Combined Stereotactic Body Radiotherapy and Anthracycline-based Chemotherapy – a Case Report and Literature Review

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Introduction: Abscopal effect is the occurrence of the tumor regression at a distant metastatic site, outside the irradiated volume. As a phenomenon has been rarely observed in previous decades. Immunotherapy as a standard in oncology treatment combined with radiotherapy (RT) highlighted radiotherapy as immunomodulator once again. Volume based radiotherapy allowed delivery of higher doses to tumor and dose and fractionation play major role in immunostimulant processes.

Aim: To present abscopal synergic action of stereotactic body radiotherapy (SBRT) and anthracycline based chemotherapy.

Case presentation: Female 42 y was diagnosed with invasive, hormone positive, HER2 negative breast cancer, stage cT2N1M1, oligometastatic disease. Bone scan and CT scan revealed metastatic sites in thoracic spine: Th 8 and Th10 vertebral body were suspicious. MRI revealed osteolytic metastasis only in Th8. Anthracycline based chemotherapy and RT were proposed. Radiotherapy to spine metastasis was prolonged until MRI report. Only Th8 was irradiated, TD 14Gy/1 fraction SBRT technique. Before RT, patient received 2 cycles of EC chemotherapy and 4 more after RT, then continued with hormonal + CDK4/6 inhibitor therapy. Control PET-CT 1 mo and 4 mo, and spine MRI 5 mo after RT were performed and showed no metabolic active changes with osteosclerotic changes in irradiated Th 8 vertebra, but also in Th10 and iliac bone, the lesion which was occult at the initial diagnostic work up.

Conclusion: Chemotherapy in combination with radiotherapy can also produce abscopal effect. Ongoing trials will bring some answers, but more investigations in the field of immune-radiobiology are needed

Keywords: Abscopal, radiotherapy, SBRT, oligometastasis, chemotherapy

Title: Use of Artificial Intelligence AI in Clinical Trials

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Background: Clinical trials are pivotal in bringing new drugs, technologies and procedures to the market, and to patients in clinical practice. The importance of clinical trials lies in the fact that they can show what does and does not work in humans that cannot be learned in the laboratory experiments or in animal trials producing the highest level of quality evidence.
Introduction: Pharma Research and Development investment is facing ever-increasing cost of bringing a single novel drug to market. Suboptimal patient selection and recruiting techniques, paired with the inability to monitor and coach patients' effectively during clinical trials, are two of the main causes for high trial failure rates.
Predictive models based on AI are already widespread in the healthcare field. Most pharma companies have only scratched the surface of AI's potential. Considering the complexity of clinical trial development, AI seems to offer an innovative solution.
Automating some of the tasks with artificial intelligence (AI) tools could optimize patient selection, matching and enrollment. Better patient selection could also reduce harmful side effects of the treatment.
AI can boost trial participant retention. Remote patient monitoring allows patients to participate in clinical trials with fewer visits to the hospital. AI algorithms can also be used to understand individual patient behaviors or needs, resulting in more patient-centric interactions and better retention.
Conclusion: Using AI pharma companies can reduce the cost and time required to process clinical-trial data through smart automation, improved efficiency while lowering the cost and produce faster trials. More studies are needed to validate the use of AI-based tools and facilitate their adoption in clinical trials.

Keywords: AI, research and development, pharma industry, clinical trials, patients selection, remote monitoring

Prevalence of coronary artery anomalies detected by coronary CT angiography in Sarajevo Canton, Bosnia and Herzegovina

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Background: Coronary artery anomalies (CAAs) are congenital variations of one or more of the coronary arteries and they are an uncommon but important cause of chest pain and, in some cases, sudden cardiac death. Anomalies of coronary arteries may be found incidentally in 0.3-1% of healthy individuals. The three types of coronary artery anomalies are anomalies of origin, anomalies of course and anomalies of termination. The purpose of our study was to estimate the frequency of CAAs in Sarajevo Canton, B&H, and to deteremine the prevalence of origin, course and termination anomalies of coronary arteries.
Aim: This was a retrospective analysis of 919 patients who underwent Coronary CT Angiography to determine CAAs in Sarajevo Canton.
Results: In our study, total number of CAAs have been found among the 130 patients (14.12%) out of which anomalies of origin are found at 14 patients (1.52%), anomalies of course at 115 patients (12.5%) and anomaly of termination in 1 patient (0.1%).
Conclusion: Coronary CT angiography is an excellent tool for diagnosis of CAAs regarding origin, course and termination of the coronary arteries.

Key words: Prevalence, coronary artery anomalies, coronary CT angiography

Deep Learning and Neural Networks in Radiology

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Aim: Recently we observe a rise in artificial intelligence (AI) - related research, especially in radiology. In order to understand the recent trends, it is imperative to understand the basic principles and key words used in AI, like machine learning and deep learning, and its current applications in radiology.

Topic review: To this end we present a brief overview of these basic principles, and show some applications of the AI by the local neuroradiology-AI team in our department. In order to automatically segment medical images, we use in-house designed convolutional neural networks (CNNs). Some of our applications in AI include the automatic segmentation of posterior limb of internal capsule (PLIC) in very early born neonates. We prospectively enroled 550 neonates born under 28 weeks of gestation, and used AI in order to predict the motor outcome at 2 years of age measured by the Bayley Scales of Infant and Toddler Development. In the same cohort, we used feed-forward neural network to predict neurodevelopmental outcome using MR spectrocopy and diffusion tensor imaging. In another project, we designed an automatic segmentation algorithm for segmentation of stroke in over 6000 patients in Tyrol Stroke Register.

Conclusion: We currently design an algorithm for automatic distinction of contrast extravasation and hemorrhage in patients after interventional procedures like mechanical thrombectomy, using dual-energy CT.

Keywords: artificial intelligence, deep learning, machine learning, neural networks, neuroradiology

Musculoskeletal Ultrasound Diagnosis and Interpretation of Sports Injuries

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Topic review: The development of technology in the last two decades has left a big mark in medicine especially in radiology.

Background: We are witnessing faster and bigger, almost daily, progress of computer software (IT) systems. Innovations and increasingly sophisticated capabilities of ultrasound devices suggest the inclusion of diagnostic ultrasound (US) in routine clinical practice. The technical characteristics of ultrasonic devices with the use of high-frequency and high-resolution probes have been significantly improved. The structures that can be shown through the so-called "Ultrasound window", the most common pathology was determined and defined for each individual observed region, and quantification and better standardization of ultrasound procedures were performed.

The application of diagnostic ultrasound (US) of the musculoskeletal system, especially the power Doppler technique (PD), has significantly improved and enabled better and more accurate diagnosis.

With the development of higher resolution probes, diagnostic musculoskeletal ultrasound (MSK-US) in small joints is becoming more common and a very, welcomed tool in the world of sports medicine, soft tissue injury, rheumatology and rehabilitation. Among the numerous examinations of various systems in the body, it is widely used for the quantitative and qualitative assessment of various musculoskeletal pathologies, mostly in athletes with sports injuries.

Conclusion: The advantage of ultrasound examination of athletes is reflected in the ability to perform dynamic examinations, as well as the ability to interact with the patient (athlete) and correlate symptoms with the findings of ultrasound examination, which the healthcare system provides as an instant and overall service.

In presentation, we will discuss common sports injuries of these structures, their clinical implications, and ultrasound key points.

Key words: ultrasound, diagnostics, musculoskeletal, joints, technology, sports

Case of recurrent DVT in a patient with May - Thurner syndrome

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Objective: To provide an overview of May-Thurner syndrome, also known as Cockett syndrome, is a congenital anatomical variation where the left iliac vein is compressed by the right iliac artery. It is more commonly observed in women aged 20 to 50, occurring three times more frequently in women compared to men.

Topic Review: We present a case of a 30-year-old man who initially presented with lower abdominal pain and pain in the left leg. Upon ultrasound examination, a thrombus was identified in the great saphenous vein on the left side, propagating to the external iliac vein. The patient had an elevated D-dimer value of 3000 (with a reference value of up to 800). Despite being on rivaroxaban 10 mg therapy, a year later, the patient experienced recurrent pain in the left leg. MRI angiography confirmed thrombosis of the common left iliac vein, which was compressed and displaced dorsally by the common iliac artery, consistent with May-Thurner syndrome. Two months later, color Doppler revealed inadequate recanalization of the iliacofemoral segment, particularly the common femoral vein. Further tests revealed that the patient had thrombophilia.

Conclusion: Iliac vein compression is a relatively common condition, affecting approximately 1 in 5 individuals. However, not all cases of iliac vein compression are formally diagnosed as May-Thurner syndrome, likely due to the absence of symptoms unless a deep vein thrombosis (DVT) develops. In cases where May-Thurner syndrome is suspected, anticoagulant therapy, particularly in patients with concurrent thrombophilia, may be necessary for effective management.

Keywords: recurrent DVT, May-Thurner Syndrome, iliac vein, thrombus, ultrasound, abdominal pain

Vulvar Synovial Sarcoma

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Introduction: Only a few cases of synovial sarcoma of the vulva have been described in medical literature, and they mostly occur in the first two decades of life. Synovial sarcoma occurs near tendon sheaths and synovial membranes and is linked to the chromosomal translocation.
Aim: In this exceptionally rare case presentation, the change occurred during pregnancy and not in the third decade of life, as it is stated in the medical literature.
Case presentation: A 35-year-old woman came to the surgical clinic because of a cystic formation just above the symphysis, of which she had known for 6 months, and which began to grow during pregnancy. Cytological content was aspirated and showed an inflamed cystic formation. Gynecological ultrasound showed a cyst in the area of the labia majora, 48x16x31mm in size, with hypoechoic liquid content. She was given amoxicillin and clavulanate and rivanol compresses as therapy during pregnancy. 2 months postpartum, an MRI of the pelvis was performed, which showed a significant increase of the cyst, which is described as a multi-loculated, cystic-solid formation, 50x74x73mm in size, lobulated contours with solid elements that show diffusion restriction on the DWI/ACD sequence and post-contrast imbibition of the septa within the formation – radio-morphologically suspicious etiology, and pathophysiological diagnosis was recommended. Surgical control indicated surgery.
Conclusion: PHD analysis with immune-histochemical analysis performed in the Czech Republic revealed that it was a synovial sarcoma, monophasic epithelial variant, FNCLCC grade 2. MSCT of the abdomen showed no signs of disease recurrence.

Keywords: synovial sarcoma, cyst labia majora, post-contrast imbibition, chromosomal translocation