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PERIOPERATIVE MANAGEMENT OF A TWO-YEAR-OLD CHILD WITH CLINICAL PRESENTATION OF BRAIN INCARCERATION

Ajla Hadžić, Direković Redžib, Ermin Pobrić, Asmira Ljuca

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We will present a case of perioperative management of a critically ill child due to complications of a newly discovered central nervous system (CNS) tumor. The most common pediatric CNS tumors are infratentorial. Complete surgical resection is only feasible in localized disease, necessitating rapid diagnosis. Perioperative complications, often life-threatening, occur at a rate of 10-50%, posing significant challenges in anesthesia management.

A 2-year-old child was admitted to the pediatric department of a secondary healthcare facility due to vomiting, headache, drowsiness, and loss of consciousness. The child, from an uncomplicated second pregnancy, exhibited normal development and vaccination history. An urgent CT scan revealed an expansive lesion with midline structure displacement, prompting consultations with anesthesiologists and neurosurgeons. Initially slated for transfer to a tertiary care center, the child's deteriorating condition necessitated an urgent decompressive craniotomy.

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Prompt and appropriate management of life-threatening clinical conditions remains paramount, regardless of healthcare facility level or circumstances.

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Prompt and appropriate management of life-threatening clinical conditions remains paramount, regardless of healthcare facility level or circumstances.

Keywords: life-threatening, pediatric, intensive care, sedation

IMPACT OF GERIATRIC NUTRITIONAL RISK INDEX ON PATIENTS' OUTCOMES AFTER CARDIAC SURGERY

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Aim: The Geriatric Nutritional Risk Index (GNRI) is a simple screening assessment of nutritional status in elderly patients. The aim of the study was to determine the relationship between preoperative GNRI and the occurrence of the postoperative complications and outcomes in elderly patients after cardiac surgery in our center.

Materials and Methods: In this retrospective study the total of 90 patients aged 65 or older were evaluated for GNRI and its impact on patients' outcomes. Patients underwent open elective heart surgery for coronary bypass, valve replacement or combined cardiac surgery between August 2022 and January 2024.They were separated into two groups: those without risk of malnutrition (GNRI > 98) and those at risk of malnutrition (GNRI ≤ 98). The GNRI was calculated using formula including patient serum albumin level, weight and ideal body weight.

Results: Comparison between those two groups showed that nutritionally high-risk patients had worse pre-operative risk profiles, with higher incidence of chronic lung disease, chronic renal failure, NYHA class 3, and uncontrolled diabetes. High-risk patients had higher incidence of operative mortality, prolonged ventilation, atrial fibrilation, heart failure, renal failure, deterioration, wound infection, longer immobility, LOS and readmissions.

Conclusion: The easily accessible Geriatric Nutritional Risk Index used for nutritional status before cardiac surgery has a predictive role in postoperative outcomes. Assessment of patient nutritional status and prompt nutritional support may be a good periprocedural strategy to diminish the risk of complications and improve outcomes.

Keywords: malnutrition, GNRI, cardiac surgery, postoperative complications, patient outcomes

AIRWAY MANAGEMENT IN A NEWBORN WITH MULTIPLE ANOMALIES: CASE PRESENTATION

Amela Delibegović, Jasmina Smajić, Lejla Dedić-Simendić, Maja Tomić-Sejranić, Vildana Agović, Adela Hodžić

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Introduction: Securing the airway is a challenge for an anesthesiologist. Endotracheal tubes used in pediatric anesthesia can have cuffs or be without. In a newborn, the length of the endotracheal tube is determined based on the "1234-78910" rule.

Case Presentation: Term female newborn, 37 weeks gestational age, birth weight 2040 g, birth length 46 cm, occipitofrontal circumference 31 cm, Apgar score 7/7. At birth, cyanotic with irregular breathing, normal cardiac actions, dribbling thick secretions from the mouth, aspirated, ventilated, resulting in a pale pink color. In the neonatal unit, pale pink with livid extremities, hypotrophic, hypotonic, diminished reflexes, tachypneic R:70/min, head circumference 1x1 cm, pronounced mandibular hypoplasia, complete cleft of the soft and hard palate, tongue completely obstructing the airway, patent nostrils. SpO2: 74%- 81%, HR:152/min, despite nasal cannula placement, severe respiratory insufficiency remains. During intubation, a previously noted deformity with difficult access to the larynx is observed. Inserted a 2.5 Fr tube. Upon removal of the guide wire from the tube, the upper expanded part of the tube dislodges, attempts to remove it are made under laryngoscope control. General condition of the newborn remains unchanged. Transported to the ICU for further respiratory support. Diagnosis: Foreign body in the digestive tract, Patent foramen ovale, Persistent ductus arteriosus, Micrognathia, Palatoschisis.

Conclusion: In this case, extraction of the foreign body from the esophagus was required by a pediatric surgeon with assistance from an anesthesiologist who, through improvisation using a laryngoscope and a small surgical instrument, removed the endotracheal tube from the esophagus.

Keywords: newborn, multiple anomalies, airway

CASE REPORT

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Patient, 60 years old. Patient came to Department for pain management because of knee pain that irradiated to femoral region and hip. Examination showed bilateral gonarthorisis. First diagnostic block procedure of genicular nerves was done, and patient had improvement. So, it was decided to perform radiofrequency ablation of genicular nerves. VAS before treatment was up to 10 and after radiofrequency ablation 2. But patient came later complaining of pain in hips, lumbar region and abdomen with frequent dysuric symptoms and daily fever. Further examination was recommended, and metastatic prostate cancer was diagnosed. Scintigraphy showed dissemination in the pelvis, along the spine, to ribs and skull. Oncologist decided first for LHRH agonist therapy and later taxotere with androgen deprivation therapy and abirateron. Daily, patient needed 400 mg of tramadol, 225 mg of pregabaline and naproxen 550 mg twice/day. Bilateral diagnostic block of medial branch was performed in segments L2/L3, L3/L4, L4/L5 and L5/S1. After that patient had improvement and VAS decreased from 10 to 2 and he daily needs up to 100 mg tramadol. The patient is scheduled for lumbar radiofrequency ablation after the chemotherapy is done or in case of significant pain increase.

Keywords: pain management, radiofrequency ablation, cancer pain

DEVELOPING NON-PHARMACOLOGICAL PAIN MANAGEMENT PROGRAM FOR ELDERLY POPULATION

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Background: Chronic medical conditions in the elderly and extensive chronic therapy used to treat them often complicate pharmacological management of chronic pain. As anesthesiologists and pain therapy practicians, we tried to develop a specialized non-pharmacological therapeutic program for this population.

Aim: This research aimed to determine whether a short-term non-pharmacological pain treatment significantly reduced patients' pain scores, measured by visual analogue scale (VAS).

Subjects and methods: Users of centers for healthy aging who suffer from chronic pain were asked to participate in the research. Each participant underwent a medical exam and an interview with a pain specialist, which was used to create an individualized short-term non-pharmacological treatment.

Participants were also asked to complete a questionnaire before and after treatment.

Results: Seventeen patients in total participated in this research. Most participants had chronic lower back pain, followed by neck pain and knee pain, and 41% said that their chronic pain limits their daily activities. VAS score measured before and after treatment was statistically significantly reduced (mean difference 3.12 (CI 1.97 – 4.27), $p<0.0001$).

Conclusion: Specialized and individualized non-pharmacological pain management programs could significantly reduce pain in elderly patients suffering from chronic pain.

Keywords: chronic pain, non-pharmacological pain management

NON-PHARMACOLOGICAL PAIN MANAGEMENT

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Objective: Pain is unpleasant sensory and emotional experiences associated with actual or potential tissue damage. Pain is the most common health problem leading to seeking health care. About 4 of 10 hospitalized adult patients suffer from pain. Non-pharmacological pain management is very important for successful treatment of pain. Pain management is most effective when non- pharmacological and pharmacological approaches are combined.

Review: Non-pharmacological treatment of the pain includes many methods and can be helpful for pain relief in combination with other pain treatments. Including acupuncture, transcutaneous electrical nerve stimulation, cognitive behavioral therapy, progressive muscle relaxation, occupational therapy music therapy. Non-pharmacologic therapies can be stand-alone interventions or work in combination with medicine, procedures or surgery. An often-under-recognized feature of non-pharmacologic therapies is their ability to confer additional benefits: a treatment to reduce pain can also reduce anxiety and depression, nausea and vomiting; facilitate restful sleep; and increase a patient's sense of well-being and desire to participate in their own recovery

Conclusion: Multi-disciplinary approach to pain management should be an imperative and non- pharmacological pain management is part of that approach. Non-pharmacological treatment is inexpensive and safe and can consequently reduce the need for opioids.

Keywords: pain management, approach, therapy

RADIOFREQUENCY ABLATION IN UNIVERSITY CLINICAL HOSPITAL MOSTAR

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Radiofrequency denervation is a procedure in which an electrode is used to generate heat to coagulate the nerve and prevent it from transmitting painful signals to the brain. It does not remove the cause of the pain. This procedure involves x-ray fluoroscopy to guide an insulated electrode with an exposed tip into the area parallel to the target nerve. (Murtagh 2006) A current is then passed through the electrode destroying the adjacent tissue, including the target nerve, so that the transmission of pain signals are interrupted (Murtagh 2006). The coagulation process is dependent on a number of factors including: the electric current used and the size of the electrode, the temperature generated, the duration of the procedure, impedance (i.e. resistance to the passage of an alternating current), identifying the correct joints and the application of correct RFD technique (Bogduk 2014). (ISCRR Research Report 2014)

In patients who do not respond to conservative management, radiofrequency denervation could be an option.

In Department for pain management in University Clinical Hospital Mostar from 2023 we started performing radiofrequency ablation to patients who had positive response to diagnostic blocks.

We started performing diagnostic blocks of medial branches for faset joints, genicular nerves, hip and shoulder pain. Before the radiofrequency ablation procedure we perform diagnostic block with 0.5% levobupivacaine. If there is pain reduction for 50% or more patient is candidate for radiofrequency ablation.

Keywords: pain department, invasive procedures, radiofrequency ablation

THE ROLE OF PERCUTANEOUS LASER DISK DECOMPRESSION IN PAIN MANAGEMENT

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Objective: This review aims to provide a balanced overview of percutaneous laser disk decompression (PLDD) as a treatment modality for contained lumbar disk herniation, evaluating its efficacy, safety, and position in the range of treatment options.

Topic Review: Sciatica, often caused by herniation of an intervertebral disk, affects a significant number of individuals annually. While many patients recover with conservative treatment, a subset requires surgical intervention. PLDD, a minimally invasive procedure, offers the potential for reduced morbidity and shorter recovery periods compared to conventional surgery. . PLDD reduce the pressure on the nerves and reduce the disc herniation. The heat-induced reduction of tissue also ensures that pain signals are no longer transmitted to the brain. Chronic pain can be eliminated as a result.

Conclusion: PLDD has proven to be safe and effective. It is minimally invasive, is performed in an outpatient setting, requires no general anesthesia, results in no scarring or spinal instability, reduces rehabilitation time, is repeatable, and does not preclude open surgery should that become necessary. Well-designed research comparing PLDD to conventional surgery and conservative management is necessary to determine its true efficacy and place in the treatment algorithm for lumbar disk herniation.

Keywords: PLDD, lumbar disk herniation, minimally invasive procedure

A MULTIDISCIPLINARY TREATMENT OF CHRONIC PAIN

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Introduction: The Pain Management Program (PMP) is a multidisciplinary program for the treatment of chronic pain in patients who have failed previous treatment. The program is based on a multidisciplinary approach to the treatment of chronic pain with the aim of educating and involving the patient as an equal partner in the treatment of pain. The treatment team within the multidisciplinary program includes algologist, physiatrist, psychiatrist, psychologist, nutritionist, bachelor's degrees in physiotherapy, occupational therapy and nursing.

Subjects and methods: The subjects were patients included in the multidisciplinary program for the treatment of chronic pain at the Clinical Department of Pain Management of the Osijek, University Hospital Center Osijek in the period from the implementation of the Program in work of Department since March 2014, to April 2022. In the second study, patients with chronic low back pain were included in a multidisciplinary program and multimodal treatment of chronic pain, and patients included only in multimodal treatment in the period from November 2021 to May 2023. Patients were monitored during 4 weeks of active treatment, where they filled out standardized questionnaires before and after the intervention and wore a smart watch for 4 weeks.

Results: In the observed period, there were a total of 721 patients included in the multidisciplinary program, of which 50 (6.93%) dropped out of the program. The majority of patients 346 (51.56%) had low back pain. When joining the program, the 480 patients (71.53%) assessed the intensity of pain in the severe category (VAS 7-9), while the 404 patients (60.2%) at the end of the program assessed the intensity of pain as moderate (VAS 4-6). In the second study, there were a total of 128 patients. A significant improvement was obtained for pain measurement with the NRS scale and for all scales and subscales of all applied questionnaires.

Conclusion: From the obtained results it is evident that there is a significant statistical difference in pain intensity before and after the completed multidisciplinary program. Despite partially different initial characteristics, improvement in all observed variables was recorded in subjects treated with a multidisciplinary approach, even when they did not reach statistical significance.

Keywords: chronic pain, multidisciplinary treatment

REGIONAL ANESTHESIA MANAGEMENT IN A HIGH-RISK PATIENT: A CASE REPORT

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Objective: This case report aims to describe the successful use of regional anesthesia in a 70-year- old patient with multiple comorbidities undergoing urgent below-knee amputation.

Case Report: A 70-year-old female presented with Gangrene pedis, Type 2 Diabetes, Hypertension, and severe Cardiomyopathy, necessitating an urgent below-knee amputation. The patient's condition was further complicated by Pneumonia, Chronic kidney disease, and Valvular pathology. She was also receiving Clexane 40 mg and Clopidogrel 75 mg. Point of Care Ultrasound (POCUS) revealed multiple B-lines in the lungs, pleural effusion with atelectasis on both sides, and approximately 2 liters of fluid in each pleural cavity. The patient exhibited hypertension, tachycardia, confusion, and a reduced Glasgow Coma Scale score, with an oxygen saturation of 85% on 4L/min O2 via nasal cannula. Given the urgency and complexity of the patient's condition, pleural drainage was performed. Anesthesia was managed with an ultrasound-guided popliteal block using 20 ml Ropivacaine and a saphenous nerve block with 10 ml Ropivacaine to achieve sufficient regional anesthesia. The below-knee amputation was performed without complications, and the patient's condition remained stable throughout the surgical procedure. Post-amputation, the patient was transferred to the Intensive Care Unit (ICU) for close monitoring.

Conclusion: In this case, regional anesthesia played a crucial role in providing effective pain management and anesthesia for urgent surgery in a patient with multiple comorbidities and complex medical issues. This highlights the importance of considering regional anesthesia as a viable option in challenging cases where general anesthesia may pose greater risks.

Keywords: regional anesthesia, below-knee amputation, comorbidities, urgent surgery, complex medical case

PSYCHOLOGICAL APPROACH IN THE TREATMENT OF CHRONIC PAIN

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Chronic pain negatively affects all aspects of a person's life, causing serious physical, psychological and psychosocial difficulties, and unlike acute pain, it represents a special health problem in itself. The biopsychosocial model of pain indicates the necessity of a comprehensive approach to treatment, taking into account the connections between physical, psychological and social factors in the experience of pain. Psychotherapy for people with chronic pain is primarily aimed at improving physical, emotional, social and professional functioning, and not at eliminating the pain itself. Psychotherapeutic procedures used in the treatment of chronic pain differ in their scope, duration, and goals, and therefore show different patterns of treatment effectiveness. The most commonly used and scientifically based psychotherapies in the treatment of chronic pain are divided into four categories: behavioral therapy (BT), cognitive-behavioral therapy (CBT), mindfulness-based therapy (MBT), and acceptance and commitment therapy (ACT). The aim of this paper is to present the theoretical basis of the mentioned approaches, the therapeutic goals and effectiveness of these approaches, and the factors and individual differences that affect the success of the treatment. Research emphasizes how psychotherapy can help individuals actively deal with chronic pain, but there is still a great need to identify predictors that influence the success of treatment.

More empirical research into the factors that contribute to differential response to treatment and expanding the availability of psychological pain treatment may result in significant savings in the treatment of chronic pain.

Keywords: chronic pain, multidisciplinary approach, psychotherapy

EPIDURAL STEROID INJECTIONS: INDICATIONS, TECHNIQUES, AND PATIENT OUTCOMES

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Objective: This paper aims to provide a comprehensive overview of epidural steroid injections (ESIs), including their indications, anatomy, techniques, complications, and outcomes, in the management of chronic low back pain (LBP) and neck pain.

Topic review: ESIs play a crucial role in managing radicular pain caused by conditions such as disc herniation, spinal stenosis, and degenerative disc disease. The procedure involves delivering steroids and local anesthetics to the epidural space, targeting the source of pain and inflammation. ESIs have shown varying levels of efficacy for different conditions, with good evidence supporting their use in lumbar disc herniations and spinal stenosis. However, it's important to note that the effects of ESIs are not permanent. While some patients may experience long-lasting pain relief, others may require multiple injections or additional treatments to maintain their pain relief. Additionally, ESIs are not a cure for the underlying condition, and patients may need to continue with other treatments such as physical therapy and lifestyle modifications to manage their pain effectively.

Conclusion: Despite the efficacy of ESIs in providing short-term pain relief and improving quality of life, they are part of a comprehensive treatment plan that may include physical therapy, lifestyle modifications, and multimodal analgesia. Complications associated with ESIs, although rare, should be carefully monitored. An interprofessional approach involving physicians, nurses, psychologists, and physical therapists is crucial for optimizing outcomes and providing comprehensive care for patients with chronic LBP and neck pain.

Keywords: ESI, chronic low back pain, radicular pain

MINIMALLY INVASIVE PROCEDURES IN THE TREATMENT OF CHRONIC PAIN

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Chronic pain represents a major public health problem because 20% of the population of a country suffers from chronic pain on average, which entails a huge number of non-working days, i.e. sick leave, which is a big economic cost for every country.

Although pharmacotherapy is the cornerstone in the treatment of chronic pain, which is often supplemented by non-pharmacological treatment, and the choice of drugs is based on the pathophysiology of pain, minimally invasive treatment of chronic pain is sometimes the only option in the treatment of pain, and very often a part of multimodal pain treatment, which reduces the need for pharmacotherapy, with smaller doses of NSAIDs and opioids, which reduces the side effects and complications of the aforementioned drugs. Among the minimally invasive procedures in the treatment of chronic pain, the following procedures are most often used:

- Epidural administration of steroids is particularly effective in acute radicular pain because it suppresses the inflammatory response around the nerve root itself, and depending on the pathology, the approach can be interlaminar, transforaminal and caudal.

- Sympathetic ganglia blockade is effective in complex regional pain syndromes in the upper and lower extremities as well as in chronic visceral pain by modulating the transmission of pain signals by sympathetic fibers.

- Percutaneous laser disc decompression (PLDD) is an effective method of treating disc protrusion with and without nerve root compression by reducing the pressure in the disc itself, which is achieved by vaporizing the nucleus pulposus and thereby achieving recovery of protrudiraning disc.

  Radiofrequency thermal and pulse modulation and denervation of individual nerves and ganglia of the dorsal horn, which modulates the transmission of pain signals from a certain region (knee joint, hip, shoulder, etc.), thus reducing the perception of pain from that area

- Spinal cord stimulation (SCS) is achieved by installing one or two electrodes in the epidural space and programming the battery activates certain areas on the electrodes and thus modulates the transmission of the pain signal of neuropathic pain to the brain.

In addition to the mentioned procedures, blocks of the sacroiliac joints, minimally invasive procedures for degenerative discogenic pain, blocks of peripheral nerves as well as blocks of small and large joints for musculoskeletal pain are often used. Although the mentioned procedures require trained personnel, space for implementation as well as expensive equipment and expensive consumables, the cost-benefit is on the side of minimally invasive procedures in the treatment of chronic pain, because it has been proven that inadequate pain treatment is the most

expensive treatment for an individual, with many ineffective hospital days treatment, ineffective operations, and sick leave that often lasts from several months to several years, all of which is a far greater economic cost for any country than minimally invasive treatment of chronic pain.

Keywords: epidural steroid administration, PLDD, SCS, minimally invasive pain treatment

ATYPICAL HUS IN PREGNANCY: A CHALLENGE FOR PHYSICIANS – A CASE REPORT

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Introduction: Atypical hemolytic-uremic syndrome in pregnancy is a rare form of disease characterized by a triad of symptoms: microangiopathic hemolytic anemia, thrombocytopenia, and acute kidney failure. Triggered by pregnancy, genetically predisposed women develop a syndrome that leads to hemolytic disease with endothelial damage and platelet consumption.

Case report: A young female patient, 26 weeks pregnant, was examined at the Clinic for Internal Diseases, Department of Nephrology with abdominal pain, bloody diarrhea and vomiting since five days prior. Laboratory findings revealed high values of renal parameters, thrombocytopenia, hypoproteinemia, pathological urine findings, which led to the initiation of plasmapheresis and hemodiafiltration treatment. Further laboratory examination showed decrease in the number of erythrocytes, low values of hemoglobin, hematocrit, haptoglobin, and an increase in liver parameters. On the fifth day of hospitalization, due to worsening general condition and laboratory findings, the patient was transferred to the Intensive Care Unit of the Clinic for Anesthesiology and Reanimation for intensive treatment. During hospitalization in the ICU, the patient was treated multidisciplinary, microbiological and immunological tests were negative, and genetic testing performed at a reference center in Hungary confirmed a HUS. Corticosteroids were also, introduced into therapy, and administration of biological therapy (Ravulizumab) was considered. After the initiation of corticosteroids, patient's condition improved, and on the eighth day of hospitalization in the ICU, patient was transferred to the Nephrology Department for further treatment.

Conclusion: Atypical HUS in pregnancy is a severe condition that requires multidisciplinary approach, early recognition and initiation of plasmapheresis and hemodialysis treatment.

Keywords: HUS, pregnancy, multidisciplinary approach

CORTICOSTEROIDS: POWERFUL WEAPON IN CRITICAL ILLNESS, YES OR NO

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Introduction: The first documented therapeutic use of a corticosteroid was in 1948, when Philip Hench used synthetically produced cortisone (compound E) to treat a patient with rheumatoid arthritis. Over the subsequent 60 years the use of corticosteroids in medicine, including critical care, has become widespread. Interest in the potential benefits of the profound anti-inflammatory and immunosuppressant effects of exogenous corticosteroids has led to the exploration of their role across a broad spectrum of clinical scenarios.

Key findings: Critical illness-related corticosteroid insufficiency (CIRCI) is a state of systemic inflammation involving dysregulation of the hypothalamic-pituitary-adrenal axis, altered cortisol metabolism, and tissue resistance to corticosteroids. Many conditions may be associated with CIRCI, including sepsis, septic shock, acute respiratory distress syndrome, and severe community-acquired pneumonia. Steroids may be beneficial for a broad spectrum of critically ill patients. Exogenous corticosteroids have both glucocorticoid and mineralocorticoid effects to a varying degree of potency. Administered corticosteroids enter target cells, bind to glucocorticoid receptors in the cytoplasm, and then migrate into the nucleus where the activated receptor complex binds to DNA. This complex alters the proteins produced by the nucleus, changing the functions of the cell in a number of ways, including downregulating the release of inflammatory mediators. The anti-inflammatory effects of glucocorticoids underlie most of their therapeutic uses. But steroids are potent hormones with diverse physiological effects and adverse consequences; they can have a significant impact, both positive and negative, on a critically ill patient. They can be associated with several side effects, most notably hyperglycemia, but also hypernatremia, neuromuscular weakness, myopathy, superinfections, upper gastrointestinal bleeds, arrhythmias, and steroid-induced psychosis.

Conclusion: Steroid administration remains controversial within modern critical care. Caution must be taken to carefully consider the indications, risks, and benefits of corticosteroids when deciding on their use. Steroid use should always be guided by clinical response.

Keywords: corticosteroids, critical care, benefit, risk

A CASE OF POST-ERCP SEVERE SEPTIC SHOCK ASSOCIATED WITH PSC-AIH OVERLAP SYNDROME

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Background: PSC/AIH overlap syndrome (OS) is a rare disorder characterized by the concomitant occurrence of the biochemical and histological features of AIH and the cholangiography abnormalities found in PSC. As it is difficult to diagnose, endoscopic retrograde cholangiopancreatography (ERCP) is commonly used as a diagnostic and therapeutic measure, but can be complicated by cholangitis, pancreatitis or sepsis.

Case presentation: In this study we present a young woman who was treated for recurrent nonspecific abdominal pain for several years. She was admitted to the hospital to undergo ERCP, which failed and was complicated by edematous pancreatitis. Later, she underwent another ERCP, as well as liver biopsy, after which she developed severe septic shock, and was managed in the intensive care unit, requiring organ-failure support. She was finally diagnosed with PSC/AIH overlap syndrome and followed up accordingly.

Discussion and Conclusion: Despite improvements in antimicrobial therapy and supportive care, the incidence of and mortality associated with sepsis still remain relatively high. Severe complications following ERCP, such as sepsis and cholangitis, are associated with therapeutic ERCP in patients in which previous diagnostic ERCP without drainage was performed.

Keywords: ERCP, septic shock, PSC, AIH, PSC-AIH overlap syndrome, sepsis

POLYTRAUMA AND FAT EMBOLISM SYNDROME

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Objectives: Fat embolization refers to the presence of fat droplets circulating in the bloodstream, while fat embolization syndrome occurs when these droplets cause clinical symptoms, which most often include respiratory insufficiency, neurological disorders and the appearance of petechiae.

Topic review: A young patient (twenty-three years old) sustained severe injuries in a traffic accident, including fractures of both femurs and lower legs, the pubic bone, serial rib fractures on both sides and a fracture of the left radius and was admitted to the ICU and placed on controlled mechanical ventilation with sedation and relaxation. Orthopedic surgery was performed on admission to externally fixate and reposition the femurs and lower legs. Adequate medical and supportive therapy was provided. In the further course of treatment, the patient developed tachyarrhythmia and high fever. Despite multiple checks, fat droplets were not detected in the circulation. Shortly after admission, subconjunctival and axillary petechiae emerged, spreading to the trunk and upper extremities. Hemodialysis commenced, but on the sixth day, the patient experienced severe hemodynamic instability, hypertension, and tachycardia, prompting an emergency brain CT scan revealing malignant brain edema. Hypotension ensued, necessitating inotropic and vasopressor support. Despite treatment, the patient remained febrile and oliguric, deteriorating progressively and succumbing to the condition on the tenth day.

Conclusion: Fat embolization syndrome predominantly affects patients with long bone and pelvic fractures, with early operative intervention reducing its incidence. Mortality rates range from 5-15%, with therapy primarily focused on managing ARDS and supporting affected organ systems.

Keywords: polytrauma, fat embolism syndrome, surgery

FROM APPENDICITIS TO SEPTIC SHOCK

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Introduction: Acute appendicitis is one of the most common surgical diseases, which in rare cases may present as severe clinical manifestations leading to septic shock.

Case report: A 55-year-old female patient underwent emergency surgery due to a gangrenous rupture of the appendix. Postoperatively the patient was hospitalized in the Intensive Care unit intubated, sedated, tachycardic, hypotensive and febrile. Laboratory test results revealed leukocytosis, anemia, metabolic acidosis, elevated inflammatory and renal parameters. Chest X-ray established bilateral pleural effusion and atelectasis. The next day patient was hypotensive, so vasopressor and inotropic drugs were administered. Hemodialysis treatment was indicated. On the sixth day of the hospitalization patient underwent surgery when terminal ileostomy was performed. In the following days the patient was extremely febrile, anuric and developed anasarca. Due to prolonged intubation, a surgical tracheotomy was performed. After two weeks, the patient reacted to rough stimuli, and on the sixteenth day patients was conscious, contactable. In following days patient breathes spontaneously through cannula and finally through tracheostoma after decannulation. Laboratory test results showed a marked improvement. A control abdomen CT was in order. On the thirty-seventh day of hospitalization, the conscious, contactable, hemodynamically and respiratory stable patient was transferred to the Clinic for Surgery for further treatment.

Conclusion: Septic shock is a vitally threatening condition that requires a multidisciplinary approach to the patient as well as a timely response that is necessary for a positive final outcome. Thankfully, due to established guidelines, monitoring and follow-up of the patient as well as appropriate therapy, morbidity and mortality can be reduced.

Keywords: appendicitis, septic shock, sepsis

TRIIODOTHYRONINE HORMONE SUPPLEMENTATION THERAPY IN SEPTIC SHOCK PATIENTS WITH EUTHYROID SICK SYNDROME: TWO PILOT, PLACEBO-CONTROLLED, RANDOMIZED TRIALS

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Background: to assess 28-day survival in two pilot groups of septic shock patients with euthyroid sick syndrome (ESS) supplemented with triiodothyronine (T3).

Methods: A total of 95 septic shock patients with ESS were divided according to values of the thyroid hormones into low T3 and low T3T4 groups. Among 48 patients with low T3, 24 (50%) were randomized to T3 for 4 days and 24 (50%) to placebo. Among 47 patients with low T3T4, 24 (51%) were randomized to T3 for 4 days and 23 (49%) to placebo. The analysis included 28-day survival as the primary outcome and laboratory with hemodynamics as the secondary outcomes. Laboratory data were analyzed on the day of admission (T0), on the first (T1), third (T2) and seventh day (T3) with hemodynamics analyzed for the first four days.

Results: In the low T3 population, 18 (75%) patients receiving T3 died at day 28 compared with 8 (33.3%) patients receiving placebo ($p = 0.004$). In the low T3T4 population, 6 (25%) patients receiving T3 died in ICU compared with 12 (52.1%) patients receiving placebo ($p = 0.039$). Oral T3 treatment increased mean arterial pressure values at day 1, day 3 and day 7 in the low T3T4 population, ($p = 0.015$, $=0.005$ and $=0.042$ respectively), and had no significant effect on these values in the low T3 population.

Conclusion: T3 supplementation was associated with a low 28-day mortality rate in patients with low T3T4 but with increased mortality in patients with low T3 ESS. These results suggest caution before initiating thyroid supplementation in septic patients.

Keywords: Euthyroid sick syndrome, septic shock, triiodothyronine supplementation

CHARACTERISTICS AND MONITORING RESPIRATORY DEPRESSION AFTER ANESTHESIA

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Respiratory depression is common in patients recovering from surgery and anesthesia. Failure to recognize and lack of timely institution of intervention can lead to catastrophic cardiorespiratory arrest, anoxic brain injury, and mortality. Opioid-induced respiratory depression (OIRD) is a common and often under-diagnosed cause of postoperative respiratory depression.

Other causes include residual anesthesia, residual muscle paralysis, concurrent use of other sedatives, splinting from inadequate pain control, and obstructive sleep apnea. Currently used methods to identify and monitor respiratory safety events in the post-surgical setting have serious limitations leading to lack of universal adoption. New tools and technologies currently under development are expected to improve the prediction of respiratory depression especially in patients requiring opioids to alleviate acute postoperative pain.

In this narrative review, we discuss the various causes of postoperative respiratory depression and highlight the advances in monitoring and early recognition of patients who develop this condition with an emphasis on OIRD.

Keywords: analgesia, monitoring, opioids, postoperative complications, respiratory depression

NEW RECOMMENDATIONS OF THE AMERICAN ASSOCIATION OF ANESTHESIOLOGY (2022) FOR TREATMENT OF DIFFICULT AIRWAYS

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Difficulty establishing airways and lung ventilation is one of the most urgent conditions in medicine, which can lead to severe complications, including permanent neurological damage and death. To facilitate the handling of this difficult clinical situation, various guides and recommendations have been created to increase patient safety, assist physicians, and protect them from criminal liability. The American Society of Anesthesiologists (ASA) issued new recommendations in 2022, which cover all segments of this problem, starting with the clear definition of different clinical situations (difficult laryngoscopy, difficult tracheal intubation, difficult face mask ventilation, difficult placement supra and infraglottic means), through recommendations for preparing care for difficult airways, to algorithms and strategies for dealing with expected and unexpected difficult airways.

The paper presents the most important aspects of the mentioned segments of the new ASA recommendations, as well as their comparison with previous ASA recommendations and recommendations of other associations.

Keywords: shortness of breath; management; recommendations; American Society of Anesthesiologists.

MANAGEMENT OF BACTERIAL AND FUNGAL INFECTIONS IN ICU

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Objective of the review: Bacterial and fungal infections are common issues for patients in the intensive care unit (ICU). Large, multinational point prevalence surveys have identified that up to fifty (50%) of ICU patients have diagnoses of bacterial or fungal infection at any one time. Infection in the ICU is associated with its own challenges and with worse clinical outcomes for patients.

Topic review: Epidemiology of drug-resistant infections will likely vary between geographical regions, but common risk factors should be considered for those at risk of carriage and infection with multidrug-resistant (MDR) organisms. For MDR-bacteria, common risk factors include long-term care facility residence, recent hospital admission, previous broad-spectrum antimicrobial use, known colonization, and recent travel to high prevalence areas. Antifungal-tolerant and drug-resistant fungal infections are an emerging concern in ICU with risk factors including known colonization, long-term suppressive or prophylactic antifungal use, and previous exposure to antifungal therapy (eg. hematological, cystic fibrosis, prolonged ICU patients).

Conclusion: Bacterial and fungal infection in ICU patients are important events that must be considered by all those involved in the care of critically ill patients. A large proportion of infections are preventable through the implementation and adherence to multi-modal IPC policies.

The diagnosis of infection can be complex and evolve over time as additional information becomes available. The advent of molecular diagnostics and rapid methods for determination of AST are providing us with information on organism characteristics sooner.

Keywords: bacterial infection, fungal infection, ICU

HOW CAN WE ASSESS NUTRITIONAL STATUS IN THE CRITICALLY ILL - WHICH SCREENING TOOLS ARE NEEDED?

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In intensive care units critically ill patients are at high risk of developing malnutrition, which is associated with the worse clinical outcome. According to the literature, malnutrition occurs in 35–70% of critically ill patients. The nutritional status of critically ill patients deteriorates quite rapidly after admission in intensive care unit, as a consequence of severe catabolism caused by stress, proinflammatory cytokines and hormones, even when patients are well nourished. Critical illness is usually associated with a state of catabolic stress, accompanied by a systemic inflammatory response together with complications related to increased infectious morbidity, multiorgan failure and prolonged hospitalization. The negative effects of malnutrition derive from the correlation between a negative energy balance and an increase in intensive care unit stay, prolonged mechanical ventilation, more frequent infections and higher mortality. Due to all mentioned, unfortunately, with these patients we have progressive increase in cost of hospitalization.

The clinical course of critical illness can be improved by early enteral nutrition, adequate administration of macro- and micronutrients, and strict control of blood glucose. In this case we have reduction of mortality, morbidity and reduced readmission rate. Nutritional assessment in critically ill patients is challenging, best method to identify patients susceptible to malnutrition has not yet been identified. Various risk factors and nutritional risk scores have been proposed. An ideal screening tool should have adequate validity, reliability, sensitivity, specificity, and positive predictive value for detecting high-risk patients. However, no screening tool has been able to fulfill these criteria, none hold the status of being the definitive “gold standard” for critically ill patients. Therefore, each hospital has its own type of screening that fits best with the characteristics of its patient population.

The nutritional screening tools currently in use across a number of regions are Subjective Global Assessment (SGA), Malnutrition Screening Tool (MST), Small Nutrition Assessment Questionnaire (SNAQ), Nutrition Risk in the Critically ill (NUTRIC), Mini-Nutritional Assessment (MNA), Nutrition Risk Score 2002 (NRS 2002), MUST Malnutrition Universal Screening Tool (MUST). Among all the screening tools, only the NRS 2002 and the NUTRIC have been extensively studied.

So, as a conclusion, malnutrition remarkably compromises clinical outcomes, impacting tissue metabolism, muscular strength, wound healing, and immune function. It is associated with a higher risk of adverse events, encompassing both infectious and noninfectious complications, prolonged need for mechanical ventilation, and longer rehabilitation process. Consequently, this results in extended hospital stay and heightened mortality risk, thereby increasing healthcare expenses, compromising patients’ quality of life, and

imposing additional financial burdens on healthcare institutions.

Thus, routine nutritional assessments and monitoring play a crucial role in patient care by enabling the identification of deficiencies via screening, evaluating, and diagnosing the nutritional status. This practice aids in predicting positive or negative health outcomes.

EMERGENCY AIRWAY CONTROL IN A PATIENT WITH RHEUMATOID ARTHRITIS: A CASE REPORT

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Objective: To describe our experience with a successful placement of a percutaneous tracheostomy for emergency airway control.

Case report: 66-year-old patient was admitted to the ICU due to respiratory failure and coma. The underlying diagnosis was urosepsis and septic shock. Comorbidities included rheumatoid arthritis and mastectomy due to breast cancer. On admission, the patient presented with dyspnea, hypoxia, and coma. Intubation was indicated. Due to neck contractures and limited movements in the temporomandibular joint, endotracheal intubation was not possible, including with a videolarygoscope. After a failed videolarygoscopy and with the patient ventilation being appropriate, we proceeded to an emergency percutaneous tracheostomy. The medical intensive care unit is dislocated, so assistance was called. The patient's oxygen saturation was satisfactory during the establishment of the airway. A percutaneous tracheostomy was successfully placed within minutes, and mechanical ventilation was initiated.

Conclusion: Percutaneous tracheostomy provided a safe, effective emergency airway in an adult patient who presented with dyspnea, head and neck contractures, and limited motions in the temporomandibular joint in a dislocated ICU location throughout the hospital.

Percutaneous tracheostomy performed by appropriately trained personnel may be a potential adjunct for emergent airway control in diverse settings.

Keywords: airway, difficult airway, percutaneous tracheostomy, temporomandibular joint

EFFECTS OF BRODALUMAB AND TNFA-INHIBITORS ON THE COMPOSITION OF THE GUT MICROBIOTA IN PATIENTS WITH PSORIASIS

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Systemic inflammation has emerged as a common link between psoriasis and depression in recent research. The gut microbiota plays a crucial role in regulating immune system function, and dysbiosis in the gut microbiota can disrupt this delicate balance and contribute to systemic inflammation. Patients with psoriasis and depression both show dysbiosis in their gut microbiota. In addition, biological treatment, which is used for severe cases of psoriasis, has the potential to alter the gut microbiota, although the knowledge is limited.

This study aims to investigate if and how the gut microbiota changes in patients with severe psoriasis who change treatment to Brodalumab from their previous treatment with TNFα-inhibitors. The study also aims to investigate if significant different taxa correlate to clinical variables.

All patients left fecal samples on designated dates, depending on the randomized group. Fecal samples were sequenced by targeting the hypervariable V3-V5 region of the 16S rRNA gene. Bioinformatics and statistics were conducted afterwards.

The gut microbiota across all groups mainly consisted of the phyla Firmicutes and Bacteroidetes. All dominant taxa on lower taxonomic levels belonged to these phyla. The dominant genus was Faecalibacterium. No significant difference before and after treatment change to Brodalumab of specific taxa were found. No correlation to clinical variables was found.

These novel findings give insight into the potential impact of biological treatment on the gut microbiota in patients with psoriasis. The findings lay the groundwork for future, more comprehensive studies in this emerging field.

Keywords: Psoriasis, Depression, Gut microbiota, Brodalumab, TNFα-inhibitor

THE EFFECTS OF BRODALUMAB ON THE FUNGAL MICROBIOME IN PATIENTS WITH PSORIASIS

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Background: The gut microbiota plays a crucial role in supporting proper immune system function, but dysbiosis can disrupt this balance, leading to systemic inflammation. Both psoriasis and depression patients exhibit gut microbiota dysbiosis and are further aggravated by systemic inflammation. Studies have shown that biological treatments, utilized for severe psoriasis cases, have the potential to impact the gut microbiota, although most focus remains on bacteria with little known about fungi.

Aim: To investigate the gut microbiota changes, from a fungal perspective, in relation to using Brodalumab in comparison to TNF-a inhibitors in treatment of severe Psoriasis.

Methodology: A total of 20 patients with psoriasis, 12 receiving Brodalumab only and 8 receiving TNF-α inhibitors then switching to Brodalumab were recruited for this study, and their fecal samples obtained. Fecal samples were analyzed by 18s rRNA gene sequencing by targeting the varied ITS2 region. Bioinformatics and statistics were conducted afterwards.

Results: In both treatment groups, most fungi belonged to the phylum Ascomycota. All dominant taxa on lower taxonomic levels belonged to this phylum. The dominant genera were Saccharomyces, Candida and Pencilium.

There is a slight variation observed before and after treatment change to Brodalumab in specific taxa. No correlation to clinical variables was found.

Conclusion: These findings give insight into the effect biologic agents can have on the fungal gut microbiome. More elaborate studies over a longer time need to be done for better understanding of this novelty research area.

Keywords: Psoriasis, Depression, Gut Microbiome, Brodalumab, TNF-alpha inhibitors

WHAT´S NEW: PATHOGENESIS AND TREATMENTS FOR GENERAL PUSTULAR PSORIASIS

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Background and aims: Although the pathogenesis of General Pustular Psoriasis (GPP) is not fully understood, the role of genetical factors and potential triggers, such as drugs, infections, and pregnancy, have been recognized. Mutations in the IL36RN gene, which encodes the interleukin-36 receptor antagonist (IL-36Ra), have been detected in some patients with GPP. Acute GPP is characterized by the sudden development of widespread erythematous plaques and pustules along with systemic symptoms of fever and malaise.

Method: A literature search was conducted to summarize latest data on clinical presentations, diagnostic criteria, and treatment options for this somewhat unusual, inflammatory skin disease.

Results: The differences in the inflammatory mechanisms between GPP and plaque psoriasis are evident and will be highlighted. GPP is associated with dysregulation of the innate immune system, specifically IL-36 signaling. In contrast, plaque psoriasis is primarily driven by the adaptive immune system, predominantly the IL-23/IL-17 axis.

Conclusion: GPP is a distinct disease entity from plaque psoriasis based on clinical, histological, genetic, and pathophysiological features. The IL-36 pathway is preferentially involved in GPP, while the IL-23/IL-17 axis drives plaque psoriasis. GPP can be challenging to treat. New treatment options, including inhibition of the IL-36R, are effective and can offer rapid improvement and remission.

Keywords: Psoriasis, General Pustular Psoriasis (GPP), IL-36 pathway, IL-17 and IL-23 pathways

THE ROLE OF VITAMIN D IN AUTOIMMUNE DISEASES

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Objective: To present new knowledge about the role of vitamin D in autoimmune diseases.

Topic review: 1.25-Dihydroxyvitamin D is a steroid hormone derived from vitamin D, playing an important role in maintaining an adequate serum level of calcium and phosphorus. It is now clear that vitamin D exerts an endocrine action on the cells of the immune system, generating anti-inflammatory and immunoregulatory effects. Lower vitamin D levels have been found in several autoimmune diseases, such as rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis, type 1 diabetes mellitus, multiple sclerosis, inflammatory bowel diseases, autoimmune thyroid diseases.

Vitamin D plays a significant role in modulating the immune system, strengthening the innate immune response while exerting an inhibitory effect on the acquired immune system

Conclusion: Although a high correlation between vitamin D deficiency and autoimmune diseases has been proven, we are still not sure whether this is a cause or an effect. Low vitamin D levels in patients with autoimmune diseases may be explained by low vitamin D intake, malabsorption, lack of sun exposure, or reduced outdoor activity. In addition, it is likely that good vitamin D status is a general indicator of good health.

Keywords: Vitamin D, autoimmune diseases

CUTANEOUS TOXICITY TO CHECKPOINT INHIBITORS: OUR EXPERIENCES

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The pathophysiological mechanisms of cutaneous reactions to cancer immunotherapy, including checkpoint inhibitors, have not been fully elucidated. Most authors agree that they are associated with enhanced activation of T or B cells against dermal or epidermal antigens mediated by PD-1 and CTLA-4 receptor blockade.

Reactions are generally mild, with high-grade cutaneous toxicity occurring in < 3% of patients during ipilimumab or anti-PD-1 monotherapy and in < 30% of patients treated with the combination. The reactions have a different morphology: maculopapular - morbilliform exanthemas, various dermatitides (spongiotic, lichenoid, psoriasiform, urticarial), immunobullous reactions, severe skin adverse reactions - SCARs, etc.

The increasing number of adverse reactions poses new challenges in diagnosis and treatment with some unresolved problems, such as different morphologies with a wide differential diagnosis, the absence of reliable biomarkers to predict the risk of side effects, and the problem of choosing the optimal steroid-sparing agent. A multidisciplinary team (oncologist, dermatologist) is needed for proper diagnosis, severity assessment, and treatment of skin reactions to checkpoint inhibitors and other modalities of cancer immunotherapy.

We will present several interesting cases from our Center and discuss the current guidelines for the management of these reactions.

Keywords: checkpoint inhibitors, skin, toxicity

PHOTOTHERAPY

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Background and aims: Phototherapy is a treatment option for many dermatological diseases. The benefits of sun exposure in treating a variety of skin diseases have been known for thousands of years. In recent decades, UV devices have been developed to standardize and predict treatment outcomes, making it possible to apply treatment even in areas with low UV index.

Method: We conducted a literature search to investigate the documented effects of UV on different dermatological diseases, as well as the effects of various types of UV on conditions such as PMLE, photoaging, and skin cancer.

Results: Our systematic review examined diseases with documented responses to phototherapy and the effects of UV on the skin.

Conclusion: Phototherapy represents an excellent therapeutic option for a number of skin problems. However, due to the potential for sun damage, precautions must be taken when administering it.

Keywords: sun, phototherapy, UV, skin, psoriasis, eczema, vitiligo, PMLE, skin cancer

SWEDAD - A NATIONWIDE SWEDISH REGISTRY FOR PATIENTS WITH ATOPIC DERMATITIS RECEIVING SYSTEMIC PHARMACOTHERAPY

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SwedAD, a Swedish nationwide registry for patients with atopic dermatitis (AD) receiving systemic pharmacotherapy, was launched on September 1, 2019. We describe the experiences of establishing a user-friendly registry to the benefit of patients with AD, and the utilization and improvement of the registry. By December 31, 2023, 52 clinics had recorded 1 834 treatment episodes in 1 554 patients. Patient- and investigator-reported outcome measures include Eczema Area and Severity Index (EASI), Patient-Oriented Eczema Measure (POEM), Dermatology Life Quality Index (DLQI), and Peak Itch Numerical Rating Scale-11 (NRS-11) as recommended by the Harmonizing Outcome.

Measures for Eczema (HOME) initiative. Several clinical studies based on data from SwedAD have been published and more projects are ongoing. Challenges in the management of a nationwide registry include assessing coverage rate and the multifactorial regional variations in the enrolment of patients. SwedAD is a helpful tool for patients and healthcare providers in shared decision-making regarding AD treatment.

The registry is also an important source of data for clinical and translational research as well as for healthcare policymakers in the currently expanding field of systemic pharmacotherapy for AD.

Keywords: atopic dermatitis, registry, biologics, JAK inhibitors

SYPHILIS TESTING: DIAGNOSTIC ALGORHYTHMS AND RESULTS INTERPRETATION

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Objective: To present current approach in syphilis testing and results interpretation.

Topic review: Syphilis is sexually transmitted disease that can cause serious health problems. Patients that have symptoms or asymptomatic patients with positive anamnesis for syphilis should undergo test. There are two types of tests most commonly used: treponemal and non-treponemal and two testing algorhytms: traditional and reverse algorhythm. Interpretation of results is at times complicated as mutually exclusive results can happen.

Conclusion: Current algorhythm in syphilis testing makes diagnosing easier and more accurate, hence treatment of this potentially dangerous disease is more effective.

Keywords: syphilis, testing, results

THE APPLICATION OF PRP IN DERMATOLOGY

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PRP (Platelet Rich Plasma) or platelet concentrate, was first described in hematology in the 1970s where the term PRP served as a description of a product with a high concentration of platelets used in the treatment of Thrombocytopenia. PRP represents an autologous plasma derivate with a high concentration of platelets obtained from the patient's whole blood. A normal platelet count in a healthy person is between 150,000-400,000 platelets/µl and depending on the preparation system, PRP contains a 4-8x higher concentration of platelets than peripheral blood. This treatment first became popular in orthopedics and sports medicine because of its possibility to stimulate the soft tissue and help in treating bone and joint systems due to the high concentration of growth factors. In the 2000s, it became interesting to plastic surgeons and dermatologists for its use in skin rejuvenation and hair growth. Despite many scientific papers in this field, the exact mechanism of action is still not fully understood, but it is believed that the platelets undergo degranulation to release a combination of growth factors and molecules. Platelets contain a large number of granules: Delta granules: ADP/ATP, Ca, serotonin, Alpha granules: growth factors, fibronectin, β -Thromboglobulin, fibrinogen, coagulation factors V and XIII, as well as growth factors, such as PDGF (platelet-derived growth factor), TGF - β (transforming growth factor), VEGF (vascular endothelial growth factor), EGF (epidermal growth factor), CTGF (connective tissue growth factor), FGF (fibroblast growth factor), IGF – 1 (insulin like growth factor 1) which are present in much higher concentrations (5-8x higher) in PRP than in blood - the most factors are released during the first hour of platelet activation.

PRP increases the release of cytokines that then bind to transmembrane receptors on the cell and lead to angiogenesis, collagen synthesis, ECM production, and reduced apoptosis.

Contraindications for this treatment are few and they include: Thrombocytopenia, disorder of any coagulation factor, hemodynamic instability of the patient, sepsis, acute and chronic infections, chronic liver diseases and anticoagulant therapy, while the indications are many, such as sun damaged, dehydrated skin, wrinkles, acne scars, hyperpigmentation, rosacea, as well as Lichen Sclerosus et atrophicus (LSA) and androgenetic alopecia. LSA is a chronic inflammatory dermatosis of unknown cause that can affect any part of the skin and mucous membrane and it represents a great therapeutic challenge. PRP therapy gave a positive effect in the treatment of LSA, as well as androgenetic alopecia. The procedure does not require additional equipment to perform and is inexpensive. If the principles of asepsis and antisepsis are followed, there are no complications and side effects. There are many indications that, in near future, PRP will become a part of the standard therapy for these skin

conditions. which are present in much higher concentrations (5-8x higher) in PRP than in blood - the most factors are released during the first hour of platelet activation.

Keywords: PRP, Growth factors, Lichen Sclerosus et atophicus, Androgenetic alopecia

QUALITY OF LIFE AND STIGMA OF PATIENTS WITH PSYCHODERMATOLOGICAL PATHOLOGY

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Can certain "mental sufferings" be manifested on the skin and how? Psychodermatology tries to provide the answer to this and many other questions related to the complicated, cause-and-effect relationship between dermatological diseases and psychological conditions. It is focused on the area where dermatology, psychology and psychiatry overlap and complement each other. Psychodermatological disorders are conditions that arise from the interaction of the psyche and the skin, and we divide them into three groups: psychosomatic disorders, primary psychiatric disorders, and secondary psychiatric disorders.

In recent decades, as a consequence of the understanding that health is a very important prerequisite for a good quality of life, the concept of quality of life related to health has been separated from the global concept of quality of life. Skin diseases, due to their visibility and aesthetic deficiency, and often present social stigmatization, as well as demanding therapeutic procedures, have a specific impact on the quality of life of the affected persons. A large number of studies have shown that skin diseases can lead to significant stress and deterioration of patients' quality of life.

Stigmatization is often encountered in people with visible skin changes. Research shows an increasing awareness of the psychosocial effects of skin diseases. Anxiety, depression, reduced self-esteem, sexual difficulties, communication disorders and a generally reduced quality of life are common.

What is important to emphasize is that the treatment of psychodermatological disorders is not possible without a team approach of psychiatrists, dermatologists and psychologists, but also the understanding of patients with skin changes is essential in order to eradicate simplification and neglect of the suffering and difficulties of these patients.

Keywords: psychodermatology, stigmatization of dermatological patients

NECK INJURIES: TOPIC REVIEW

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Objective: The purpose of the present study is to review the topics of initial assessment, diagnosis and clinical management of neck trauma.

Topic review: The most significant studies on neck injuries that have been published in the last few years are presented in this publication. The problems of treating neck trauma remain the same, despite advancements in evaluation and therapy over the last few decades. These include the possibility of life-threatening conditions or functional limitations due to damage to neck components. This research aims to examine the mechanism of injury resulting from neck trauma. We'll talk about the diagnostic techniques used to find neck injuries and how to treat them. There are many therapy streams available at the moment, including conservative management of a subset of patients, initial management not based on regions, and first management by zones.

Conclusion: The care of neck injuries includes resuscitation using the principles of ATLS contingent upon the patient's clinical assessment determining whether they are stable or unstable. Using a Foley catheter can help with the initial stabilization of the patient if hemodynamic instability is caused by bleeding. Patients who are unstable should have an urgent surgical assessment. Regardless of the damage's location, patients with stable conditions and no outward symptoms should have computed tomography with angiography performed to assess the injury.

Keywords: neck injuries, trauma, management, diagnosis, assessment

THE FORENSIC SIGNIFICANCE OF CORE TEMPERATURE IN THE DETECTION OF PRIMARY AND SECONDARY HYPOTHERMIA AS A CAUSE OF DEATH: PILOT STUDY ON WISTAR RATS

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Background & Aim: Hypothermia is defined as a body core temperature below 35°C and can be caused by internal or external stress. Primary hypothermia is caused by excessive exposure to low environmental temperature without any medical conditions prior to that. Secondary hypothermia is caused by alteration in thermoregulation by disease, trauma, surgery, drugs or infections. The aim of the study is to see the difference and effects in primary and secondary hypothermia with regard to the groups of benzodiazepine or alcohol use.

Methods: The total 21 Wistar rats divided into three experimental groups as: K-Control group rats exposed only to hypothermic action(n=7); H1-A- Alcohol + hypothermia (n=7); and H2-B-Benzodiazepines + hypothermia (n=7). The temperature spots that were analyzed in study were: normal core temperature, core temperature during an injection of 0,3 ketamine, temperature of immersion and the temperature when rats have entered hypothermia and temperature of death.

Results: The core temperature decreased faster in secondary hypothermia groups. The length of survival/survival time was shorter in A and B groups, v. K group

Conclusions: There is a difference between primary and secondary hypothermia depending on consumption and intoxication with alcohol or benzodiazepines that can help in the distinction in sudden deaths when the etiological cause is not clear after macroscopic and microscopic pathological analysis.

Keywords: hypothermia, experimental forensic medicine, rats, death, temperature

PULMONARY THROMBOEMBOLISM IN A PATIENT WITHOUT PREVIOUS CHRONIC DISEASES: SUSPICION OF MODS - CASE REPORT

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Clinical description: Emergency services send a team to visit a fifty-seven-year-old patient. The call was made by his friend, who gives us heteroanamnastic information. For the past two days, the patient has been getting weaker and has difficulty speaking. After the arrival of the team, however, the wife states that the patient has been in a bad general condition for seven days. The body temperature is elevated, the patient is confused. Upon arrival, the urinary catheter is already placed. The patient is conscious, poorly communicative, extremely dyspneic, slightly cyanotic, pronounced edema around the eyes. Extremely tachycardic, pulse 160/min, atrial fibrillation with VESs, breathing frequency around 40 breaths per minute, Spo2: 90, TA: 110/70.

Clinical hypothesis: The patient was sent to the General Hospital by an ambulance accompanied by staff. Upon arrival, an examination by an emergency medicine specialist and a cardiologist is performed and pulmonary thromboembolism and MODS are suspected. The patient was then referred to the KUM, and after a preliminary CT scan of the lungs with contrast, a diagnosis of segmental PTE with pleural effusion was established. The patient is hospitalized at the Clinic for Pulmonary Diseases.

Diagnostic Pathway: The patient is monitored daily from the day of admission, all the necessary diagnostic and therapeutic evaluation is done along with consultation examinations, which will be detailed during the presentation itself.

Discussion and learning points: The aim of our case-report is to show how timely intervention can save a patient's life. It should also not be ignored that even patients who do not have chronic diseases and who do not use any therapy can of course be a serious case with a severe clinical picture. The case report is about a 57-year-old male patient who, after proper recognition of the clinical picture and targeted diagnostic evaluation, was diagnosed with a massive pulmonary embolism with suspicion of MODS. A good connection between all levels of health care (primary, secondary, tertiary) and timely treatment speak in favor of one saved life.

Keywords: patient, embolism, disease

ETHICAL CONSIDERATIONS OF SLOW CODE – ALIBI FOR RESUSCITATION ATTEMPT

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Objective: This review analyses ethical principles of clow code resuscitation. Ethical principles of cardiopulmonary resuscitation (CPR) are not defined in Easter Europe by specific national and regional regulations. Medical personnel are sometimes forced to apply CPR measures but do not always feel compelled to make a full effort.

Topic Review: Slow code is slow or submaximal attempt of CPR measures and implies application of a set of CPR actions that are intentionally implemented insufficiently and too slowly. In fact, the assumption inherent in the slow code model is that the patient will not survive besides applied CPR measures which has not been reported by the attending physician-member of the EMS team. Literature findings show that slow code practices are usually applied to patients with severe and devastating diseases, vegetative or other forms of coma, dementia, or advanced terminal disease, but where terminal event is expected and does not surprise those caring for the patient. Expert opinions in the literature are divided between the unacceptability and justification of slow code application, which can trigger unpleasant events.

Literature shows that in conditions of lack of clear guidelines, CPR initiation completely depends on emergency medical service personnel decision and is out of regulatory control.

Conclusion: It is important to encourage discussing application of CPR measures as an alternative for slow code. If the patient is not on palliative treatment, it is important to reduce the influence of physician on bringing decision for CPR initiation.

Keywords: cardiopulmonary resuscitation, slow code

BYSTANDER - CARDIOPULMONARY RESUSCITATION – FIVE MINUTES MORE FOR SURVIVAL

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Background & Aim: During the last years minimal improvements have been observed in the survival of patients with out-of-hospital cardiac arrest (OHCA), especially those related to time management in the pre-hospital environment. The aim of this study is to analyze the association between bystander-cardiopulmonary resuscitation (CPR) and occurrence and cumulative incidence of return of spontaneous circulation (ROSC) in patients with OHCA.

Methods: The study included bystander-witnessed OHCA cases during the period October 1, 2014 – September 31, 2023.

Results: During the follow up-period 2823 patients were witnessed by a bystander. Bystander initiated CPR in 602/2823 (21.3%). In the bystander-initiated group, ROSC was observed in 211/602 (35.0%), while in 417/2221 (18.8%) in the group of patients when bystander did not initiated CPR ($p<0.001$). ROSC was also significantly predicted by bystander CPR ($p<0.001$, OR 2.335, 95%CI 1.914-2.847). When observing time passed from cardiac arrest, a 50% cumulative incidence of ROSC was achieved five minutes earlier in bystander-initiated cases, compared to bystander-non-initiated cases (18 vs 23 minutes, respectively $p<0.01$). When observing time passed from emergency call, the same incidence was achieved four minutes earlier in bystander-initiated cases, compared to bystander-non-initiated cases (17 vs 27 minutes, respectively $p<0.01$), while when observing time passed from EMS scene arrival, it was achieved five minutes earlier in bystander-initiated cases, compared to bystander-non-initiated cases (10 vs 15 minutes, respectively $p<0.01$).

Conclusions: Bystander attempting CPR measures prolongs the chance of achieving ROSC in OHCA patients by 4-5 minutes, measured from either cardiac arrest, emergency call, or EMS scene arrival.

Keywords: out-of-hospital cardiac arrest, cardiopulmonary resuscitation, return of spontaneous circulation

LEADING CAUSES OF MORTALITY IN THE FEDERATION OF BOSNIA AND HERZEGOVINA (2013-2022)

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Background: Mortality data serves as a critical tool for evaluating and comparing health statuses at local, national, and international levels, especially in light of the challenges posed by the COVID-19 pandemic.

Objective: This study aims to comprehensively analyze the general mortality rate and identify the primary causes of mortality from 2013 to 2022, scrutinizing trends over a decade to discern any significant changes.

Methods: The identification of leading causes of mortality relies on data obtained from the Institute for Statistics of FB&H. Mortality patterns are meticulously examined by assessing the primary causes of death spanning the years 2013 to 2022.

Results: In FB&H, the general mortality rate per 100,000 population exhibited variations over the study period. The rates increased from 875 in 2013 to 965 in 2016, further rising to 1006 in 2019, peaking at 1341 in 2021, and slightly declining to 1075 in 2022. Notably, the emergence of U07.1 as the primary cause of mortality in FB&H in 2020 and 2021, attributed to the COVID-19 pandemic, indicates notable shifts in mortality patterns over time, with mortality from non-communicable diseases (NCDs) predominantly attributed to causes such as I63 (cerebral infarctions) and I21 (myocardial infarction).

Conclusion: The observed increase in the number of leading causes of death underscores potential disruptions in healthcare services in FB&H during 2020 and 2021. This phenomenon may also be attributed to potential underreporting of COVID-19 cases or other factors requiring further investigation. Hence, concerted efforts are imperative to mitigate deaths from NCDs, emphasizing the importance of clear guidelines and targeted recommendations.

Keywords: mortality from NCDs, mortality trends, leading causes of death

PERIPANDEMIC ANALYSIS DATA IN THE FEDERATION OF BOSNIA AND HERZEGOVINA: UNDERSTANDING SUICIDE TRENDS AND CHARACTERISTICS

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Background: Suicide represents a significant public health challenge with profound social, emotional, and economic implications. While suicide rates are high across all age groups, they are particularly pronounced among younger individuals, constituting a significant contributor to premature mortality. Addressing suicide is therefore a crucial aspect of mental health intervention globally.

Objective: This study aimed to assess the trends of suicide deaths in the Federation of Bosnia and Herzegovina (FB&H) from 2019 to 2022, analyzing characteristics such as gender, age, and method of suicide.

Methods: Conducted as a retrospective population-based analysis covering the years 2019 to 2022, this study utilized data from the FB&H mortality register, specifically from the Institute for Statistics FB&H. Suicide rates were stratified by age groups, with age-specific death rates and suicide methods categorized by age and sex.

Results: In 2019, the age-specific suicide death rate was 9.4, which increased to 9.8 in 2020, peaked at 11.7 in 2021, and then decreased to 9.4 in 2022. Males accounted for over 70% of suicide deaths, with more than half occurring within the 30-64 age group and nearly one-third among those aged 65 and above. Hanging and firearms were the predominant suicide methods, particularly among males, while poisoning was more common among females."

Conclusion: Examining age and methodological trends in suicide over time is crucial for informing targeted prevention efforts. It is imperative to prioritize the enhancement of mental health services, ensuring equitable access to high-quality care within community settings. Addressing this challenge effectively necessitates the implementation of a comprehensive, multisectoral suicide prevention strategy.

Keywords: suicide, suicide methods, suicide mortality

PROGRAM OF ORAL HEALTH PROTECTION MEASURES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Background: Intending to improve the health of their citizens' healthcare systems in one country represents the result of the combined efforts of government agencies and institutions. Properly designed health systems should provide early disease detection and facilitate appropriate intervention.

Objective: Recognizing the importance of preserving the oral health of children, the Institute of Public Health of the Federation of Bosnia and Herzegovina (FB&H) implemented a pilot program in West Herzegovina County/Canton. The goal of this program was to evaluate the oral health status of children aged 6 and 12 by observing the following parameters: dental status (dmft and DMFT), significant caries index (SiC), and debris index.

Results: A total of 879 children were examined, out of which 476, or 54.2%, were born in 2011 and 403 of 45.8% were born in 2017. Results of this study showed that the dmft of children 6 years old was 5.29 (±3.92), and the DMFT of 12-year-old children was 4.33 (±3.28). The average value of the SiC index for deciduous teeth in six-year-old children was 9.93 (± 2.49), while the average value for permanent teeth was 8.29 (± 2.3). The average debris index for the 12-year-olds was 0.5 (±0.53), and for the six-year-old children, it was 0.41 (±0.56), which means sufficiently good oral hygiene in both groups.

Conclusion: Despite the significant reduction of dental caries in the world, the data presented in this research indicate that dental caries remains one of the most widespread childhood diseases in the FB&H.

Keywords: oral health, debris index, significant caries index

HYSTEROSCOPIC METROPLASTY IN THE CASE OF BICORNATE UTERUS

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A 29-year-old patient was referred to our hospital because of moderate vaginal bleeding and pelvic pain. The bleeding has lasted for three days, menstrual cycle is otherwise normal.

The patient has had similar symptoms several times before in the last year. She has never given birth or conceived. For the last two years she has been unsuccessfully trying to conceive.

Her last Pap smear has shown LSIL lesions and HPV test was positive for high-risk HPV.

After conducting clinical and ultrasound examination, we suspected there was a septum inside the uterine cavity and scheduled an MRI. MRI confirmed the diagnosis of bicornate uterus with a single cervical canal (Dg: Uterus bicornis unicollis). The patient was informed about different treatment approaches concerning her diagnosis and she opted for surgical removal of the septum. She was informed in detail about the possible complications, as well as the probability of positive outcome and future healthy pregnancies.

Hysteroscopic metroplasty was perfomed and the septum was resected. Foley's catheter was placed in the uterine cavity to prevent adhesions and we removed it prior to discharge from the hospital. We also gave her hormone therapy-oestrogen to promote reepithelization of the endometrium. During the follow up appointment we verified that the septum was removed by ultrasound. After undergoing treatment for LSIL and HPV, the patient is now actively trying to conceive.

Keywords: Bicornate uterus, uterine anomalies, metroplasty

KNOWLEDGE, AWARENESS AND VIEWPOINTS OF MEDICAL STUDENTS REGARDING CERVICAL CANCER PREVENTION

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Background: Cervical cancer is the fourth most common malignancy in women worldwide, primarily caused by human papillomavirus (HPV) infection. The incidence and mortality of this disease remain high, especially in developing countries, including Bosnia and Herzegovina. However, when detected early, the disease is curable. Therefore, there is a crucial need to raise awareness about its etiology and prevention methods. Efforts should be made to educate individuals about the significance of Pap smear screening to reduce the incidence of cervical cancer.

Aim: To assess the knowledge and awareness of young individuals in Bosnia and Herzegovina about cervical cancer and HPV infection and to enhance disease prevention through education and awareness.

Methods: An online anonymous questionnaire was conducted to collect data from first, fourth and fifth year medical students at the Faculty of Medicine in Sarajevo.

Results: Survey results indicated that the knowledge and awareness of young individuals about cervical cancer, HPV, and Pap smear testing could and should be improved.

Conclusion: There is a lack of awareness among young individuals regarding essential facts such as symptoms, risk factors, and the importance of primary prevention of cervical cancer. Therefore, it is necessary to enhance education as a key factor in the fight against this disease.

Keywords: cervical cancer, HPV, Pap smear, youth and knowledge

CAROLI'S DISEASE-A CASE REPORT

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Objective: Diagnostic pathway and timely treatment of patients with Caroli´s disease.

Topic review: Here we present the case of a female patient with recurrent cholangitis and terminal liver insufficiency as a consequence of Caroli's disease. We describe the case of a 27-year-old female patient who was hospitalized due to acute cholangitis. Laboratory tests showed CRP levels of 372 mg/L, total bilirubin of 58 µmol/L, GGT of 98 U/L, and ALP of 109 U/L. Antibiotic therapy with ceftriaxone and metronidazole was initiated, resulting in an adequate clinical response, with inflammatory parameters regressing, and the patient was discharged home. After one month, the patient experienced recurrent abdominal pain and chills - clinical signs of cholangitis. Laboratory tests revealed increased CRP of 351 mg/L, total bilirubin of 66 µmol/L, and procalcitonin of 3.39. An abdominal MSCT scan showed dilation of the main bile duct to 18 mm with discreetly thickened walls. Subsequently, an endoscopic retrograde cholangiography revealed fusiform dilation of the main bile duct up to 2 cm, as well as localized dilation of the intrahepatic bile ducts, suspicious cysts - Todani type Iva. A minimal sphincterotomy was performed, and a cholesterol stone fragment measuring 5 mm was extracted using a basket. Suspicion of Caroli's disease was raised. Due to the progression of the inflammatory condition accompanied by progression of liver insufficiency (hypoalbuminemia, ascites), she was transferred to the Transplantation Medicine Center where urgent liver transplantation was performed, resulting in the clinical recovery of the patient.

Conclusions: The treatment of Caroli's disease is very complex, especially in cases of recurrent cholangitis. Conservative and surgical treatment options are limited and depend on the extent of liver changes, clinical presentation, and disease stage. In particularly severe cases, when liver failure occurs, liver transplantation is recommended. The prognosis of untreated disease is very unfavorable due to the recurrence of symptoms. Our article emphasizes the importance of rapid and accurate diagnosis and timely intervention in this rare type of liver insufficiency.

Keywords: Caroli's disease, liver transplantation, cholangitis

D-DIMER PLASMA LEVELS: A PROGNOSTIC BIOMARKER IN LIVER CIRRHOSIS

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Introduction: Liver cirrhosis is associated with thrombotic complications, and D-dimer levels have been proposed as a potential prognostic marker.

Aim: The present study aimed to examine correlation of D- dimer levels and thrombotic complications in cirrhotic patients and to determine the predictive ability of D-dimer levels for poor outcomes.

Material and Methods: Retrospective analysis was conducted on 61 cirrhotic patients admitted between January 2022 and January 2024 at the University Clinical Centre of the Republic of Srpska, Department of Gastroenterology and hepatology, who underwent D-dimer testing on admission.

Results: Out of the total participants, 55 were male and 6 were female. The rate of portal vein thrombosis, whether occurring in or out of the hospital, was 4.92%. The D-dimer levels were correlated with Child-Pugh score. The highest D-dimer level was observed in the Child-Pugh class C patients (median D-dimer level in this group was 8,25 mg/L), followed by the class B (median D-dimer level 5,0 mg/L) and A patients (median D- dimer level 0,8mg/L).

Conclusions: In conclusion, the D-dimer level is significantly associated with the degree of liver damage and thrombotic complications of liver cirrhosis. Therefore, D-dimer testing could be included in prognostic stratification of liver cirrhosis.

Keywords: Portal vein thrombosis, D-dimer, liver cirrhosis, Child-Pugh score

GIANT LIVER HEMANGIOMA IN PREGNANT PATIENT WITH ULCERATIVE COLITIS AND NEWLY FOUND HEPATITIS C SUCCESSFUL OUTCOME - OUR EXPERIENCE: UPDATE

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Objective: Hemangiomas are the most common benign liver tumors of Giant hemangiomas are those larger than 5 or 10 cm. During pregnancy hemangioma complications are rare but can be catastrophic. (growth, rupture, bleeding, pain and compressive effect). There are no general guidelines for the management of giant hemangiomas in pregnancy. Comorbidities increase the risks.

Topic review: Case description: 30-years-old primagravida (6th week of pregnancy) reported to gastroenterologist with the CT angiography that show a giant liver hemangioma (194x132x139 mm). She stopped the treatment for UC which was diagnosed 3 years ago after finding out about pregnancy. Hepatitis markers show anti-HCV positivity. The patient had an extremely petite constitution (156 cm, 48 kg). A Concilium consisting of a gastroenterologist, an abdominal surgeon and a gynecologist had been organized and reviewed the case. After discussion with patient, we decided for conservative approach with regular check-ups by a gastroenterologist, primary care gynecologist and from 24. week of pregnancy hospital gynecologist. The gastroenterologist decided for outpatient follow-up with laboratory tests of liver functions and EHO verification of the liver in 2-3 weeks intervals. Mesalazine, folic acid and vitamin supplements were introduced in the therapy immediately while gynecologist prescribed Beclamethasone in the 30. week of pregnancy. Laboratory tests of liver function did not show any significant deviations during pregnancy. Radiologically, there were no significant changes in size or overall look of the tumor. The patient was delivered by caesarean section. First day after delivery, massive bleeding from the

wound occurred, and was successfully managed surgically. CT scan showed no bleeding from hemangioma or significant change in its size. After delivery the patient has been treated with antiviral therapy and SVR was achieved. Colonoscopy showed only mild ulcerative proctitis.

Conclusion: Cases like this require a multidisciplinary approach, frequent follow-up, and a developed action plan for all involved.

Keywords: gigantic liver hemangioma, pregnancy, hepatitis C, UC

HEPATORENAL FAILURE IN LEPTOSPIROSIS: A CASE REPORT

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Objective: Infective diseases may cause acute liver failure

Topic review: Leptospirosis is an infectious disease which represents one of the most common zoonoses in the world. We present a case report of a 63- year-old female patient who developed symptoms including abdominal pain, nausea and vomiting. In physical examination, patient had jaundice and abdominal tenderness on palpation. Laboratory findings verified mild anemia, leukocytosis, thrombocytopenia, hyperbilirubinemia, elevated levels of LTs, nitrogenous products and non- specific markers of inflammation and metabolic acidosis. Imaging studies revealed steatotic liver visualized by abdominal ultrasound. Serological test were positive for acute leptospirosis infection. Patient was treated with Beta-Lactam antibiotics (penicilin), intravenousus fluid administration and other symptomatic therapy. Regardless of all treatment modalites, fatal outcome occurred in the second day of the hospitalization due to multiple organ dysfunction syndrome.

Conclusions: Leptospirosis is an infectious disease that must be kept in mind in the differential diagnosis of liver and kidney diseases. If not threated promptly it can progress to severe form and lead to fatal outcome.

Keywords: Leptospirosis, Hepatorenal syndrome, MODS

IMPACT OF ORAL CONTRACEPTIVES ON BUDD-CHIARI SYNDROME

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Objective: indications for oral contraceptives and their impact in patients with hematological diseases

Topic review: Budd-Chiari Syndrome (BCS) is a rare disorder characterized by hepatic vein thrombosis, leading to compromised blood flow through the inferior vena cava. The exact incidence of BCS remains uncertain. We present a case report of a 26-year-old female patient, initially under treatment for irregular menstrual cycles and polycystic ovarian syndrome (PCOS), developed symptoms including epigastric pain, ascites, and hepatomegaly. Laboratory investigations revealed elevated counts in erythrocytes, leukocytes, and platelets. Imaging studies confirmed thrombosis involving all three hepatic veins and the inferior vena cava. Further genetic analysis identified a JAK2 mutation consistent with polycythemia rubra vera (PRV). Technical challenges precluded the transjugular intrahepatic portosystemic shunt (TIPS) procedure due to thrombosis involving all three hepatic veins. In addition to hydroxyurea, the patient was on low molecular weight heparin, aspirin, furosemide, and spironolactone as part of her therapy regimen. A year later, FibroScan revealed liver cirrhosis, and complete resolution of ascites occurred. BCS, primarily associated with hematological hypercoagulability, can manifest acutely, subacutely, or chronically, with secondary forms attributed to extrinsic factors such as tumors. Oral contraceptives, known risk factors for hepatic vein thrombosis, can exacerbate underlying conditions such as PRV. Notably, BCS cases linked to JAK2 mutations underscore the importance of cautious oral contraceptive use, especially in individuals predisposed to hematological disorders. Multidisciplinary approaches and vigilant monitoring are paramount in optimizing patient outcomes.

Conclusions: Given the potential for adverse events, clinicians must carefully evaluate the risks and benefits of oral contraceptive therapy, particularly in young females with underlying hematological predispositions.

Keywords: Budd-Chiari syndrome, JAK2 mutation, oral contraceptives, polycythemia vera

RARE CASE OF LIVER YOLK SAC. TUMOR IN 22-YEAR-OLD MAN

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Objective: Yolk sac tumor of the liver has been reported to date. Therefore, it is very important to obtain as much information as possible about the clinical presentation and course of the disease.

Topic review: We present a case of an unresectable primary yolk sac tumor of the liver in a 25- year -old man. A 25-year-old man presented with a pain under the right rib. Ultrasound examination revealed large mass in the liver parenchyma. The patient was referred for an urgent CT scan and MRI of the abdomen which confirmed large mass in the right liver lobe, measuring approximately 13.5x12.5x15.5 cm and pathological lymphadenopathy in the porta hepatis with the largest diameter 38x26mm. The described mass infiltrates and completely obliterates the right and middle hepatic vein and shows the compressive effect on the inferior vena cava with the consequent difficulty in flow. Laboratory examinations established high values of serum alpha-fetoprotein (AFP) 1440 ng/mL, carcynoembrionic antigen (CEA) 1280 ng/mL, as well as other tumor markers Ca19-9 4110 U/mL, CA 125 II 36.9U/mL, CA 153 269 U/mL with beta HCG in normal range 2.40mIU/mL, slightly elevated GGT 176 U/L and AP 165 U/L and reference values of total bilirubin 6.7umol/L. The biopsy of the liver mass revealed it to be a nonseminomatous GCT, which is suggestive of a yolk sac tumor due to the positivity on CK 19 and focally on CDX2 and high values of AFP and CEA in the serum. Immunophenotypic, tumor cells were: SALL 4 +; CK-19 +; CDX2 +/-; CK7 -, CK20 -/+, CD56 -; TTF-1 -, p63 -, HePar -;

S-100P -, GATA3 -, PAX-8 -; CD30 -; CD117 -/+; AFP -. Ultrasound of the scrotum was normal. PET-CT showed secondary deposits in the retro pancreatic lymph nodes and one micronodes in the lung parenchyma. Oncologist indicated 4 cycles of systemic chemotherapy - PEB protocol according to the NCCN guidelines (Cisplatine; Etoposide and Bleomicine). After 4 cycles a revision and assessment was performed with CT scan of the thorax and MRI of the abdomen and pelvis, which showed a satisfactory response. However, multidisciplinary team did not recommend a surgical procedure, given that the MRI of the abdomen and PET Scan showed a large necrotic lesion in the liver, with liver metastasis and retroperitoneal lymphadenopathy. Additional two cycles of PE protocol were given, after which a CT angiography of the abdomen showed progression of the disease. During the treatment tumor markers were regularly controlled (LDH; beta HCG (only one in normal range); AFP; CEA; CA 125; CA 19-9), of which all were above the normal range. In the second line of treatment patient has received a three cycles of TIP protocol (Paclitaxel; Mesna; Ifosfamide and Cisplatine). Radiology assessment after three cycles showed again the progression of the disease, with metastatic lesions in the liver, lungs and generalized lymphadenopathy. Given the aggressive nature of the disease and progression on the second line of therapy, the patient is referred to high-dose chemotherapy with peripheral blood stem cell support.

Conclusion: Some reported cases of liver Yolk sac tumor were managed with surgery along with chemotherapy. However, many other reported patients died of the disease despite the use of an aggressive therapeutic strategy. Although rare, primary yolk sac tumor of the liver should be considered as a differential diagnosis in young patients with large cystic tumors with necrosis and significantly elevated AFP.

Keywords: liver tumor, Yolk sac tumor, alpha-fetoprotein, carcynoembrionic antigen

WILSON DISEASE: A CASE REPORT

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Objective: Importance of timely diagnose and treatment of patients with Wilson disease

Topic review: Wilson Disease is an inherited autosomal recessive disorder that causes the body to retain excess copper, it begins to damage the liver and causes degenerative changes in the brain and Kayser-Fleischer rings. Its presentation can be varied. If not treated, can cause severe brain damage, liver failure and death.21 - year old male, was admitted at the Gastroenteroheptology Clinical, KCUS, with abdominal distension and encephalopathia. Previously, the patient was hospitalized at the Neurological Clinic due to tremors of the right hand. Laboratory, radiological evaluation (abdominal, cardiac ultrasound, portosystemic Collor Doppler ultrasound, RTG p/C, cranial, thorax, abdominal CT, cranial MRI), endoscopic evaluation, liver biopsy and specialist examinations were performed.

Results: Ophthalmological examination revealed bilateral KF rings. Cranial MRI-deep sulci on the convexity of the brain and a hazy shadow in the pons were recorded. Laboratory results showed hemoglobin 145g/l, thrombocytopenia Tr 59, hyperammonemia (70 umol/l), total bilirubin 21, AST 44 IU/L, ALT 26 IU/L, GGT 134 U/ml, albumin 30. Serum copper 9,82 mg/dl, ceruloplazmin 0,08 g/l. AFP11.50. Renal parameters were normal. MELD score 10. Radiology verified splenomegaly, elevated portal pressure, endoscopy- esophageal varices first degree. After excluding chronic viral (Hep B and C, TORCH), autoimmune liver diseases, a liver biopsy is performed (liver steatosis, moderate interface hepatitis and lobular inflammation, presence of a connective tissue partition with liver steam (cirrhosis).

Conclusions: D-penicillamine was started and patient showed improvement in neurological status. There was no further deterioration in the liver status, no liver transplantation was performed.

Keywords: liver tumor, yolk sac tumor, alpha-fetoprotein, carcynoembrionic antigen

COXIELLA BURNETTI AND ENTEROCOCCUS FAECALIS ENDOCARDITIS: THERAPY OF CHOICE

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Background: Infective endocarditis (IE) is an uncommon, important clinical condition with significant morbidity and mortality among the affected population with multiple etiologies. Enterococus faecalis is the third leading cause of IE, while polymicrobial endocarditis is quite rare.

Aim: To examine the following protocol for diagnosing endocarditis in febrile conditions and therapy of choice. Materials and Methods: This case report is about 60-year old male patient who was reported becauseof high fever for the past month and shortness of breath and increase in CRP despite antibiotic therapy. Enterococus faecalis was isolated in blood cultures and it was serologicaly recorded that he had acute infection with Coxiella burnetti. TTE and TEE was performed and showed large vegetation of the tricuspidal valve. The patient undergoes coronary angiography and cardiosurgical intervention to replace the tricuspidal valve with mechanical one.

Conclusion: Since the symptoms and signs of IE are non-specific and can develop secretly endocarditis should always be considered. Endocarditis should be suspected in patients with fever of unknown origin (FUO) and no obvious source of infection. Patients with proven bacteremia must be examined in detail looking for new heart murmurs. The identification of the causative agent are the key to the management of treatment.

Keywords: Infective endocarditis, treatment, diagnosis

REVIEW OF CLINICAL FEATURES, COMORBIDITIES AND OUTCOMES IN COVID-19 PATIENTS DURING 2020 AND 2023

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Background: During COVID-19 pandemic SARS-CoV-2 expressed various mutations, therefore a variety of clinical features.

Aim: To describe distinctive clinical features, the most common comorbidities and outcomes of the disease at different stages of pandemic.

Materials and methods: This descriptive analysis included 2295 patients admitted to the Clinic of Infectious Diseases Clinical Center University of Sarajevo with a diagnosis of COVID-19 in the period of the beginning (March-June 2020) and the end (January-June 2023) of COVID-19 pandemic. Data were taken from patients' medical records.

Results: In 2020 2243 patients were analyzed and in 2023 52 patients respectively, with a male predominance in both periods (62.51% vs 53.84%). Among them, 50% of patients were older than 65 years in 2020 and 98.1% in 2023. In the beginning of the pandemic the most common comorbidities were: cardiovascular diseases (predominantly hypertension), type 2 diabetes, and chronic lung diseases. In 2023 the same comorbidities were recorded, with 42.9% of patients being transferred from another hospital unit when the COVID-19 was confirmed. Approaching the end of pandemic, the burden of disease itself was to lesser extent in terms of number of hospital days and fatal outcome.

Conclusions: During the COVID-19 pandemic, each new subtype of SARS-CoV-2 had specific clinical features and unpredictability of its course and outcome. At the end of pandemic, only older patients with numerous comorbidities expressed severe illness which required hospital admission which sometimes ended with unfavourable outcome.

Keywords: COVID-19, comorbidities, clinical features, outcome

TUBERCULOSIS MENINGITIS IN A TWO-YEAR-OLD CHILD COMPLICATED BY OBSTRUCTIVE HYDROCEPHALUS: A CASE REPORT

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Background: Although tuberculosis (TB) is one of the most widespread infectious diseases, extrapulmonary TB occurs significantly less frequently, mostly in immunocompromised patients and children.

Case report: Two-years-old female was treated at Clinic for infectious diseases Clinical center University of Sarajevo (CCUS). Nine days prior to admission she exhibited symptoms of fever, loss of appetite, and vomiting. She was treated with antibiotics initially in another hospital for suspected bronchopneumonia before transffering to CCUS after developing seizures. Important epidemiological link was patient's mother who completed therapy for pulmonary TB half a year before onset of girl's symptoms. Laboratory findings showed only mild leucocytosis, and brain MRI leptomeningitis, most likely due to specific inflammation (TB). Cerebrospinal fluid (CSF) analysis showed pleocytosis, mild proteinorrhagia and hypoglycorrhagia. Diagnosis was confirmed by a microbiologically positive Bactec MGIT CSF culture. Chest CT was without pathological findings. After the diagnostic work-up, quadruple anti-TB therapy (isoniazid, rifampicin, ethambutol, and pyrazinamide) was introduced according to the protocol. Control brain MRI showed wider third and lateral ventricles with periventricular thinning in favor of incipient unstable hydrocephalus which, according to the neurosurgeon, did not require neurosurgical intervention. She was treated in the hospital for two months with a quadruple antibiotic regimen with successive reduction of corticosteroids and was discharged home with double anti-TB therapy (isoniazid, rifampicin) which was continued for a total of nine months with regular check-ups. Three years after hospital release brain MRI showed residual periventricular thinning while now five-year-old patient is without any visible sequelas of TB meningitis.

SEVERE FORM OF HLH SYNDROME WITH MODS TRIGGERED BY VARICELLA ZOSTER VIRUS

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Histiocytic-hemophagocytic syndrome (hemophagocytic lymphohistiocytosis, HLH) is a life-threatening condition characterized by a strong systemic inflammatory response and multiple organ dysfunction. The clinical picture is very variable and non-specific. It has a high mortality rate. Underlying cause of the development of this syndrome is a hyperreactive and inadequate immune response to the antigen, primarily cytotoxic T lymphocytes, NK cells and macrophages.

A 6-year-old boy was hospitalized on the 6th day of his illness; fever, then vesicular measles-VZV. 6 th day of the illness, a crisis of consciousness of the grand mal type, which is repeated until status epilepticus. Previous diagnosis of juvenile idiopathic arthritis with nephrotic syndrome, as well as PH confirmed by minimal kidney disease. With a proven mutation for hereditary carpotarsal osteolysis syndrome. On therapy Cyclosporine, Adalimumab and Prednisone. During the first decade, cytopenia and an increase in HLH-specific biomarkers are registered in the laboratory findings, therefore a secondary HLH syndrome activated by VZV is suspected. Disease was initially presented with liver dysfunction and coagulopathy, and in the further course it was complicated by lung and kidney dysfunction and Multiple Organ Dysfunction Syndrome (MODS). Active Varicella-Zoster Virus (VZV) viremia present at all times, which additionally activated HLH. He was treated multidisciplinary in the intensive care unit (ICU) with intensive support and monitoring.

Keywords: HLH syndrome, VZV, MODS

SPODILODISCITIS AND MULTIPLE VERTEBRAL ABSCESSES IN A 53-YEAR-OLD WOMAN

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Spondylodiscitis (vertebral osteomyelitis) can be defined as a primary infection of the intervertebral disc, with a secondary infection of the vertebrae (spondylitis). It can lead to osteomyelitis of the spinal column. It is often complicated by the formation of liquid collections along the vertebral canal. Our case is a report of a 53-year-old woman who, 7 months after spinal disc surgery, felt pain in the lower back with pain spreading to the hip and lower extremities. An MRI of the spine initially verifies the existence of spondylodiscitis, and since no etiology can be found microbiologically, empiric antibiotic treatment is started. Despite the above, the disease is further complicated by the formation of liquid collections along the vertebral canal. This required surgical drainage of the abscess. Microbiologically, the control results showed a positive test for brucellosis. In the further course, despite the three-month antibiotic therapy designed according to the received findings (and previously also drainage), the MRI findings of the spine continued to progress (abscess collections were still present). Respecting the fact that all previous therapy was not successful, and respecting our clinical experience, antituberculosis therapy was included along with continued Doxycycline therapy. Antituberculosis therapy was continued for the next 3 years, and control MRI scans of the spine showed a gradual to complete regression of the previously described changes.

Keywords: spondylodiscitis, brucellosis, vertebral abscesses, tuberculosis

INFECTIONS OF THE SPINE

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Infections of the spine may involve different anatomic compartment, including intervertebral disk, vertebral bone, paraspinal soft tissues, epidural space, meninges, and spinal cord. . Infections can be bacterial, fungal, parasitic, or viral in origin. Predisposing factors for developing spinal infections include: immunodeficiency; drug abuse; the widespread use of broad-spectrum antibiotics, corticosteroids, and immunosuppressive drugs; diabetes mellitus; and spinal surgery. Inflammatory lesions of the spine are often indistinguishable on imaging and even on pathologic examination. However, infectious causes are treatable so it is important for the radiologist to make the diagnosis.

Keywords: spine, infection, radiology

PSYCHOPHARMACOTHERAPY IN THE TREATMENT OF PWS

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Introduction: Prader Willi syndrome is a genetic disorder caused by a mutation on chromosome 15 that results in infantile hypotonia, obesity, short stature, mild to moderate mental retardation, and neuroendocrinological abnormalities. There are three main subtypes of PWS: 70% of cases are due to deletion of the PWS region on the father's chromosomes 15, and 25% are due to maternal uniparental disomy, or when the child inherits both 15 chromosomes from the mother and none from the father. Numerous behavioral and psychological problems such as patient temperament, tantrums, self-harm, impulsivity, mood lability, attention deficit disorder, OCD, and acoustic spectrum disorder are associated with the syndrome.

Objective and Methods: The aim of the paper is to present a rare case of PWS and the psychiatric symptoms it presents, but also to point out that patients with PWS respond to unusually low doses of medication and are more likely to experience side effects at standard doses, to point out the need for caution when administering medication.

Results: Patient A.I years old, from Sarajevo, diagnosed with PWS, under regular treatment by an endocrinologist. We followed the patient through regular check-ups within the Child and Adolescent Psychiatry outpatient clinic. The girl presented with psychological disorders in the domain of OCD, understood by the psychologist as LMR.

Conclusion: By monitoring the patient's clinical picture through regular check-ups, we concluded that the symptoms of anxiety and OCD were significantly interfering with the patient's functioning, and we decided to use the SSRI antidepressant Sertraline in therapy. The drug was titrated gradually and slowly, monitoring the NUS effects. The drug proved to be effective, and the symptoms of anxiety decreased, but other symptoms, precipitated by the genetic disorder, persisted.

Keywords: Prader Willi syndrome, OCD, pharmacotherapy

OVERLAPPING SYMPTOMS OF OCD AND ADHD IN A 14-YEAR-OLD CHILD: WHEN CRUCIAL DECISIONS ARE INFLUENCED BY THE AVAILABILITY OF PHARMACOLOGICAL THERAPY -A CASE REPORT

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Introduction: Attention deficit hyperactivity disorder (ADHD) has firmly entrenched itself among the common childhood and adolescent disorders, with approximately 60% of affected individuals experiencing persistence into adulthood. Many children and adolescents with ADHD also exhibit one or more comorbidities, among which obsessive-compulsive disorder (OCD) presents a particularly challenging combination. This challenge is exacerbated when effective treatment for one disorder is unavailable.

Case Presentation: We report the case of a 14-year-old male patient displaying symptoms of both ADHD and OCD. He was brought to our outpatient unit by his mother, who noted initial disturbances in her son's functioning during his first year of elementary school, primarily in the form of restlessness and significant attention deficits. Subsequently, a range of symptoms indicative of OCD emerged. The patient underwent psychological evaluation on two occasions, both of which confirmed that his intelligence was intact and above average. Due to the pronounced OCD symptoms, the patient was initiated on a daily dose of 50 mg of sertraline. However, the unavailability of stimulant medications in our country's legal market, coupled with bureaucratic hurdles, poses significant challenges in treating patients with dual diagnoses of OCD and ADHD. The patient continues to be monitored longitudinally.

Conclusion: This case highlights the ongoing challenge faced by psychiatrists in our country in adequately addressing the needs of patients with concurrent ADHD and OCD. Presently, treatment primarily focuses on managing OCD symptoms pharmacologically, while options for addressing ADHD symptoms remain limited to cognitive-behavioral therapy, psychoeducation, and supportive interventions.

Keywords: ADHD, OCD, comorbidity, stimulants, availability

THE IMPACT OF STRESS ON THE DIET OF STUDENTS

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Introduction: Eating habits are acquired in early childhood. Enrolling in college and moving to another city represent a major turning point in the life of every student. One of the habits that changes is the eating habit. They are entering a completely new world where the quality of nutrition depends on the student, not on the parents. Due to lack of time, students tend to eat unhealthy food. The way students eat also changes due to the effects of stress, so most students change their established eating habits.

Aim: The aim of this work is to examine how stress affects students' eating habits and whether their eating habits change during their studies.

Methods: This paper is a descriptive-analytical study. The survey was conducted on the student population, and as a research instrument, an online survey questionnaire created for the needs of this work was used.

Results: The research showed that the majority of respondents changed their eating habits during their studies, 65% of students gained and 35% lost weight. 70% of students under stress eat less than usual, 25% of students eat more than usual, and about 5% of students eat normally. 90% of students agreed that stress affects the way they eat.

Conclusion: Based on the obtained results, we can conclude that the eating habits of students change during their studies. The stress that is present in students is manifested by increased or decreased desire for food.

Keywords: students, diet, stress

THE IMPORTANCE OF SPORTS IN PRESERVING THE MENTAL HEALTH OF CHILDREN AND ADOLESCENT

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Objective: According to the report of the World Health Organization, the number of people with mental health problems is continuously increasing. When it comes to mental health, children are a particularly vulnerable category.

Topic review: Sport contributes significantly to the preservation of the health of children and adolescents as long as the training is adapted to their age and capabilities. Sports can also have a positive impact on children's mental health by providing them with opportunities for physical activity, social interaction, and the development of self-confidence. In order to preserve mental health, it is very important to ensure support, proper training and work on the prevention of overload and stress. Sports and physical activity can be as effective as drugs in improving the mental health and satisfaction level of teenagers. Through sports activities, young people develop not only physical fitness, but also good life skills such as teamwork, self-confidence and perseverance.

Conclusion: It is very important to provide support to adolescents and direct them to engage in sports activities in order to enable optimal development and ensure a healthy and successful path to the future.

Keywords: sports, mental health, children and adolescents

PROTECTION OF MENTAL HEALTH AND PSYCHO-SOCIAL SUPPORT OF CHILDREN IN MONTENEGRO

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Objective: The World Health Organization describes mental health as "a state in which a person realizes his potential, can cope with the stress of everyday life, work productively and fruitfully, and contribute to the overall health of a person." Being mentally healthy in childhood means reaching the expected levels of development and emotional maturity, developing functional social skills, resilience and the ability to deal with problems in difficult situations.

Topic review: Given that mental illnesses begin in childhood and adolescence, it is extremely important that parents, special education teachers, selected doctors and selected pediatricians, social workers, school psychologists can recognize potential mental health problems of children and young people, that they can provide adequate therapy and where it is not possible to forward to the appropriate services of psycho-social support. The lack of specialized personnel in order to adequately protect children with mental health problems, at all levels of health care, was identified as the main problem. Mental health care and psycho-social support services are not sufficiently developed, nor are they equally available in all regions of Montenegro.

Conclusions: Children's mental health is still a big challenge. Despite certain changes in legal and bylaws, their application in practice did not lead to the expected changes. Mental health is something that is still under-cared for and even less talked about. Long waiting times for examination, diagnosis and treatment, overloading of institutions where these services are provided must be the focus of public policy makers if we want healthy future generations.

Keywords: mental health of children, psycho-social support

PREVALENCE OF BURNOUT SYNDROME IN STUDENTS

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In the case of student burnout syndrome (there is no universal definition), it is most often described as a state of psychological and mental exhaustion due to work or college, when the usual methods of coping with stress are not effective, three dimensions appear: emotional exhaustion, cynicism and reduced efficiency. Emotional exhaustion represents the first reaction to the stressful demands of studies and represents the basic individual stress dimension of burnout, people feel tired of sympathy, complain of a feeling of emotional emptiness, describe how they have no strength for anything, etc.

The aim of this research was to examine the presence of burnout syndrome, and what consequences it has on social engagement, to determine the demographic characteristics of students as well as the highest prevalence in certain study programs.

In this work, a transversal research was conducted using the online questionnaire method (Google Forms) and included 96 students. The questionnaire was completely anonymous for students of different study programs who attended classes from October to December 2023. To determine the existence of burnout syndrome, the Maslach Burnout Inventory was used - Student Survey (MBI-SS) (Maslach, Jackson, 1981, 100). It consists of three dimensions, namely exhaustion, cynicism and academic efficiency. According to the demographic results, a larger share is made up of female students, i.e 62 female students and 34 male students. According to age, the most respondents are 24 years old, which is 19% of the total number of examined students. Then there are more examinees who are from Medical and Philosophical faculty compared to others. The results show that students mostly feel during their studies emotionally exhausted, i.e. 88.4% of them, while 11.6% of students never felt emotionally exhausted. Considering the year and type of study, students of Medicine and Mechanical Engineering faculties feel more exhausted than students of other faculties, but without statistical significance differences ($p>0.05$).

Certainly, burnout syndrome is very common among students, and the reasons for this can be numerous, from the fact that subjects and exams are more demanding, fatigue from previous years accumulates and stamina weakens, and of course there is also the awareness of new challenges after completing studies.

Keywords: burnout, student, emotional exhaustion, reduced efficiency

HIERARCHICAL TAXONOMY OF PSYCHOPATHOLOGY (HITOP) IN YOUTH: A NARRATIVE REVIEW AND MULTINATIONAL STUDY

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Background: Research indicates that mental health problems should be conceptualized as continuous dimensions organized in a hierarchy. This implies the existence of a broad general dimension of psychopathology, complemented by more specific dimensions capturing various aspects. The Hierarchical Taxonomy of Psychopathology (HiTOP), as the most comprehensive hierarchical model, incorporates individual signs, symptoms, and behaviors at its most specific level, while at its broadest level, it encompasses higher-order dimensions.

Aim and Methods: We conducted a narrative review of studies that considered the HiTOP framework in youth psychopathology conceptualization and performed a new study to map various psychopathological symptoms and personality traits within this structure. The study involved a multinational sample of 3923 community adolescents, aged 15 - 19 years.

Results: Data from the reviewed studies consistently supports the structure of youth psychopathology aligned within the HiTOP framework, particularly its general superspectrum of psychopathology and its broad internalizing and/or externalizing spectrum. Additionally, distinct lowest-level dimensions were found such as fear and distress, affectivity, antagonism, hyperactivity/attention problems, thought disorder, psychotic-like experiences, traumatic stress, alcohol use/harms, detachment, and somatoform. Three higher-level dimensions were identified: cognitive-emotional-arousal, externalizing behavior, and social dysfunction. Further down the hierarchical structure, twelve specific subfactors were identified: thought dysfunction, low mood, fearfulness and anxiety, physiological hyperarousal, attentional dysfunction, disruptive mood, antisocial behavior, antagonistic behavior, detachment, self-destructive behavior, and substance use.

Conclusion: Our study supports previous findings and contributes to growing evidence that the HiTOP framework can effectively be applied to conceptualize psychopathology in adolescents.

Keywords: psychopathology, assessment, adolescents

INCLUSIVE POLICY IN CHILDREN AND ADOLESCENT WITH DEVELOPMENTAL AND INTELLECTUAL DISABILITIES

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Objective: Intellectual disability ranks in the top ten causes of disease burden globally and is the top cause in children younger than 5 years. Approximately 40% of children with intellectual disability present with a diagnosable mental disorder, a rate that is at least double that in children without intellectual disability. Most risk factors for poor mental health and barriers to accessing support are not unique to people with intellectual disability.

Topic review: Disability can occur together or separately from other mental or physical disorders. Health is a core element in quality of life, but poverty, marginalization, limited access to primary health care, and lack of health promotion knowledge compromise health. From inclusion we expect approach to individual and his/her family by the society, to take into account all their diversities, preservation and improvement of their personal physical and mental health, for optimal possible functioning, at all personal and social levels.

Conclusion: Mental health promotion as part of inclusive policy should be represented in the curricula of all kindergartens, schools and faculties with planned leisure time activities. An integral part of all therapeutic approaches to children and adolescents with developmental disabilities should be the training of children and their families for the adequate use of leisure time. Working with parents and members of family through "family-oriented practice" is a challenge for interdisciplinary team in health care services and requires a significant change from a traditional child-centered approach.

Keywords: mental health promotion, inclusive policy, children and adolescents, developmental and intellectual disabilities

PANDAS SYNDROME - A CASE REPORT

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Objective of the Review: PANDAS is an acronym that stands for Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections, rare conditions first described in 1990, which are still not thoroughly investigated. Clinically, PANDAS is characterized by sudden changes in behavior, personality and movement in patients with streptococcal infections, although other infectious agents have also been reported. Objective of this review is the presentation of a case report of a boy with diagnosed PANDAS syndrome in order to contribute to the investigation of diagnosis and treatment of this rare condition.

Topic Review: We present the case of an 11-year-old boy with symptoms of obsessive-compulsive disorder, which included motor and vocal tics, starting at the age of 4 after a throat infection. The boy had been under the treatment of a neuropediatrician. Onset of anxiety symptoms and panic attacks in December of 2023 was recognized as aggravation of the primary condition, as obsessive-compulsive symptoms and tics persisted. The boy was hospitalized at Neuropediatric Clinic at University of Sarajevo, and a child psychiatrist was consulted. After a course of immunoglobulin therapy, remission of symptoms followed under the supervision of a child psychiatrist. No additional psychopharmacotherapy was administrated.

Conclusion: PANDAS, being by definition a diagnosis of exclusion, is a rare, serious condition which can severely impact the quality of life of patients up to the point of debilitating normal functioning. This report highlights the importance of a thorough, detailed patient history and extensive diagnosis as to prevent the possibility of a misdiagnosis of a condition that is easily treated once recognized.

Keywords: PANDAS syndrome, immunoglobulin therapy, obsessive-compulsive symptoms

ADHD; (NO) AVAILABILITY OF ADEQUATE MEDICINE IN BIH: A CASE REPORT

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Case report: We presented the case of a 7-year-old patient diagnosed with ADHD.

Introduction: Attention deficit hyperactivity disorder is a common, controversial syndrome characterized by developmentally inappropriate hyperactivity, impulsivity, and inattention (1). In the world and in the region, there are drugs that are registered and used in the treatment of this disorder. What complicates the care of a child diagnosed with ADHD, parents and health professionals who deal with the mental health of children, is the fact that in BiH there are no drugs that are registered for the treatment of ADHD. Psychostimulants have been the drug of choice for children with ADHD since reports of immediate, often dramatic improvements in behavior and academic performance in children were published 60 years ago (9). These findings have since been confirmed in multiple controlled, short-term studies; 70% of patients responded to stimulant drugs (methylphenidate, dextroamphetamine), eliminating most of the controversies surrounding the short-term efficacy and safety of these drugs.

Objective: to provide an overview of the evaluation and treatment of ADHD disorders in children, to emphasize the importance of a multidisciplinary approach to this disorder, especially at a sensitive developmental age, and the aggravating factor in the treatment process; unavailability of registered medicine in BiH.

Methods: Psychiatric examination, neuropediatric/pediatric examination, psychological testing, EEG, ECG.

Conclusion: Early diagnosis and treatment can be useful for the course of life of a child suffering from ADHD, and for his overall better functioning.

Keywords: ADHD, methylphenidate, child and adolescent psychiatry, treatment

RISK FACTORS FOR DEVELOPMENT OF DISORDERED EATING AMONG ADOLESCENTS IN BOSNIA AND HERZEGOVINA

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Background: Due to excessive concerns and focus on weight control and body shape, adolescents often resort to inappropriate behaviors and attitudes towards eating, resulting in physical and psychological issues.

Aim: To investigate the frequency of disordered eating among adolescents and possible relationships and predictor variables between disordered eating and age, BMI, body appreciation, self-esteem, quality of family interactions, psycho-social health, and childhood abuse experience in adolescents of both sexes.

Participants and methods: A cross-sectional study was carried out on a suitable sample of 724 high school students aged 14-19 years. The following tools have been used: socio-demographic questionnaire, The Eating Attitudes Test, Body Mass Index, Body Appreciation Scale, Rosenberg's Self-Esteem Scale, Quality of Family Interaction Scale, Pediatric Quality of Life Inventory and Childhood trauma Questionnaire.

Results: 7.7% adolescents had a risk frequency of disordered eating. Body appreciation is the most significant predictor for developing disordered eating across the entire sample of adolescents (β= -0,325, $p<0,05$) and individually for male adolescents (β=-0,199, $p=0,010$) and female adolescents (β= -0,379, $p<0,001$). In addition to this variable, BMI has proved to be a statistically significant predictor in explaining the eating habits of female adolescents (β=0,185, $p<0,001$) while this happens to be self-esteem for male adolescents (β=-0,211, $p<0,022$).

Conclusion: The most significant risk factors for developing disordered eating in adolescents are body appreciation, BMI and self-esteem. Results of this research can contribute to enhancement of intervention programmes which promote a positive body image and aim to prevent disordered eating in adolescents of both sexes.

Keywords: adolescent, body image, body mass index, feeding and eating disorders, risk factors

KNOWLEDGE AND ATTITUDES OF HEALTHCARE STUDENTS TOWARDS PSYCHIATRIC PATIENTS

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Introduction: All over the world, health personnel, students, and the general population in general have negative attitudes and opinions towards psychiatric patients, which indicates the presence of stigmatization of a population that is extremely sensitive. It is a fact that today there are prejudices, which arise as a source of ignorance, it is very important to reintegrate the environment of the patient himself, even among health professionals, despite the progress of modern medicine. Nursing students are the future of the health care system, therefore it is extremely important to commit to breaking the trend of negative attitudes and ignorance through continuous education and training from the right sources that are scientifically proven.

Goal: We have two goals of the work, to examine the knowledge and attitudes of students towards psychiatric patients and to examine the most common prejudices about psychiatric patients.

Material and methods: The methods used in the preparation of this paper are cross-sectional research and descriptive method. The research was conducted on students majoring in general health care. The instrument for data collection was an online questionnaire, which was created for the purpose of writing a scientific research paper.

Results: The research included 68 students of all years of study in the general department of health care. Regarding the demographic structure, according to gender, 60 women and 8 men participated in the research. Considering the age structure, 80% of respondents are between 18-28 years old. The majority (93%) of respondents believe that psychiatric patients are not to blame for their own condition, and 53% believe that a large number of people are not faking mental illnesses. 87% believe that psychiatric patients should not be removed from the social community, while 30% of them believe that psychiatric patients are incapable of work.

Conclusion: Given that the research shows that prejudices are still present, in smaller numbers but still present, it is extremely important to carry out further education in order to reduce them to a smaller number. Medical staff is the first line of healthcare, so it is necessary to train students for responsible work that follows after studying.

Keywords: students, prejudices, health care, education

THE MENTAL HEALTH OF CHILDREN WITH JUVENILE IDIOPATHIC ARTHRITIS

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Objective: The co-occurrence of depression and anxiety is frequently observed in children with rheumatologic diseases, such as Juvenile Idiopathic Arthritis (JIA). Patients with JIA often exhibit symptoms of depression and anxiety similar to those present in other chronic childhood diseases and at a higher rate than healthy children.

Topic review: Depression and anxiety may have a more substantial effect on the quality of life of patients with JIA than other symptoms of the disease. The main risk factors for depression and anxiety are disease activity, disease burden, and pain. Managing a disease with medications and blood test monitoring can also be psychologically challenging. Anxiety related to injections was found to be more common among younger patients, those with higher disease activity, and those receiving subcutaneous administration. Anxiety related to blood tests was more prevalent among younger patients who had been on methotrexate for a shorter duration. Importantly, anxiety related to blood tests was found to be an independent predictor for lower scores in psychosocial quality of life. Chronic illnesses have a significant impact on mental health, and their effects extend far beyond the patient. Children's anxiety and depressive symptoms are positively correlated with their parents, with 12% of parents displaying clinically significant depressive symptoms.

Conclusion: It is crucial to recognize and address the mental health problems of children with JIA to improve the patient's overall well-being and achieve better treatment outcomes. The integration of mental health promotion into general rheumatology medical care is an essential component of comprehensive patient care.

Keywords: mental health, depression, anxiety, juvenile idiopathic arthritis

ADHD ASSOCIATED WITH CONDUCT DISORDER: A CASE REPORT

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The paper presents the case of an 11-year-old boy diagnosed with ADHD associated with behavioral disorder. The clinical picture was dominated by hyperactivity, attention deficit, behavioral disorders, impulsiveness and aggressiveness, along with inadequate social communication with peers and adults.

The goals of the treatment were aimed at reducing hyperactivity, undesirable forms of behavior while improving the quality of attention. The emphasis of the treatment was also on improving the spectrum of prosocial forms of behavior, increasing the level of self-esteem, while improving the academic and general functioning of the child. The treatment plan was focused on the child, the mother and the school. The mother was involved in psychoeducation in order to better understand the nature of the disorder, be educated and involved as a co-therapist in the application of behavioral techniques in the home environment with a clear and consistent structuring of daily activities and supervision of their implementation. The treatment focused on the child included the application of behavioral techniques (positive reinforcement, tokenization, attention training, intolerance of inappropriate behavior, stop technique, anger control and social skills training with a previous functional analysis of behavior). In addition, the child was included in occupational, psychotherapeutic, defectological and psychopharmacological treatment. The treatment aimed at the school included educating the teacher in the application of behavioral techniques aimed at reducing undesirable forms of behavior. In order to achieve maximal effects of the treatment, a multidisciplinary approach is needed with good cooperation between doctors, parents and the school.

Keywords: ADHD associated with conduct disorder, case report, treatment

TREATMENT OF CHILDREN WITH ADHD IN BOSNIA AND HERZEGOVINA - CHALLENGES AND DIFFICULTIES

Nermina Kravić, Nataša Topić

Objective/Aim: Methylphenidate as an essential medicine for the treatment of attention deficit hyperactivity disorder (ADHD) in children and adolescents for more than 60 years. ADHD is one of the most common mental conditions in childhood. Meta-analytic evidence shows that methylphenidate has one of the highest effect sizes, in terms of efficacy from randomized controlled trials. In spite all of those benefits, methylphenidate is not registered for use in Bosnia and Herzegovina yet.

Case report: Fifteen years old boy, live as an only child in extended family with both parents and grandmother, in psychiatric treatment from the age 9. In clinical description he was fulfilling all nine criterions from inattention and hyperactivity from the Criterion A (DSM 5). In spite high intellectual capacity, he could not participate in regular schooling, and his behavior at home was severely disturbed, so social services overlook their parental competence. From the age of 12, methylphenidate was prescribed in therapy, patient showed good respond, but parents have difficulties to get that medicine in pharmacies in Bosnia and Herzegovina. Further on, we prescribed different psycho-pharmacotherapy (risperidone, olanzapine, aripiprazol, valproic acid, lamotrigin) trying to calm patient behavior, but except prolonged sleep, we did not get any improvement in social Belgrade, Serbia, where this medication was registered and in use for more than 30 years. Our patient got methylphenidate 36mg, his behavior was improved, start to go to school; quality of their family life was improved.

Conclusion: Not having a possibility to treat children and adolescents with ADHD with psychostimulans here in Bosnia and Herzegovina we misuse basic ethical and human right for providing best possible treatment for certain condition, prolong suffer of patient and his family and increase possibilities of negative side effects of other psychotropic medications which we prescribe.

Keywords: ADHD, Bosnia and Herzegovina, non-registration methylphenidate prescription

MOST PSYCHOSES ARE SYMPTOMATIC AND FREQUENTLY NOT PRIMARY CEREBRAL DISORDERS

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Aims: The current pharmacotherapy in clinical psychiatry is the "therapy of consequences" (of biochemical disturbances as consequences of many different etiological factors in brain, in body and in environment). Our aim in this study is the investigations of real causes of psychotic disorders (Schlike and other) and of the current possibilities to more precise etiological diagnostic and opportunities to targeted, etiological general and psychopharmacotherapy. The dominant approach are the etiopathogenetic approach and detection of: infective-inflammatory, toxic, metabolic, endocrinological, neurological, vascular, anatomic, real genetic, iatrogenic, and other well-known causes of disturbances of CNS functions.

Methods: All diagnostic methods (biochemical, microbiological, endocrinological, toxicological, neuroimaging) in discovery the real causes and etiopathogenesis of Sch-like and other psychotic disorders and about targeted pharmaco- and psycho-pharmacotherapy of real causes: infective-inflammatory, metabolic, toxic, endocrinologic, neurogenic, cerebrovascular, iatrogenic, ect.

Results: The most frequent etiology in our sample of 100 patients with psychotic future were: psychoactive drugs (29 %), respiratory tract and other infections (25 %), endocrine and metabolic disturbances (16 %), cerebrovascular disorders (12 %), brain disorders (11 %) and neurodevelopmental disorders (7 %).

Conclusion: Introduction of more precise diagnostic of real causes of some psychiatric disorders with psychotic future (infective-inflammatory, metabolic, toxic, endocrinologic, neurogenic, cerebrovascular, iatrogenic, etc..), can be very effective contribution in well targeted pharmacotherapy in clinical psychiatry. The conception of "co-morbidity" and "dual diagnosis" and the treatment of biochemical and immunological consequences od psychiatric disorders separated from etiology, must be reevaluated.

Keywords: psychosis etiology therapy

THE IMPACT OF PHYSICAL ACTIVITY DURING PREGNANCY ON THE MENTAL HEALTH OF THE MOTHER AND CHILD

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Objective: Pregnancy is a unique period in a woman's life. Good mental health, emotional balance and psychological stability of a pregnant woman ensure healthy development of the child. Psychological imbalance endangers the child's mental health. Physical activity during pregnancy is effective in maintaining good mental health of the pregnant woman and her child.

Topic overview: Mental health disorders are common during pregnancy. Conditions of heightened emotional sensitivity of a pregnant woman can affect the child's mental development and are reflected in his emotions, cognition and behavior. Stress, anxiety and depression damage the fetus, affect the prenatal environment and disrupt regions responsible for emotional control, attention and memory. The influence of these potentially harmful stimuli increases the likelihood of cognitive difficulties and psychiatric conditions in the child. Long-term stressors cause cognitive, behavioral and emotional problems in offspring. Children of anxious mothers are exposed to worry, fear, avoidance and anxiety. Neurodevelopmental disorders, speech delay and child behavior problems are associated with postpartum depression. Physical activity is an important means of preventing mental disorders during pregnancy. It maintains the mental health of pregnant women, reduces anxiety, stress, depression and reduces the risk of postpartum depression. It has a positive effect on offspring, improves neurodevelopment and cognition and reduces anxiety.

Conclusions: Prenatal physical activity improves the mental health of the pregnant woman, creates an optimal environment for the development of the psychophysical abilities of the fetus and consequently affects the mental health of the offspring.

Keywords: pregnancy, physical activity, mental health, fetus, offspring

BENEFITS AND HARMFUL CONSEQUENCES OF CANNABIS LEGALIZATION FOR YOUNG PEOPLE IN BOSNIA AND HERZEGOVINA

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Objective: Cannabis or marijuana has been used medicinally, recreationally and spiritually for thousands of years around the world. The CBD component of cannabis gives the advantage to be used for medical purposes with the aim of alleviating the symptoms of multiple sclerosis, AIDS, controlling epileptic seizures, cancer.

Topic review: Smoking marijuana can provide relaxation to people with chronic pain and reduce the perception of pain. However, marijuana is the first psychoactive substance young people encounter on the illegal drug market, which has a significant adverse effect on their health. It is this dichotomy between the benefits and risks of marijuana that fuels the debate to protect public health and the health of young people. In Bosnia and Herzegovina, the use of cannabis is exclusively illegal and most often the first drug that young people encounter. The short-term risks of consuming marijuana are: impaired memory and psychomotor functions, risky behaviors and intoxicated states. Long-term risks are physical deterioration, cognitive deterioration and the development of serious mental disorders (psychosis, depression, anxiety). So far, twenty European countries have decriminalized cannabis. However, the attitudes of individual EU countries are completely different.

Conclusion: The benefits of cannabis are obvious if it is used in a controlled manner for medical purposes, but one should keep in mind the numerous harmful consequences of uncontrolled, chronic use. If we as a society want to take advantage of the benefits of cannabis, we must clearly delineate medical and recreational use, in order to protect public health, especially young people.

Keywords: cannabis, medical purposes, addiction, harmful use, young people

HOW AVAILABILITY OF PSYCHOPHARMACOLOGICAL AND PSYCHOTHERAPEUTIC INTERVENTIONS SHAPE TREATMENT OUTCOME- AN EXAMPLE OF TREATMENT OF PSYCHOSIS AND ADHD

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Introduction: Availability of therapeutic options has wide effect on treatment outcome and success. In our country, with focus on the ward for child and adolescent psychiatry at the Clinical center University of Sarajevo, we have to provide treatment for all varieties of disorders happening during all developmental periods. Treatment is a challenge per se but with limited availability of psychopharmacological and psychotherapeutic interventions it becomes even a more pronounced challenge. We have covered two distinct disorders: psychosis in children and adolescents and attention – Deficit / Hyperactive disorder (ADHD). On one side they are many available treatment options for patients with psychosis, but for patients with ADHD limited treatment options are available which increases the use of off – label medication with variable effect on the symptomatology.

Aim: Review the used treatment options for psychosis in children and adolescents on one side and ADHD on the other side and to outline the probability of use of off label medication because other treatment options still remain unavailable.

Methods: Included were children and adolescents treated through inpatient, outpatient or ambulant care at the ward for child and adolescent psychiatry, Department of psychiatry, Clinical center University of Sarajevo during the period of four years. We focused on two distinct diagnose (psychosis and ADHD) in children and adolescents aged 8 – 18 years. Parameters of interest were sociodemographic variables, use of medication (covered off label use as well), psychotherapy provided and availability of treatment and treatment outcome. The study was designed as a retrospective- prospective, cross-sectional study.

Results: The availability of therapeutic options shaped treatment outcome and success, and as well time to treatment initiation. Unavailability of medication shaped use of off label medication in patients with ADHD.

Keywords: ADHD, psychosis, treatment options, treatment outcome

SUPPORT FOR PRESERVING THE MENTAL HEALTH OF SECONDARY SCHOOL STUDENTS

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Objective: Adolescence and youth are periods when young people are particularly vulnerable to various mental challenges such as depression, anxiety and eating disorders. According to CDC research, the number of adolescents with mental health problems is increasing. Topic review: According to data from 2005, over one-third of schools involved teaching or non-teaching staff to provide mental health services, and more than a quarter used external agencies to provide mental health services in schools. In 2021, more than 4 in 10 (42%) students felt consistently sad or hopeless, and nearly a third (29%) experienced poor mental health. In 2021, more than 1 in 5 (22%) students had suicidal thoughts, and 1 in 10 (10%) attempted suicide. In Montenegro, nongovernmental organizations made a great contribution to the promotion of mental health through workshops that were implemented through projects in high schools, as well as through support services for the preservation of mental health.

Conclusion: Preserving mental health is a big challenge for young people, their families, teachers, and the wider community. In order for a young person to grow into a mature and stable personality, it is necessary to strengthen and provide support in overcoming the various problems they face during growing up.

Keywords: Keywords: mental health, preservation of mental health, high school students

THE FIRST PSYCHOTIC EPISODE OF A FIFTEEN YEAR OLD PATIENT - LYME DISEASE AS A TRIGGER OF MENTAL ILLNESS: A CASE REPORT

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Objective: The objective of this work is to show the importance of recognizing the first psychotic episode for further catamnetic monitoring, but also to show the significance between the possible connection of early borreliosis with mental illnesses, and to see if there are elements for the manifestation of late Lyme disease. Psychosis is characterized by overt disturbances in behavior, perception and thinking. In psychiatry are available many tools, on the basis of which we can achieve relatively precise prediction, as well as early detection of the first psychotic episode.

Excerpt: Female patient, 15-years old was admitted in the department of Child's psychiatry as her first admission. who, after the symptoms of early borreliosis were recognized and treated with antibiotics, subsequently contacted a psychiatrist for the first time after a suicide attempt, and whose course of illness on the psychological level Is going to change completely, during her first hospitalization. At first, the clinical picture was consistent with a depressive disorder, but very quickly the exteriorization of the real clinical picture occurs, where positive psychotic symptoms are recorded, primarily in terms of perception disturbances. After neurological and psychiatric treatment, neuroborreliosis is finally suspected. Despite a positive medical history, previously confirmed and treated Lyme disease, the serological profile performed at our clinic in January of this year was not conclusive for manifestations of late Lyme disease, as confirmed by the infectious side.

Conclusion: We decided to analyze the first psychotic episode in order to emphasize the importance of early recognition as well as adequate therapy. Although borreliosis can be accompanied by any psychological disorder, it is most often associated with an exogenous psychotic disorder with auditory and visual hallucinations and somatic delusions.

Keywords: psychosis, borreliosis, disorder

OVERVIEW OF RISKY BEHAVIORS IN CHILDREN AND ADOLESCENTS TREATED AT THE WARD FOR CHILD AND ADOLESCENT PSYCHIATRY DURING THE PERIOD OF 2018-2024

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Introduction: The mental health of children and adolescents was important during the COVID 19 pandemic. The combination of genetic and environmental factors from early life stages, including parenting, education, quality of relationships, incidence of trauma, poverty and health crisis like COVID-19 pandemic together shape the mental health of children and adolescents. Because of quarantine and restrictions on a national level due to pandemic, children spent important years of their lives apart from families, friends, classrooms and outside playing. The global report of UNICEF from the 5th of October 2021 outlined that children and young are probable to experience long-term effect of the pandemic on their mental health and wellbeing. They outlined that suicide is one of the most often causes of death in adolescents. Studies that have covered this theme regarding the effect of pandemic on suicidal behavior outlined that young population was at heightened risk of suicidal thoughts and self-mutilation.

Aim: Investigate if a statistically significant specificity exist in correlation with risky behaviors in patients treated at the ward for child and adolescent psychiatry, Department of psychiatry, Clinical Center University of Sarajevo during the period 2018-2024 (period before pandemic- during pandemic - period after pandemic).

Methods: The study is descriptive and retrograde, performed on a clinical sample of patients (children and adolescents). Used were instruments specifically created for this study to cover variables about psychosocial environments.

Keywords: risky behaviors, adolescents, children, pandemic COVID-19

CEREBROVASCULAR AND CARDIOVASCULAR RESPONSES TO TILT IN PATIENTS WITH AUTONOMIC FAILURE

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Objective of review: We summarize current knowledge on the use of Tilt table test in patients with autonomic failure.

Topic review: Dysautonomia is a term used to describe any disorder of the autonomic nervous system (ANS). The estimate is that 70 million people worldwide have some form of autonomic dysfunction. One common sign of autonomic dysfunction is difficulty maintaining upright posture, known as orthostatic intolerance or postural orthostatic tachycardia syndrome (POTS) and involves abnormal blood pressure and heart rate. Classic cerebral autoregulation theory suggests that cerebrovascular resistance must decrease to maintain adequate flow in the face of the drop in mean arterial blood pressure induced by upright position. The primary goal in the treatment of ANS failure patients should be to find ways to limit the fall in cerebral perfusion pressure (CPP) while standing. The Tilt table test is considered to be the “gold standard” in testing for dysautonomias. Systemic hemodynamic measurements during tilt table are heart rate, beat-to-beat estimates of arterial blood pressure and neurophysiologic monitoring: Transcranial Doppler Ultrasound-TCD, noninvasive, real-time, continuous method of monitoring cerebral blood flow velocity of intracranial vessels. Cerebral NIRS or Near Infrared Spectroscopy, measure of regional oxygenation saturation (rSO2) of the frontal cerebral cortex. Somatic NIRS, measure of regional oxygenation saturation (rSO2) of the distal body muscles, usually gastrocnemius. Finally, quantitative EEG or BIS -bispectral index is recorded to document transient episodes of syncope and/or seizures objectively and precisely.

Conclusion: These are powerful new neurophysiologic tools, coupled with traditional systemic hemodynamic and electrocardiographic measures that will improve the diagnostics in the complex determination of the causes of syncope and cardiac-based confusional states.

Keywords: Dysautonomia, Tilt table, EEG, TCD, NIRS

A RARE CASE OF DIABETIC AMYOTROPHY (BRUNS-GARLAND SYNDROME) AS A COMPLICATION OF DIABETES MELLITUS

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Objective of review: Our goal is to increase awareness about rare manifestations of diabetic amyotrophy as a hyperglycemia-related complication.

Topic review: Diabetic amyotrophy, also known as proximal diabetic neuropathy or Bruns-Garland syndrome, is a rare complication of diabetes mellitus characterized by asymmetric, painful weakness and wasting of the proximal muscles, typically affecting the lower extremities. However, rare cases may present with multifocal manifestation involving the upper extremities and sensory disturbance. We are reporting a case of diabetic amyotrophy in a 61 years old male patient with a long-standing history of diabetes mellitus typ 2. The patient presented with combination of foot drop, bilateral hand atrophy and sensory disturbance. Diagnostic evaluation, including nerve conduction studies and electromyography, confirmed the diagnosis of diabetic amyotrophy. The patient treatment involves of glycemic control, pain management with medications, physical therapy and ergonomic adaptation.

Conclusion: This case highlights the importance of recognizing this rare manifestation of diabetes mellitus. Further research is needed to elucidate the underlying mechanisms and optimize treatment strategies for diabetic amyotrophy.

Keywords: diabetic amyotrophy, diabetic complications

COGNITIVE IMPAIRMENT IN MULTIPLE SCLEROSIS

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Objective of review: Our objective is to provide a brief overview of the frequency and importance of cognitive impairment in MS patients and symbol digit modalities test (SDMT) in the cognitive assessment in MS patients.

Topic review: Of the more than two million people worldwide with multiple sclerosis, 40% to 65% experience cognitive impairment, many of them early in the course of the disease. Cognitive deficits which occur during the early stages of the disease are the ones that need to be specially identified and addressed, to prevent the worsening of CI, implicating a poor prognosis in MS. The Symbol Digit Modalities Test (SDMT) is a valuable screening tool for CI and can be the starting point when assessing CI in MS patients when other comprehensive screening tools are not available.

Conclusion: Early detection and monitoring of cognitive dysfunction in multiple sclerosis (MS) may be enabled with smartphone-adapted tests that allow frequent measurements in the everyday environment.

Keywords: multiple sclerosis, cognitive impairment, symbol digit modalities test, smartphone-adapted symbol

MYOTONIC DYSTROPHY TYPE 1 (MORBUS CURSCHMANN-STEINERT)

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Objective of review: Our aim is to present a short overview of current knowledge on clinical presentation, evaluation and monitoring for expected complications patient with Myotonic dystrophy type 1.

Topic review: Myotonic dystrophy type 1, also known as Curschmann Steinert disease, is a rare, gradually progressive multi-organ disorder. It manifests as an autosomal dominant myopathy. Clinical presentation typically includes myopathic face, myotonia, and combined proximal and distal muscle weakness with muscular atrophy. Affected individuals often experience multi-organ involvement, affecting the neurological, cardiac, respiratory, endocrine, and digestive systems. Timely diagnosis is crucial for cardiovascular monitoring, prevention of cerebrovascular events, and management of respiratory and endocrinological complications. We present a case of a 37-year-old man who presented with grip myotonia, combined proximal and distal weakness predominantly affecting the distal muscles, and balding. Physical examination revealed grip myotonia, while laboratory findings showed an elevated creatine phosphokinase level of 364 U/L (reference values 0-205 U/L). Liver function tests indicated modestly elevated levels of alkaline phosphatase and gamma-glutamyl transpeptidase. Percussion myotonia was positive on both sides of the m. tenar. Electromyoneurography (EMNG) was performed on the upper and lower extremities, confirming the diagnosis of myotonic dystrophy type 1.

Conclusion: Although there is currently no therapy, symptomatic therapy, rehabilitation and monitoring for expected complications can improve quality of life.

Keywords: myotonic dystrophy type 1, hereditary myopathy, Curschmann-Steinert disease

A CASE STUDY ON NON-CONVULSIVE STATUS EPILEPTICUS

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Objective of review: to provide a brief overview on non-convulsive status epilepticus.

Topic review: Non-convulsive status epilepticus (NCSE) is a neurological disorder in which continuous epileptiform EEG discharges occur. It manifests primarily as altered mental processes and behavior without seizure-like movement. Nonconvulsive status epilepticus (NCSE) occurs in about 50% of patients with coma or convulsive status epilepticus and in many cases remains underrecognized, while being potentially fatal if left untreated. We want to present a case of 38 years old female patient admitted to the hospital after a series of seizures. One week prior to admission she discontinued anti-epileptic therapy, which consisted of: Perampanel, Lamotrigine, Sodium valproate. She was admitted to the clinic in the presence of her mother who gave heteroanamnestic data. Patient was somnolent and disoriented. Contrast brain MRI showed old posttraumatic or vascular resorptive field. During hospitalization, a NCSE was registered for 7 days. Continuous EEG monitoring suggested a specifically changed EEG with signs of severe disfunction of the fronto-cortico-parietal region with increased electric epileptiformic activity above it. She was treated with sodium valproate infusions and gradually started taking oral therapy of the same medicine. Clinical results and EEG showed an objective improvement in the patients' status.

Conclusion: Some subtypes of NCSE such as absence status epilepticus are treated easily, while others do not respond well to treatment. There still remains a debate between clinicians on how aggressive the treatment should be. Overall, additional research is needed to better define this condition, and to establish treatment paradigms for different subtypes of NCSE.

Keywords: altered consciousness, epileptiform EEG discharges, anti-epileptic therapy, nonconvulsive status epilepticus

CASE REPORT OF A PATIENT WITH INVOLUNTARY HEAD AND ARM MOVEMENTS RESEMBLING CHOREA

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Objective of review: To provide an overview of involuntary movements

Topic review: Chorea prevalence is unknown due to a lack of community-based studies. Hereditary chores, caused by Huntington disease, affect 3 per 100,000 people worldwide. It affects the face, limbs, respiration, phonation, and speech, often without awareness. HD diagnosis involves clinical features, family history, and genetic confirmation of expansion. Genetic testing, including targeted mutation analysis, confirms suspected cases. We present a case of 74 years old patients with involuntary had movements In May 1993, after some war combat; he noticed that his head was shaking slightly. Since then, this disturbance has been intensifying, as have involuntary hand movements, following the onset of spondylodiscitis in 2017. He denies similar situations in the family. The patient was treated with levodopa, benserazide, and rasagiline; no clinical or subjective improvement was observed. During hospitalization, relevant neuroradiological tests and examinations were performed, and MRIs of the brain and of the cervical spine with anesthesia were performed. The levels of ceruloplasmin in serum and copper in the urine and the ophthalmologist's examination of the KF ring are done, and the results are normal. Abdominal ultrasound was also performed, finding no abnormalities.

Conclusion: Based on the neurological status, disease course, and the tests performed, we are of the opinion that the patient has segmental dystonia, with the necessity of further monitoring and genetic testing for chorea. At discharge, there were no changes in neurological findings compared to admission.

Keywords: chorea, huntington disease, segmental dystonia, genetic testing

MS AND PREGNANCY

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Objective of review: In this review, we summarize current position on MS treatment in pregnancy.

Topic review: Multiple sclerosis is an inflammatory, autoimmune, neurodegenerative disease, more common in women than men and most common in women of childbearing age. Pregnancy is not a disease, but it is another state with a series of changes in the woman's body. Previously, it was considered that pregnancy has a negative effect on MS itself and there was a recommendation that women with MS do not give birth. Today we know that pregnancy itself has a protective effect on the course of MS, that the placenta secretes anti-inflammatory cytokines, progesterone and estrogen act as immunomodulators during pregnancy, suppressing lymphopoiesis of B cells and protecting the mother from relapse diseases.

Multiple sclerosis alone does not affect a woman's fertility. If a woman is receiving first-line IM therapy (glatiramer acetate, interferons beta 1a or b), she can continue it during pregnancy, and if she is receiving any other drug, each of them requires a certain period of suspension before conception. If relapses occur during pregnancy, a 1.5T magnetic resonance can be used to confirm them, but without the use of contrast. Pulse corticosteroid therapy is not recommended in the first trimester of pregnancy, while it can be used in the second and third. Symptomatic therapy is not recommended.

Conclusion: Pregnancy is a specific state requiring a special consideration in MS treatment.

Keywords: multiple sclerosis, pregnancy, treatment

ISOLATED COGNITIVE DECLINE AS THE FIRST MANIFESTATION OF CADASIL

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Objective of review: To discuss the etiology and pathophysiology of a rare hereditary neurological cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL). In addition, to report a rare confirmed CADASIL case in Bosnia and Herzegovina that presented with rapid cognitive decline

Topic review: CADASIL is a rare hereditary disease affecting small vessels in the brain caused by mutations in the NOTCH3 gene. It has a wide palette of clinical manifestations, usually starting with cognitive decline, migraine, and headaches. Therefore, it is frequently misdiagnosed as a transitory ischemic attack (TIA), ischemic stroke, or migraine. As advances in genetic testing enable the detection of patients with CADASIL, its incidence is rising. However, CADASIL is still rarely diagnosed, especially in countries with scarce socio-economic resources in healthcare, such as genetic testing which is mandatory to diagnose CADASIL. Hence, it should be considered in everyday clinical practice as a differential diagnosis, especially in younger patients with positive family history.

Conclusion: The exome sequencing that detects genetic mutations causing this rare disease is imperative. Family members should also be advised to do genetic testing, as this enables the detection of CADASIL before the onset of symptoms. In addition, the on-time implementation of more aggressive preventive strategies, including lifestyle changes and symptomatic treatment, is imperative. This will increase the patient's quality of life and decrease the development of various neurological complications.

Keywords: cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy, CADASIL, Cognitive decline, NOTCH3 testing

ACUTE TREATMENT OF MIGRAINE IN ADULTS

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Objective of review: To provide a short overview on acute migraine treatment

Topic review: Migraine is a common episodic disorder, the hallmark of which is a disabling headache generally associated with nausea and/or light and sound sensitivity. The current state of knowledge suggests that primary neuronal dysfunction leads to a series of intracranial and extracranial changes responsible for migraine, including four stages of development: stages of premonitory symptoms, aura, headache, and postdrome. The once popular vascular theory of migraine, which suggested that migraine headache is caused by vasodilation, while migraine aura results from vasoconstriction, is no longer considered tenable. Vasodilation, if it occurs at all during spontaneous migraine attacks, is likely an epiphenomenon resulting from instability in the central neurovascular control mechanism. The choice of a specific drug depends on patient-specific factors, including the severity and character of symptoms, comorbid conditions, and prior response to treatment. Non-invasive neuromodulatory devices are usually used for patients who do not respond to or cannot tolerate previous medications and those who wish to avoid medications. For some patients, oral agents are less effective because of poor absorption resulting from migraine-induced gastric stasis and vomiting.

Conclusion: The pharmacologic approach to migraine is largely directed by attack severity, presence of associated nausea and vomiting, treatment setting (outpatient or medical facility), and patient-specific factors such as presence of vascular risk factors and drug preference.

Keywords: migraine, headache, migraine attacks

THE ROLE OF MICRORNAS IN ALZHEIMER'S DISEASE AND POTENTIAL THERAPEUTICS

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Objective of review: To present a role of MicroRNAs in Alzheimer's Disease

Topic review: MicroRNAs (miRNAs) have been identified as potentially important regulators in the pathophysiology of Alzheimer's disease (AD). MiRNAs are small, non-coding RNA molecules that play a significant role in the cell apparatus. MicroRNAs endogenous 18-22 nucleotide non-coding RNAs can control post-transcriptional gene expression through translation repression or transcript degradation. The dysregulation of miRNAs has been observed in AD, impacting various processes such as amyloid β (Aβ) plaque formation, neuroinflammation, synaptic plasticity, and neurodegeneration. Studies have shown that miRNAs are implicated in the regulation of amyloid precursor protein expression, tau phosphorylation, and brain-derived neurotrophic factor (BDNF) levels. Among these microRNAs, miR-107, miR-29a, and miR-29b-1 have been implicated in contributing to increased levels of beta- site amyloid precursor protein-cleaving enzyme 1 (BACE1) and amyloid-beta (Aβ) peptides in sporadic AD. The dysregulation of miRNAs such as miR-188-5p, miR-107, miR-29a, miR-29b-1, miR-101, miR-132, and miR-137 underscores the intricate regulatory mechanisms of these small non-coding RNAs in AD pathophysiology. Moreover, miR-137 has been associated with inhibiting Tau hyperphosphorylation in AD and targeting specific genes related to the disease. In our research, we use various online databases like PubMed, Elsevier, Wiley Online Library, EBSCO, NCBI, Springer Nature, and Neuroscience Online.

Conclusion: Understanding the specific roles of these microRNAs in AD offers valuable insights into the molecular mechanisms underlying the disease and provides potential targets for therapeutic interventions aimed at mitigating neurodegeneration and cognitive decline in affected individuals.

Keywords: microRNAs, Alzheimer's disease, pathophysiology, therapeutics

FRONTOTEMPORAL DEMENTIA AND MOTOR NEURON DISEASE – A CASE REPORT

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Objective of review: To present a case of a rare presentation of motor neuron disease in a patient with frontotemporal dementia (primary progressive aphasia).

Topic review: Frontotemporal dementia (FTD) with motor neuron disease (MND) represents a syndrome of progressive language and behavioral changes, muscle weakness and atrophy. After fulfilling the diagnostic criteria for FTD-MND, the clinical manifestation becomes diverse and complex, likely indicative of extensive brain atrophy. FTD-MND advances rapidly, resulting in significantly shorter survival rate and a worse prognosis compared to other FTD subtypes. 80-yearold patient presented with a one-year history of progressive speaking and swallowing difficulties. One year prior to admission, the patient experienced a persistent peripheral facial nerve palsy, which remained unresolved at the time of admission. Four years prior to admission, he was diagnosed with symptomatic epilepsy due to head trauma. After a series of normal EEGs, the antiepileptic therapy was discontinued. The major clinical features included speech impairment, intermittent swallowing difficulties, hyperreflexia, and fasciculations affecting all four extremities. Neuroimaging findings as well as clinical features strongly indicated a diagnosis of frontotemporal dementia/primary progressive aphasia with motor neuron disease intermittent swallowing difficulties, hyperreflexia, and fasciculations affecting all four extremities. Neuroimaging findings as well as clinical features strongly indicated a diagnosis of frontotemporal dementia/primary progressive aphasia with motor neuron disease

Conclusion: Frontotemporal dementia-motor neuron disease is now recognized as an important dementia syndrome. Among FTD subtypes, the behavioral variant (bvFTD) is the most commonly observed phenotype in combination with MNDs. In contrast, there remains a lack of understanding regarding the pathology, genetics, and clinical characteristics of concurrent primary progressive aphasia (PPA) and MND, which presents a significant challenge in diagnosis and management of this clinical entity.

Keywords: frontotemporal dementia, motor neuron disease, primary progressive aphasia

CURRENT TREATMENT OPTIONS FOR MIGRAINE IN ADULTS

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Objective of review: The aim of this review is to present current options for acute and preventive migraine treatments.

Topic review: Migraine is a major global health issue that affects over 10% of the general population and is the second leading cause of years lived with disability worldwide. Classified as a primary headache disorder, migraine is a complex ilness that manifests as episodic moderate-to-severe headaches, often unilateral and associated with symptoms such as nausea and light and sound sensitivity. It causes a significant burden of disability in over a billion people worldwide and has a substantial medical and economic impact at the individual, family, and social levels. Treatment options include abortive (symptomatic) treatments, treatments with migraine-speciftc agents (e.g., triptans, calcitonin gene related peptid (CGRP) inhibitors, lasmiditan, dihydroergotamine), non-invasive neuromodulation treatment options (transcutaneous supraorbital nerve stimulation, remote electrical neuromodulation, transcranial magnetic stimulation, non-invasive vagus nerve stimulation) and peripheral nerve blocks. The general recommendation for the different approaches to migraine treatment that depends on the severity of the attacks, the presence of associated symptoms, the treatment setting (emergency, in or outpatient medical care facility), and patient-specific factors, such as the presence of the risk factors, drug preferences, and other individual factors are also presented

Conclusion: Successful migraine treatment plan is essential in reducing the level of disability, and excessive use of treatments that are less effective or with inadequate treatment response, reducing the occurrence of medication overuse headaches and maintaining the lower cost for migraine management.

Keywords: migraine, treatment

A BRIEF REVIEW OF THE HISTORY OF MICRONEUROSURGERY

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Objective: This presentation aims to briefly review the history of microneurosurgery, discussing important events and prominent personalities responsible for its development from its humble beginnings till its magnificent present.

Topic Review: In the late 1950s and 1960s, a relatively small group of pioneering neurosurgeons introduced an operative microscope and transformed microneurosurgery into the standard of care in modern neurosurgery. The surgical microscope dramatically improved visualization of the operative field by magnification and enhanced illumination, assuring better cerebroprotective measures during neurosurgical procedures leading to improved outcomes. In 1957, T. Kurze was the first neurosurgeon to use an operative microscope to remove a 7th cranial nerve schwannoma. In 1958, R. Donaghy established the world's first microsurgery research and training laboratory in Burlington, Vermont, which stressed the perfection of vascular anastomoses in small cerebral vessels. In 1961, J. Jacobson developed a two-person stereoscopic (binocular) surgical microscope and coined the term microvascular surgery. In 1967, G.M. Yaşargil performed the first microvascular anastomosis (EC-IC bypass) in Zurich, Switzerland. After that, microneurosurgery of the skull base underwent a period of exponential growth over the next 20 years.

Conclusion: Microsurgical techniques for the treatment of vascular and neoplastic brain disorders belong among the major research advances in surgery in recent decades allowing neurosurgeons to approach complex lesions in areas that were previously difficult to access and enabling more accurate repair of nerves and cerebral blood vessels. Soon, super-microsurgical interventions assisted by robotic devices will be even better suited to perform precise microneurosurgery and improve outcomes further.

Keywords: microsurgery, history, operative microscope, important personalities

HOUSTON, WE HAVE A PROBLEM: HOW TO FIX SPINAL CSF LEAK

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As the most common and potentially dangerous complication of spine surgery cerebrospinal fluid (CSF) leak is a well-known situation. It can be in the closed paraspinal compartment or even worse – outside the fascia and the skin and can lead to both local and systemic infection, septicaemia and meningitis. This complication should be avoided. In addition to potentially endangering the patient, it negatively affects the outcome of treatment, prolongs hospital stay and has a negative economic impact. CSF, even when adequately remediated, leaves a "bitter taste" to the operator and gives the health institution a bad image. In the mildest variant, it spoils the general impression after a well-done resection of complex spinal neurosurgical or orthopaedic surgeries.

Our experiences and technique of prevention of CSF leak and/or repair fistula, based on a large personal series of patients treated due to spinal tumour lesions, degenerative problems and trauma cases are presented.

Keywords: spinal surgery, CSF leak, complication, meningitis

OXCARBAZEPINE: PREVENTION OF EPILEPTIC SEIZURES IN PATIENTS WITH SUPRATENTORIAL BRAIN TUMORS

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Background Brain tumor-related epilepsy (BTRE) management poses a significant challenge in clinical practice. Healthcare providers must tailor treatment based on each patient's unique circumstances. Different antiepileptic drugs can be used, including oxcarbazepine. Several studies show this drug's efficacy and safety in BTRE.

Methods Observational, prospective study, monitoring the efficacy and safety of the drug oxcarbazepine in the prevention of epileptic seizures, included adult patients of both sexes with a supratentorial tumor and a risk of epileptic seizures after neurosurgery.

Results The study included 153 hospitalized patients. The percentages of amplified waves, sharp waves, and spike waves decreased in the second and third compared to the first visit. Significantly lower percentages of sharp waves (p=.028) on the second compared to the first measurement and spike waves (p=.002) on the third compared to the first measurement were determined. Deterioration from normal to low hemoglobin concentration was observed in 40 (26%) patients at the second visit and 17 (12%) at the third visit, compared to the first visit. However, MCV, MCH, and MCHC values did not change significantly during the six months of follow-up. A transient drop in the number of thrombocytes was observed on the second visit. Adverse reactions to the drug were mild. Therapeutic adherence was low, as measured by the Morisky Medication Adherence Scale (MMAS-4).

Conclusions: The drug oxcarbazepine has shown good efficacy and safety in the prevention of epileptic attacks after neurosurgery in patients with supratentorial tumors. Additional education of patients on the importance of taking regular therapy is crucial.

Keywords: brain tumor-related epilepsy, oxcarbazepine, efficacy, safety

MYOPIA CONTROL: RETINAL PERSPECTIVE

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Background: Myopia, a prevalent refractive error, continues to pose a significant challenge to the public health, requiring effective intervention strategies.

Aim: This study aims to evaluate the efficacy of soft contact lenses for myopia control in a cohort of 21 patients over a 21-month follow-up period. And to provide insight into the retinal perspective of myopia control.

Materials and Methods: Employing a prospective observational study design, participants were prescribed soft contact lenses specifically designed for myopia control (MiSight® 1 day from CooperVision). These lenses aimed to slow down the progression of myopia through optical and mechanical means. Key outcome measures included changes in refraction, axial length elongation, and fundus findings recorded over the 21-month follow-up period. Patient satisfaction and adherence to the soft contact lens regimen were also assessed through structured interviews and questionnaires.

Results: Preliminary findings from this study demonstrate promising results with soft contact lenses for Myopia control. Participants exhibited reductions in myopia progression, as evidenced by minimal changes in refraction (-0,135 Dptr) and axial length elongation (average growth per year 0.07 mm). Visual acuity remained stable, with high levels of patient satisfaction reported. One patient developed lattice degeneration during the follow-up.

Conclusion: The study underscores the potential of soft contact lenses as an effective option for managing Myopia progression over an extended follow-up period. Further research is warranted to optimize the selection.

Keywords: myopia control, myopia, refraction, retina

TORIC INTRAOCULAR LENSES CHOICE AND PLACEMENT: STRIVING FOR EXCELLENCE

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Objective: To present patient selection undergoing cataract surgery, preparation, and techniques in toric IOL placement to minimize postoperative refractive surprise

Topic: Astigmatism is the curvature of the cornea, which can be surgically corrected in several ways. Today, one of the most modern and effective ways is to use toric intraocular lenses. The operation does not differ much from the standard cataract operation, but the preparation of the operation and the selection of the appropriate lens are of crucial importance. The available procedures, advantages and disadvantages as well as realistic expectations should be explained in detail to the patient who has astigmatism. Preoperative preparation is of key importance: Biometry of the eye with the help of precise devices, use of the most modern formulas for predicting the power of the lens as well as the implantation axis, taking into account surgically induced astigmatism, residual spherical equivalent, and finally the target refraction. After a successfully implanted and positioned lens, frequent postoperative control and eventual repositioning of the lens is very important, taking into account that the frequency of lens misalignment is statistically

highest in the first 24 hours after surgery.

Conclusion: Toric intraocular lenses (IOLs) are considered the most predictive way of correcting corneal astigmatism in a patient undergoing cataract surgery, as they may correct astigmatism as low as 0.75 diopters.

Keywords: astigmatism, toric, lens exchange, vision, intraocular lenses (IOL)

GASES AND LIQUIDS IN VITREORETINAL SURGERY IN DETAIL

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Objective: There are four gases commonly used as intraocular tamponade: air, sulfur hexafluoride (SF6), hexafluoroethane (C2F6) and octafloropropane (C3F8). Perfluorocarbon (PFCL), light silicone oils and heavy silicone oils are the main liquid tamponades.

Topic Review: Relative location of gases, liquids and oils in vitreous cavity is related to their specific gravity. Surface tension of the tamponades is also important physiologic characteristic determining pressure on the retina against RPE. Therefore, careful patient's head positioning is crucial for successful surgery outcome.

Conclusion: It is important to understand characteristics and abilities of different gases and liquids used in vitreoretinal surgery not only for surgeons but also for other ophthalmologists treating these patients.

Keywords: gases, liquids, vitreoretinal surgery

MANAGEMENT OF THE ORBITAL COMPARTMENT SYNDROME

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Objective: The orbital compartment syndrome (OCS) constitutes a severe emergency, requiring immediate clinical diagnosis and surgical decompression.

Topic review: This is a case report of management of the OCS within 2 hours in a young man that included immediate lateral canthotomy and cantholysis followed by surgical decompression after medical treatment to 'buy time'. The key symptom was progressive visual impairment caused by an increase in intraorbital pressure, impairing the perfusion of relevant neurovascular and neurosensory structures. Within a second the patient vision improved from light perception to 1.0 on the Snellen optotype. A drain was placed for a several days to aid in recovery.

Conclusion: Intraorbital bleeding due to trauma and surgical intervention is known to be the main etiological factor of OCS. Proper and in-time management can have dramatic improvement in visual function.

Keywords: orbital compartment syndrome, vision acuity

PREDICTING MYOPIA IN CHILDREN AND ADOLESCENTS: A NOVEL TIME-AWARE DEEP LEARNING MODEL AND 15-YEAR RETROSPECTIVE ANALYSIS FROM THE CROMYOP STUDY IN CROATIAN YOUTH

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Purpose: This study addresses the global health concern of myopia among children and adolescents by analyzing demographic and refractive data in Croatian youth, while also aiming to predict their spherical equivalent based on historical vision records.

Design: This retrospective study utilized a comprehensive dataset from pediatric ophthalmology clinics at the University Eye Department, University Hospital "Sveti Duh," Zagreb, Croatia. The dataset included electronic records spanning from 2008 to 2023, encompassing demographic and refractive data.

Methods: Data analysis focused on 895 individuals aged 4 to 18 years diagnosed with primary myopia and/or compound myopic astigmatism. A modified Recurrent Neural Network (RNN) model was created to predict children's and adolescents' spherical equivalent within 7 years post-diagnosis.

Results: The analysis revealed a rise in myopia prevalence and progression rates post-COVID-19 pandemic. Factors such as parental myopia, younger age at diagnosis, and higher baseline myopia hastened progression. Variability in progression rates across age groups and baseline refractive statuses highlighted myopia's multifactorial nature. In the testing set, the mean absolute prediction error for spherical equivalent ranged from 0.030±0.041 D to 0.448±0.244 D, depending on historical record lengths and prediction durations.

Conclusions: This study provides vital insights into myopia progression among Croatian youth, stressing the need to consider environmental factors, genetics, and age for tailored interventions. Further research is warranted to develop effective myopia control strategies suited to local contexts. Additionally, utilizing advanced RNN models, we achieved a mean prediction error of 0.101±0.146 D, surpassing clinically acceptable thresholds for myopia prediction.

RETRORECTAL TUMORS

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Retrorectal or presacral tumors are heterogeneous group of uncommon lesions occurring in the presacral space. True incidence in the general population is unknown. These tumors are classified based on their origin, as congenital, neurogenic, osseous, inflammatory and miscellaneous. Most lesions are benign and have favorable long-term outcomes. Malignant transformation of cystic retrorectal tumors has also been reported. Solid lesions are more likely to be malignant than are cystic lesions. Malignant retrorectal tumors have potential for distant organ metastasis in addition to local recurrence. Symptoms of retrorectal tumors are often nonspecific such as lower back pain, change in bowel habit, and are related to the location, size and nature of the lesion, although the most retrorectal tumors are asymptomatic lesions, being discovered incidentally.

Preoperative biopsy has been controversial for retrorectal tumors, according to the potential risk of secondary infection and seeding of the tumor, although biopsy can be considered for unresectable lesions or in patients who will not tolerate surgery. Radiological evaluation (MRI, CT) provides sufficient information regarding the nature of lesion.

Surgery is the mainstay of treatment. The morphology of tumor determines the level of extension of surgery. Complete gross resection is recommended for benign tumors, whereas radical resection or en bloc resection of involved adjacent organs is required for is required for malignant tumors. Cystic lesions without suspicious radiological features can be followed by serial imaging without resection.

Keywords: retrorectal tumors

TREATMENT STRATEGIES FOR PATIENTS WITH HER2-POSITIVE GASTRIC CANCER

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Objective of the review: Gastric cancer is the fifth most common cancer and third leading cause of cancer-related mortality in the world. Because of late diagnosis and heterogeneous characteristics, the prognosis of GC remains poor. For patients with advanced disease, traditional chemotherapy has been the mainstay of treatment, with a 5-year survival rate below 10%. After many years of effort, therapeutic strategies for HER2-positive GC have greatly evolved.

Topic Review: Recent advances in the use of precision medicine in gastric/GEJ cancer are refining the standard of care for patients with these malignancies. Amplification of HER2 has emerged as an oncogenic driver with important implications for therapy in patients with advanced gastric/GEJ cancer. For patients with HER2-amplified advanced gastric/GEJ cancer, HER2 treatment strategies are standard, but only a few HER2-directed therapies are currently available. Most recently, the FDA and the European Medicines Agency (EMA) approved T-DXd for adult patients with locally advanced or metastatic HER2-positive gastric/GEJ cancer who have received a prior trastuzumab-based regimen. Clinical trials for HER2-amplified, advanced gastric/GEJ cancer include ADCs trastuzumab emtansine (T-DM1) and T-DXd; monoclonal antibodies trastuzumab, and pertuzumab; the bispecific antibody zanidatamab, and TKIs lapatinib, afatinib, neratinib, and tucatinib.

Conclusion: In the era of precision oncology, determining the right timing and right treatment combination for the right population is the main goal of personalized patient- centric therapy. HER2 treatment strategies are standard, but only a few HER2-directed therapies are currently available.

Keywords: Gastric cancer, HER2-positive GC, ADCs trastuzumab emtansine (T-DM1), TKIsT-DXd

NEUTROPHILS ARE NOT THE ONLY SOURCE OF INCREASED MYELOPEROXIDASE LEVEL IN END-STAGE RENAL DISEASE PATIENTS WITH HEART FAILURE

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Introduction: It is well established that myeloperoxidase (MPO) is mainly expressed in neutrophils and its level increases in multiple pathologies, including chronic kidney disease. As an oxidative stress biomarker, MPO contributes to the progression to end-stage renal disease (ESRD).

The Aim: Analysis of the association of MPO level to neutrophil-derived cellular indices in ESRD patients with and without heart failure with reduced ejection fraction (HFrEF).

Materials and Methods: Blood samples from 96 ESRD patients and 40 normal human plasma samples were analyzed. Thrombo-inflammatory and oxidative stress-related biomarker levels were determined in platelet-poor plasma by commercially available enzyme-linked immunosorbent assay kits and chromogenic methods.

Results: MPO was elevated in both ESRD+HFrEF and ESRD-HFrEF groups compared to healthy controls (p=0.002 and p<0.001, respectively). In the ESRD-HFrEF group, independent predictors of MPO plasma levels were neutrophil-to-red blood cell count ratio (p=0.003, 95% confidence interval- CI 14.772-67.820, odds ratio-OR 41.296) and hemoglobin-to-neutrophil ratio (p=0.001, 95% CI -29.617—7.510, OR -18.563). In the ESRD+HFrEF group, the single independent predictor of plasma MPO levels was the level of ADAMTS-13 enzyme (p=0.009, 95% CI -635.272—125.931, OR-380.601).

Conclusions: Myeloperoxidase plasma levels are associated with absolute neutrophil count and neutrophil-derived cellular indices in ESRD patients without HFrEF, but not in patients with HFrEF. This implicates the presence of other important sources of increased myeloperoxidase levels in ESRD patients having concomitant HFrEF.

Keywords: end-stage renal disease, heart failure, neutrophils, myeloperoxidase

OXIDATIVE STRESS AND UROKINASE-INTERRELATION IN NON-SMALL CELL LUNG CANCER PATIENTS UNDERGOING SURGICAL RESECTION

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Introduction: Growth factor and inflammatory biomarker plasma levels have been thoroughly investigated. However, there is a scarcity of data regarding regulation, expression, and plasma concentrations of oxidative stress biomarkers and its association with urokinase-type plasminogen activator due to its mixed impact on cell damage in malignancies.

The Aim: Analysis of plasma levels of alphafetoprotein (AFP), urokinase-type plasminogen activator (uPA), nitrotyrosine, and myeloperoxidase (MPO) in patients with non-small cell lung cancer undergoing surgical resection.

Materials and Methods: Blood plasma samples were collected from 49 patients with lung cancer. Normal human samples were collected from 30 healthy donors and employed as controls

Results: Concentrations of nitrotyrosine and MPO were significantly higher in lung cancer patients compared to the control group (U=432, p=0.0019 and U=487, p=0.012, respectively). The lung cancer cohort was also observed to possess a significantly lower concentration of uPA (U=549, p=0.009). AFP levels in lung cancer patient samples were not significantly different compared to control group samples (U=656, p=0.43).

Conclusion: Our analysis showed higher concentrations of nitrotyrosine and MPO and lower concentrations of uPA in lung cancer patient plasma as compared to the control. However, no statistically significant difference in AFP concentrations was found between the cohorts. The upper regulation of nitrotyrosine and MPO is suggestive of oxidative stress in lung cancer, while lower values are suggestive of its various aspects of cell damage, other than oxidative stress only.

Keywords: lung cancer, oxidative stress, urokinase

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

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

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. Histomorphologicaly 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 reach the correct diagnosis between adult granulosa cell tumor (FOXL2 positive) and cellular fibroma (FOXL2 negative), and subsequently choose adequate treatment strategy.

Keywords: granulosa cell tumor, fibroma, FOXL2

DIFFERENTIAL DIAGNOSIS OF ABDOMINAL PAIN IN THE PEDIATRIC POPULATION

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Introduction: Acute abdominal pain in pediatric patients is a challenge for pediatricians due to the non-specific nature of symptoms and difficulties in the assessment and physical examination of children. Although most cases of acute abdominal pain are caused by benign conditions, the pain can be a manifestation as an urgent surgical or medical condition, The biggest challenge is timely diagnosis so that appropriate treatment can be started.

Topic review: In all age groups, numerous conditions are manifested by stomach pain, from a very simple viral disease to a life-threatening surgical condition. The anamnesis, physical examination, laboratory tests, and imaging studies must be initially aimed at differentiating between surgical and non-surgical conditions that were categorized as urgent; and non-urgent.

Conclusion: In our research, patients hospitalized at the Department of Pediatric Surgery, Cantonal Hospital Zenica, were monitored in the period from 2019 to 2023, and we analyzed the most common causes of abdominal pain that brings children to the hospital, their treatment, and the need for surgical interventions.

Keywords: acute abdominal pain, surgical abdomen, ultrasound

UPDATE ON PEDIATRIC ANXIETY DIAGNOSIS AND TREATMENT

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Introduction: Anxiety is a growing mental health problem in pediatric population worldwide. In United States about 5.8 million (9.4%) children and teenagers between ages 3-17 are diagnosed with anxiety.

Topic Review: Multiple factors contribute to development of anxiety in children including biological and genetic factors, brain wiring, temperament and coping strategies and environmental factors such as anxious parenting or troubling early childhood experiences. Simple screening tools are available to screen children for anxiety in outpatient setting such as Generalized Anxiety Disorder 7 (GAD 7) questionnaire. Treatment modalities include counseling and medication management. Most commonly used medications include selective serotonin reuptake inhibitors (SSRI's) and selective norepinephrine reuptake inhibitors (SNRI's).

Conclusion: With prompt diagnosis and treatment, anxiety in pediatric population can be significantly reduced.

Keywords: Anxiety, pediatric population, SSRI

HEART IN MUSCULAR DYSTROPHIES

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Objective: Duchenne and Becker muscular dystrophies are X linked recessive genetic disorders, determined by the mutation in dystrophin gene. Dystrophin is a large protein accountable for maintaining integrity of skeletal and cardiac myocytes. Lack of functional dystrophin results in muscle degeneration, loss of motor function, and dilatative cardiomyopathy.

Topic review: Current methods of treatment for muscular dystrophies have improved life expectancy, but also contributed to increase in cardiac causes of death. Cellular damaging of cardiomyocyte leads to necrosis and consequent progressive replacement of cells with fibrofatty tissue. Reflecting myocyte loss, left or both ventricles start to dilatate culminating with impaired contractility. Cardiac impairment presents typically as latent cardiomyopathy progressing into clinically manifest heart failure. Progression of heart problems is not correlated with skeletal muscle involvement as energy consumption is low in patients with limited mobility. Evaluation of size and left ventricular function with transthoracic echocardiography can be influenced by altered chest wall with poor acoustic windows. Magnetic resonance imaging with LGE is preferred method which is able to detect subtle changes before measurable left ventricular ejection fraction decrease. To present, treatment is directed towards prevention and delaying onset of cardiac symptoms by early initiation of ACE inhibitors. Beta adrenergic blockers and mineralocorticoid antagonists are second line of therapy when symptoms become detectable, while all medications used for treatment of heart failure are used in later stages.

Conclusion: Cardiorespiratory complications are leading cause of mortality in patients with muscular dystrophies. With advances in respiratory support we must emphasize heart problems as leading cause and contribute to prevention and treatment of heart failure. Current guidelines recommend starting anti remodeling medications before onset of cardiomyopathy.

Keywords: muscular dystrophies, cardiomyopathy, heart failure

SUBDURAL HEMATOMA - IS IT ALWAYS A CHILD ABUSE?

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Introduction: In the published reports of the developed society, subdural hematoma and/or retinal hemorrhages, in the absence of documented history of major trauma, is often construed as indicative of child abuse. Many people used the above criteria for diagnosis, but subsequently found that retinal hemorrhages were more common in non-accidental injuries (NAI). To what extent is the proposed pathognomonic association between unexplained subdural hematoma/ retinal hemorrhages and child abuse a self- fulfilling prophecy?

Case report: We present a case report that underscores the complexities surrounding this diagnostic dilemma. A 6-month-old male infant was admitted to our pediatric unit with symptoms suggestive of increased intracranial pressure. Imaging studies revealed the presence of subdural hematoma, alongside retinal hemorrhages, prompting initial concerns of non-accidental trauma. However, thorough clinical evaluation, including detailed medical history and multidisciplinary assessment, uncovered underlying medical conditions predisposing the patient to spontaneous bleeding.

Conclusion: This case serves as a poignant reminder of the nuanced nature of pediatric pathology and highlights the necessity for a comprehensive diagnostic approach in cases presenting with subdural hematoma and retinal hemorrhages.

Keywords: subdural hematoma; retinal hemorrhages; child abuse

IDENTIFICATION OF CHILD PHYSICAL ABUSE IN INFANTS

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Introduction: Child physical abuse is a common occurrence that is frequently missed in young infants who may present with subtle findings, including bruising or oral injuries, that do not require medical intervention.

Topic Review: Without proper identification of these injuries, these vulnerable patients may experience significantly worse episodes of non-accidental trauma (NAT) resulting in debilitating injuries, such as abusive head trauma, or death. In this presentation, we will discuss the minor injuries that may be seen in infants and apply elements of the history and physical examination to determine a level of concern for NAT.

Conclusion: The recommended approach to assessment for occult injuries through imaging and laboratory studies will be described. Finally, strategies to reduce bias in these assessments will be considered.

Keywords: child maltreatment, bias, physical abuse

THE DARK SIDE OF THE MOON: THE RIGHT VENTRICLE

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Introduction: Despite the complexity of congenital heart anomalies, 90% of pediatric patients survive to adulthood. However, the surgical procedure does not always include a total correction, and due to the hemodynamics of the anomaly itself, as well as the operative technique, the load on the right ventricle causes progressive right heart failure and long-term morbidity, and 50% of these patients die in the adult period due to heart failure, arrhythmias and pulmonary hypertension. Although neglected for decades, the right heart has become actualized in recent years, given new knowledge in the domain of structure, function, adaptation and response to volume and pressure loading, dysfunction mechanism, and the relationship with the left heart, with a focus on initial treatment, as well as long- term morbidity and mortality.

Topic review: The right ventricle can tolerate volume overload well, but is unable to withstand pressure overload. Right heart function is a key determinant of long-term outcomes in children with congenital heart anomalies. The volume and function of the right ventricle are better evaluated by 3D echocardiography and magnetic resonance of the heart, which, although they constitute the diagnostic gold standard, do not have the possibility of widespread use. Considering the specificity of the right heart structure, echocardiographic assessment of right heart function is challenging and there is no unique ultrasound parameter that would be sufficient even without limitations in practice. Clinical studies evaluating the relevance of natriuretic peptide (BNP/NTproBNP) as a cardiac biomarker in pediatric cardiac patients make up less than 10% of the total number of published studies on the clinical utility of this biomarker.

Conclusion: Relevant data confirm the justification of serum determination of natriuretic peptide levels in indicated cases: integrated evaluation and monitoring of children with known cardiac disease, in order to further define the severity, progression of heart failure and response to treatment, as well as the role of an auxiliary marker in the screening of significant cardiovascular disease and assessment of prognosis children who underwent palliative or corrective cardiac surgery.

Keywords: congenital heart anomaly, right ventricle, right heart failure, echocardiographic analysis, natriuretic peptides

BASIC PRINCIPLES OF QUALITY IMPROVEMENT

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Introduction: The U. S. Department of Health and Human Services defines quality improvement (QI) as

"…systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups."

Topic Review: In pediatric setting the ultimate focus of QI projects is on improving patient care and outcomes. QI improves patients' experience, providers satisfaction and systems in general. The audience will get familiar with the basics of QI principles, such as developing Global Aim building a QI Team, and Implementing Change using Model for Improvement with its three fundamental parts: SMART Aim, Measures (Data), and Ideas for change. Elements of PDSA (Plan, Do, Study, Act) cycle will be explained. Examples of clinically relevant QI projects will be discussed.

Conclusion: Quality Improvement is a powerful tool that is used to improve pediatric clinical care, patient/family experiences, provider satisfaction and health care systems.

CHRONIC KIDNEY DISEASE PROGNOSIS IN PEDIATRIC PATIENTS – NON-LABORATORY PROGNOSIS

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Introduction: While the incidence of chronic kidney disease (CKD) and end-stage renal disease (ESRD) is constantly increasing, there is a scarce of data showing the significance of potential predictors for progression of CKD to ESRD.

The Aim: Identification of basic non-laboratory and family history-related factors as an early predictors of CKD progression in pediatric patients.

Materials and Methods: The study included children aged 0-18 years with diagnosed with CKD stage 2-4 in the period 2000-2023. Parameters related to patient basal characteristics, and medical and family history were analyzed as potential predictors for CKD progression, as well as development of ESRD within one year after diagnosing CKD.

Results: A total of 552 children (60.3% males) were enrolled in this study. None of the investigated variables predicted ESRD development in patients with CKD stage 2 at the time of diagnosis, primary renal disease in patients initially diagnosed with CKD stage 3, while age at the time of diagnosis and sex in patients initially diagnosed with CKD stage 4. The most important factors influencing speed of ESRD development were age at the time of diagnosis (β=.207, p=.02), primary disease (β=.018; p<.01), and positive family history of CKD (β=5.569, p=.01) in patients with initial CKD stage 3; and primary disease only (β=5.797, p=.03) in the group of patients with initial CKD stage 4.

Conclusions: Prior to initiating laboratory workup, patient age, primary renal disease and positive family history are the main patient-related factors influencing progression in pediatric patients with CKD.

Keywords: chronic kidney disease, end-stage renal disease

COMPLICATIONS OF STILL'S DISEASE IN CHILDREN: MACROPHAGE ACTIVATION SYNDROME AND LUNG DISEASE

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Introduction: Systemic juvenile idiopathic arthritis (sJIA) and adult-onset Still's disease (AOSD) should be grouped into one disease: Still's disease, according to new diagnosis and treatment recommendations presented at the European Alliance of Associations for Rheumatology (EULAR) 2023 Annual Meeting. There are two concerning complications in children: macrophage activation syndrome (MAS) and lung disease.

Topic review: MAS should be considered in patients with Still's disease with these symptoms: fever, splenomegaly, elevated serum ferritin, low cell counts, abnormal liver function tests, elevated serum triglycerides, and intravascular activation of coagulation. Also, the risk for lung disease, is an emerging issue. This complication can arise at any time point of the disease. Active screening for lung disease is recommended by searching for clinical symptoms such as digital clubbing, persistent cough, and shortness of breath. Pulmonary function tests like pulse oximetry and diffusing capacity of the lungs for carbon monoxide (DLCO) may also be used, but these standard lung function tests are very difficult to do in children under 6 years old. High-resolution computerized tomography (CT) in recommended any patients with clinical concerns.The recommendations for lung disease are "broad," as there is still much to learn about the risk for lung disease in a small portion of sJIA patients.

Conclusion: Pediatric rheumatology community is trying to work out about this; exactly how to screen, who to screen, what to do, who to treat, and how to treat lung disease in Still's disease in childhood. There is a lot of work waiting to be done.

Keywords: Still's disease, children, macrophage activation syndrom, lung disease

ENCEPHALOPATHY CAUSED BY BARTONELLA HENSELAE – A CASE REPORT

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Introduction: Encephalopathy refers to qualitative and quantitative disorders of consciousness due to brain dysfunction, and is caused by a generalized brain injury or a focal lesion. Bartonellosis is a term used to describe infectious diseases caused by strains of Bartonella bacteria, including cat-scratch disease. Neurological manifestations of these infections are very rare, especially in patients who are not immunocompromised.

Case report: A 6-year-old boy, with no previous illnesses, was hospitalized at the Pediatric Clinic, after being diagnosed with status epilepticus. After admission, he was intubated. According to heteroanamnesis, we discovered that the boy was scratched by a cat one month before hospitalization. This was followed by symptoms in the form of headaches and nausea with fever and swollen peripheral lymph nodes. Upon admission, laboratory and radiology studies are done, as well as an emergency eye fundus examination. All tests were negative. Lumbar puncture was performed on two occasions, hemisam and cerebrospinal fluid cultures were normal. The treatment of this complex case included a multidisciplinary approach by an infectious disease specialist, an intensive care team, a neuropediatrician, an immunologist, a cardiologist, a gastroenterologist and a radiologist. They decided on a conservative approach and started antibiotics and symptomatic therapy with monitoring. On the fourth day of hospitalization, the patient was extubated, and vital signs were continuously monitored, which were all stable in the following days. On the ninth day of hospitalization, the patient is transferred to the Department of child neurology for further diagnostic processing and treatment.

Conclusion: This case report highlights the importance of considering Bartonellosis as a potential cause of neurologic symptoms and outcomes. The key factors for improving the outcome of patients with encephalopathy are early recognition of the cause and timely treatment, as well as a multidisciplinary approach due to the complexity of the diagnosis

Keywords: Encephalopathy, Bartonella Henselae, Status epilepticus, Bartonellosis, Cat scratch disease

PREFERRED SURGICAL TREATMENT OF DUPUYTREN'S CONTRACTURE WITH REFERENCE TO COMORBIDITIES

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Background: Dupuytren's contracture is a fibrosing disorder that results in slowly progressive thickening of the palmar fascia and leads to debilitating digital contractures, particularly of the metacarpophalangeal joints or the proximal interphalangeal joints. Current treatment for Dupuytren's contracture is mainly limited to surgery.

Objective: To evaluate the risk factors and analyze the characteristics of Dupuytren's contracture patients who underwent partial fasciectomy, describe clinical and epidemiological behavior of Dupuytren's contracture and to compare the results with other series published in the literature.

Methods: A retrospective descriptive study of 67 hands of 58 patients surgically treated with partial fasciectomy between 2018 and 2022 in Cantonal hospital Zenica. Information on involved hand and fingers, comorbidities, smoking history, anesthesia type, surgery duration, and postoperative complications was sought.

Results: The mean age at surgery was 61.8 with a higher prevalence of man (81% of cases). The most common form of presentation was unilateral in right hand followed by bilateral and left hand involvement. The most commonly affected fingers were the ring finger (33%) and the little finger (19%). 29% of the patients were active smokers. Hypertension and diabetes mellitus were the most common accompanying diseases. Out of 67 surgeries, 58 were performed under regional anesthesia and the rest under general anesthesia. During postoperative follow-up, 3 patients had wound dehiscence, and one patient had localized postoperative hematoma.

Conclusion: Partial fasciectomy is a safe and successful method for the treatment of Dupuytren's contracture with low rate of complications.

involvement. The most commonly affected fingers were the ring finger (33%) and the little finger (19%). 29% of the patients were active smokers. Hypertension and diabetes mellitus were the most common accompanying diseases. Out of 67 surgeries, 58 were performed under regional anesthesia and the rest under general anesthesia.

During postoperative follow-up, 3 patients had wound dehiscence and one patient had localized postoperative hematoma.

Keywords: Dupuytren's contracture, Partial fasciectomy, Contracture, Palmar fascia, Fibromatosis

ASSESSMENT OF POSTOPERATIVE COMPLICATION AND INDICATION FOR REVISION SURGERY IN IMPLANT AND TIO2MESH BRA BASED BREAST RECONSTRUCTION

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Objective: This retrospective study aimed to evaluate the safety of TiO2Mesh™ BRA, a relatively new alloplastic material, used in breast reconstruction alongside silicone implants.

Methods: A retrospective analysis of 29 patients who underwent breast reconstruction with TiO2Mesh™ BRA at the Clinic for Plastic and Reconstructive Surgery of the Clinical Center in Sarajevo from February 2018 to August 2021. Data were collected from medical records, and analysis was conducted using Pearson's chi-square test.

Results: Complications occurred in 55.2% of patients, with 34.5% requiring revision surgery. Repeated reconstruction was necessary in 24.18% of cases post-revision. Complication rates were 88.9% for one-stage and 40.0% for two-stage reconstruction. Patients receiving radiation therapy and chemotherapy had a 61.5% complication rate.

Conclusion: Complication and revision surgery rates with TiO2Mesh™ BRA were similar to global standards for other meshes in breast reconstruction. However, its addition remains controversial, lacking high- quality evidence comparing outcomes between mesh and non-mesh reconstructions. Various risk factors beyond mesh usage influence final outcomes.

Keywords: implant-based breast reconstruction, TiO2Mesh™ BRA, alloplastic material, the rate of complications

COMPRESSION OF ULNAR NERVE BY GANGLION CYST IN GUYON'S CANAL–A CASE REPORT

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Background: Compression of the ulnar nerve at the level of Guyon's canal is a very rare compressive neuropathy. Due to the vast range of symptoms that can manifest depending on the degree of ulnar nerve compression, the clinical picture is not consistent.

Objective: The aim of the study is to outline the diagnostic techniques and therapeutic options.

Case report: We reported a case of ganglion cyst-induced compression of the ulnar nerve in Guyon's canal. A 45-year-old female patient underwent surgical ulnar nerve release in Guyon's canal at the Clinic for Plastic and Reconstructive Surgery.

Discussion: After a thorough medical history and physical examination, the diagnosis of the syndrome is made, and ultrasound and magnetic resonance imaging (MRI) testing are used to determine the origin of the neuropathy. A ganglion cyst was identified pathohistological one month following the surgical excision of the soft tissue tumor. In order to hasten the patient's nerve recovery, physical therapy was recommended, and the patient was monitored for the following two years. After two years of treatment, the patient has made a very good recovery of the functionally damaged hand, as determined by a modified Bishop scoring method for evaluating functional ulnar nerve recovery.

Conclusion: In virtually all cases, early surgical intervention can lead to an outstanding functional recovery. If the symptoms are more severe and continue or get worse for more than three months, early surgical intervention is the gold standard for treating Guyon's canal syndrome. If soft tissue formations are compressing the ulnar nerve in Guyon's canal, MRI is thought to be the gold standard for diagnosis.

Keywords: Guyon's canal, compressive neuropathy, ulnar nerve

CORRELATION BETWEEN ETIOLOGICAL FACTOR AND RESULTS OF MICROSURGICAL RECONSTRUCTION OF THE UPPER EXTREMITY

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Background: Microsurgery is a branch of surgery that requires magnification with the purpose of adequate intraoperative visualization of anatomical structures. In reconstructive surgery of the upper extremity, it is used for surgeries on blood vessels and nerves.

Aim: The main goal of this research was to determine whether there is a correlation between the etiological factor and the results of microsurgical reconstruction of the upper extremity. A successful microsurgical reconstruction was considered any procedure in which the vitality of the injured extremity was preserved, regardless of its later functionality.

Materials and methods: This retrospective study included 50 patients who underwent microvascular reconstructive procedures on the upper extremity at the Clinic for Reconstructive and Plastic Surgery of the Clinical Center of the University of Sarajevo between the beginning of 2017 and the end of 2021.

Results: Statistical analysis showed that the etiological factor does not affect the result of microsurgical reconstruction and that the result is not determined by the occurrence of comorbidities, but it is significantly correlated with the anatomical level of the injury, as well as the method of microsurgical reparation of the blood vessel, which is then also correlated with the occurrence of early postoperative complications.

Conclusion: Statistical analysis indicates that the etiological factor does not affect the success of the microsurgical procedure, but it is important to keep in mind that the outcome of extensive, devastating injuries caused by some etiological factors is often amputation or reamputation, without prior microsurgical reconstruction, so the results may be unreliable.

Keywords: microsurgery, finger injuries, arm injuries, reconstructive surgical procedure, replantation

EVALUATION OF THE DIAGNOSTIC AND SURGICAL PROCEDURES IN THE TREATMENT OF COMPRESSIVE NEUROPATHIES OF THE UPPER EXTREMITY TO GENDER, AGE, DISTRIBUTION, AND COMORBIDITIES

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Introduction: compressive neuropathies of the upper extremity are most often associated with functional difficulties. The application of correct diagnostic and therapeutic procedures is an indispensable factor in the guidelines of treatment.

Aim: to assess the types of diagnostic and surgical procedures to the specific type of compressive neuropathy, to gender and age distribution, and comorbidities

Material and methods: we evaluated 77 cases of three types of compressive neuropathies of the upper extremity, treated at Clinic of Reconstructive and Plastic Surgery of the Clinical Center University of Sarajevo in the period from 2017 to 2021, with the evaluation of gender and age distribution, comorbidities, diagnostic and surgical procedures.

Results: statistically significant difference was found in gender distribution, in terms of higher female representation, 52 (67.5%), $\chi 2 = 14{,}558$; $p = 0.001$. The mean age of the examined group of patients was 50.2 ± 14.6 years. No statistically significant difference was confirmed in the correlation of age and specific type of compressive neuropathy (p 0.05) was confirmed between the type of surgical procedure to the specific type of compressive neuropathy ($\chi^2 = 0.591$; $p = 0.0001$; $p=0.0001$).

Conclusion: compressive neuropathies of the upper extremity, with the adequate clinical diagnosis, resulted in satisfactory postoperative recovery and results.

Keywords: compression neuropathy, comorbidities, decompression, neurolysis, anterior transposition

EARLY DETECTION OF LOW VISION IN CHILDREN AGED 4 AND 5 IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Background: Amblyopia screening programs for children under the age of five can detect up to 97% of all eye anomalies and exists in many high- or middle-income countries. Early treatment of amblyopia is the most cost-effective procedure in ophthalmology. The amblyopia screening programs are not systematically implemented in the Federation of Bosnia and Herzegovina.

Aim: Recognizing the public health importance of early detection of amblyopia, the Institute of Public Health of the Federation of Bosnia and Herzegovina developed and implemented a pilot preventive program for the early detection of amblyopia in 4- and 5-years old children, kindergarten attendees, in the Federation of Bosnia and Herzegovina. The aim of this original research article is to present the results of the mentioned pilot program.

Materials and Methods: The LEA symbols were the screening test tool. Positive screening test results were indication for referral to the ophthalmology specialist examination at a health facility. The pilot preventive program was implemented in 2022.

Results: 7,000 children were examined in the pilot preventive program. 8.1% children were born prematurely. 20.7% of children needed further specialist examination. However, barely more than a third of the children who need a detailed ophthalmological examination underwent one.

Conclusion: The early detection preventive programs for amblyopia in 4 and 5-year-old children should be a continuous activity within the systematic framework in the Federation. An organized national program of early detection of amblyopia can prevent vision impairment in children, lacking of school progress and occurrence of permanent disability.

Keywords: the pilot preventive program, amblyopia, children, Federation of B&H

APPLICATION OF FOOD REFORMULATION MONITORING IN ADDRESSING CHILDHOOD OBESITY IN BOSNIA AND HERZEGOVINA

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Background: As worldwide childhood obesity is major public health problem in Bosnia and Herzegovina. Addressing obesogenic environments by reformulating foods into healthier alternatives is recognized as key approach and through EU BestReMap project use of standardized food reformulation monitoring tool has been tested in five European countries.

Aim: To test applicability of monitoring tool, get overview of food supply and assess nutritional quality of processed food.

Materials and Methods: Five food groups that most contribute to children food intake were selected study on market share conducted and 5 biggest retailers selected. In biggest store of each retailer data were collected by taking photos of products. Guidelines and templates were used for product selection, nutritional and labelling information codification. Data were analyzed at R software.

Results: Data were collected on 1935 products. Front of pack labelling was lacking in 95% to 99% of products and 87% of bread and 97% of meat and delicatessen meat products did not have quantified portion size. Variability in frequency of labelling and in labelling of some nutrients were found - only 53% of bread products have labelled fibre content. In all food categories and subcategories variability in fat saturated fat sugar fibre and salt content was found leaving space for reformulation.

Conclusion: Monitoring tool proved to be applicable for getting insight in food offer for assessment of nutritional quality of food, identification of spots for reformulation and for monitoring of reformulations. Its use in maintaining a sustainable monitoring of reformulation over time is strongly encouraged.

Keywords: food reformulation, monitoring, childhood obesity

APPLICATION AND ACHIEVEMENTS OF MULTICOMPONENT SCHOOL ACCREDITATION SCHEME TO ADDRESS DOUBLE BURDEN OF MALNUTRITION IN FEDERATION OF BOSNIA AND HERZEGOVINA

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Objective: Paper objective is to present methodological framework and achievements of multicomponent nutrition accreditation scheme applied in preschool/school institutions in Federation of Bosnia and Herzegovina from 2014 to 2023.

Topic review: In order to ensure implementation of Federal ministry of education's nutritional standards addressing double burden of malnutrition in children WHO global Initiative and accreditation scheme „Nutrition Friendly School" has been applied in preschools/ schools in Federation of Bosnia and Herzegovina. Accreditation process considers 26 essential criteria related to five components that school need to fulfil to be accredited „Nutrition friendly". Accreditation process is coordinated by the entity inter-sectoral working group responsible for development of guideline, background materials, introduction of scheme and monitoring and evaluation of fulfilment of accreditation requirements. Responsibility of preschool/school-working groups in the period of six months is to work on fulfilment of accreditation criteria within the preschool/school environment and community. So far, 18 preschools/ schools from Federation of Bosnia and Herzegovina have gone through the accreditation process out of which 15 have been accredited „Nutrition friendly", while 3 received a Certificate of Commitment. Total of 118 preschool/ school stuff and 667 children directly participated in accreditation process and over 2780 children 358 employees and 5200 parents indirectly benefited from the Initiative.

Conclusion: Accreditation scheme proved to be successful instrument for implementation of nutritional standards end improvement of nutritional practices in preschool/schools. Achievements and success of the Initiative are stimulus and call for its further expansion to cover all preschool/school institutions in Federation of Bosnia and Herzegovina

Keywords: malnutrition, accreditation scheme, preschools/schools, children

TOBACCO CONTROL IN BIH: A LONG ROAD TO HEALTH IN ALL POLICIES

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Objective: In 2009, Bosnia and Herzegovina (BiH) ratified the Framework Convention on Tobacco Control of the World Health Organization (WHO), which mandates the harmonization of entity laws with this document. Drafting the Law on Tobacco Control in Bosnia and Herzegovina is an important part of the EU integrative processes and a segment of the Acquis Communautaire.

Topic review: The results of population surveys indicate a high percentage of tobacco products consumption in all population groups in BiH. Smoking trends among school children are particularly worrying. The limited resources of health budgets, which could be directed to disease prevention and health promotion, burden the costs of diagnosis and therapy of morbidity and mortality from diseases associated with smoking. The most active role in developing social dialogue in tobacco control is still by the health sector. The process of adopting the Law on the control and limited use of tobacco, tobacco and other smoking products in the Federation of Bosnia and Herzegovina lasted eight challenging years. The Federal Ministry of Health initiated the drafting of this Law in 2016, which was adopted with amendments in 2022 by the Parliament of the Federation of Bosnia and Herzegovina and began to be implemented in May 2023.

Conclusion: There is great interest and expectation from the public in this Law. For the effective implementation of the Tobacco Control legislation in BiH coordinated cooperation of all sectors is necessary, in order to prioritize health protection in all sectoral policies.

Keywords: tobacco control, BiH

COMMUNICATION SKILLS OF HEALTH PROFESSIONALS IN PROMOTION OF HPV VACCINATION IN THE FEDERATION OF BIH

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Background: During 2023, as a part of HPV immunization program, the Institute for Public Health of the Federation of BiH held 10 educational workshops with the participation of over 280 health professionals directly involved in the HPV vaccination process in the Federation of BiH.

Aim: Emphasize the importance of improving the knowledge and skills of health professionals in effective communication with parents in the promotion of HPV vaccination.

Materials: For data collection was used the questionnaire as a part of the WHO document "Communicating with caregivers about the Human Papillomavirus vaccination: facilitator's guide" published in 2023. The questionnaire was created in Google Forms and health professionals as participants on educational workshops answered on a voluntary and anonymous basis.

Methods: Analysis of results of the self-assessment of the participants before and after training at the workshops regarding their self-confidence in communication with parents about HPV vaccination. For descriptive and inferential statistics of data used IBM SPSS20 package.

Results: The data showed an increase in self-confidence of health professionals in communication with parents before and after participation in education. Self-confidence in talking to parents about HPV vaccination before education is confirmed by 32.5% of participants, while 68.0% after education. Self-confidence in talking to parents about adverse reactions after HPV vaccination is confirmed by 27.4% health professionals before education, and 64,4% after education.

Conclusion: Health professionals have a strong need to improve their knowledge and skills in effective communication in the promotion of HPV vaccination.

Keywords: communication, vaccination, HPV

MEASUREMENT OF INDOOR AIR QUALITY IN KINDERGARTENS IN FEDERATION OF BOSNIA AND HERZEGOVINA

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Background: High level of air pollution seriously endangers human health, especially air contamination in closed spaces. Children are especially sensitive to air pollutants and ensuring clean air in kindergartens and schools needs to be priority.

Aim Research objectives were to assess indoor air quality in selected kindergartens in Federation of Bosnia and Herzegovina and to raise awareness of kindergarten's staff and parents about the importance of measures that ensure clean indoor air.

Materials and Methods: Institute of Public Health of Federation of B&H, with the support of UNICEF B&H and SIDA, using mobile equipment for measuring indoor air quality, conducted measurements of the most important indoor air pollutants in 8 kindergartens in 3 cantons in the Federation of B&H. Activities also included educational workshops for kindergarten's teaching staff and distribution of educational materials.

Results Measured concentrations of air pollutants in two kindergartens located in areas with good ambient air quality were within the WHO reference values for good indoor air quality. In six kindergartens measured concentrations were slightly above the reference values but in the range that does not represent significant risk for children's health indicating that measures to ensure clean air in kindergartens particularly ventilation were insufficient.

Conclusion: This research represents the basis for further work on improving air quality in kindergartens and schools and raising the level of knowledge of teaching staff, parents and children, as well as the wider community, about the importance of clean air in the prevention of respiratory and other diseases.

Keywords: indoor air quality, kindergarten, children

ANTIMICROBIAL STEWARDSHIP IN THE OUTPATIENT SETTINGS

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The objective is to present current antimicrobial stewardship initiatives in outpatient settings and to discuss ways it can be implemented in family medicine.

Antimicrobial stewardship (AMS) consists of systematic measurement and coordinated interventions designed to promote the optimal use of antimicrobial agents, including their choice, dosing, route and duration of administration. The majority of antimicrobial use in humans occurs in outpatient settings, making this a critical target of antimicrobial stewardship.

A variety of strategies have been successfully implemented by hospital AMS programs. Many of these methods have been adapted for use in outpatient clinics, including targeting commonly prescribed antibiotics in the outpatient setting, implementing diagnostic stewardship, providing personalized feedback to providers and evaluating prescriptions. The focus of AMS in outpatients is on reducing antimicrobial resistance by implementing preventive measures like practicing hand hygiene, disease control, vaccination and favorizing narrow spectrum antimicrobials when they are needed.

Efforts for implementation of AMS have already been made through various education interventions, publications and campaigns organized by the World Health Organization, Centers for Disease Control and Prevention, European Centre for Disease Prevention and Control and different professional associations through guidelines for prescribers.

More collaboration is needed between family physicians, microbiologists and pharmacists in order to improve AMS in the outpatient setting. This can be achieved by combining strong infection prevention and control and the prudent use of antimicrobials using available resources.

Keywords: antimicrobial stewardship, outpatient, antimicrobial resistance

THE IMPORTANCE OF EDUCATION IN HEALTHCARE MANAGEMENT FOR EFFECTIVE HEALTHCARE SYSTEM ADMINISTRATION

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Education in healthcare management enables the acquisition of knowledge and skills necessary for the management of healthcare organizations. Completion of Continuing Professional Education (CPE) in healthcare management is one of the prerequisites for appointment to management positions in healthcare institutions in the Federation of Bosnia and Herzegovina (FBiH).

The Institute for Public Health (IPH) of the FBiH organizes the CPE in healthcare management. In accordance with the Rulebook on Continuing Professional Education in Healthcare Management ("Official Gazette of the FBiH", No. 6/20), the IPH of the FBiH as the education provider, in collaboration with the Faculty of Economics of the University of Sarajevo and the Faculty of Medicine of the University of Mostar, organizes two cycles of education per year for participants at basic, intermediate and advanced levels of healthcare management. Since 2012, through XXIII generation, approximately 2.300 participants successfully completed the CPE in healthcare management. The educational programs include six, seven and eight modules, at the basic, intermediate and advanced level of education, respectively, with a total duration of 240 hours. The teaching process includes 48 lecturers from higher education institutions from the FBiH and abroad, who are eminent experts in the fields of economics, medicine and healthcare organization.

In an era of intensive social development, the introduction of new modules that follow trends in healthcare management improves the existing educational programs.

The acquisition of new knowledge and improvement of competences will enable healthcare managers to provide better responses to contemporary business challenges and successful management of healthcare organizations.

Keywords: healthcare management, education

EXAMINATION OF KNOWLEDGE AND ATTITUDES ABOUT ENVIRONMENTAL NOISE OF THE STUDENT POPULATION

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Background: Noise is an unwanted sound that is uncomfortable, sometimes even painful. Environmental noise is increasingly cited as an important public health problem. Many studies indicate the significant impact of noise on a number of organic systems, as well as the benefits that noise reduction brings to health.

Aim: The aim of the paper is to investigate knowledge and attitudes about noise and the impact of noise on the health of students.

Materials and methods: 88 students from 4 faculties participated in the research.

Results: The results of the research show that 49.9% of students think that traffic noise is disturbing, 51% that noise prevents them from performing regular tasks at home, 88% of students never or occasionally cannot concentrate if they work with noise, but 66% of them likes to listen to loud music and about 70% of students wear headphones in their ears, and even 11.4% do it all the time. A large percentage of respondents (67%) do not use hearing protection against noise.

The attitudes of students regarding noise show that 54.6% of students believe that the community has not taken all the necessary measures to protect against noise, 60% of them believe that more noise- related regulations are needed, but 46.6% of students are not sure that educational programs could contribute reducing air pollution with noise, although 77.3% never heard about noise during their studies.

Conclusion: The students do not have sufficient knowledge about the importance of noise on people's health, nor have they given the necessary importance to this problem.

Keywords: noise, students

PERIPANDEMIC ANALYSIS DATA IN THE FEDERATION OF BOSNIA AND HERZEGOVINA: UNDERSTANDING SUICIDE TRENDS AND CHARACTERISTICS

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Background: Suicide represents a significant public health challenge with profound social, emotional, and economic implications. While suicide rates are high across all age groups, they are particularly pronounced among younger individuals, constituting a significant contributor to premature mortality. Addressing suicide is therefore a crucial aspect of mental health intervention globally.

Objective: This study aimed to assess the trends of suicide deaths in the Federation of Bosnia and Herzegovina (FB&H) from 2019 to 2022, analyzing characteristics such as gender, age, and method of suicide.

Methods: Conducted as a retrospective population-based analysis covering the years 2019 to 2022, this study utilized data from the FB&H mortality register, specifically from the Institute for Statistics FB&H. Suicide rates were stratified by age groups, with age-specific death rates and suicide methods categorized by age and sex.

Results: In 2019, the age-specific suicide death rate was 9.4, which increased to 9.8 in 2020, peaked at 11.7 in 2021, and then decreased to 9.4 in 2022. Males accounted for over 70% of suicide deaths, with more than half occurring within the 30-64 age group and nearly one-third among those aged 65 and above. Hanging and firearms were the predominant suicide methods, particularly among males, while poisoning was more common among females.

Conclusion: Examining age and methodological trends in suicide over time is crucial for informing targeted prevention efforts. It is imperative to prioritize the enhancement of mental health services, ensuring equitable access to high-quality care within community settings. Addressing this challenge effectively necessitates the implementation of a comprehensive, multisectoral suicide prevention strategy.

Keywords: suicide, suicide methods, suicide mortality

PROGRAM OF ORAL HEALTH PROTECTION MEASURES IN THE FEDERATION OF BOSNIA AND HERZEGOVINA

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Background: Intending to improve the health of their citizens healthcare systems in one country represents the result of the combined efforts of government agencies and institutions. Properly designed health systems should provide early disease detection and facilitate appropriate intervention.

Objective: Recognizing the importance of preserving the oral health of children, the Institute of Public Health of the Federation of Bosnia and Herzegovina (FB&H) implemented a pilot program in West Herzegovina County/Canton. The goal of this program was to evaluate the oral health status of children aged 6 and 12 by observing the following parameters: dental status (dmft and DMFT), significant caries index (SiC), and debris index.

Results: A total of 879 children were examined, out of which 476, or 54.2%, were born in 2011. and 403 of 45.8% were born in 2017. Results of this study showed that the dmft of children 6 years old was 5,29 (±3,92), and the DMFT of 12-year-old children was 4,33 (±3,28). The average value of the SiC index for deciduous teeth in six-year-old children was 9.93 (± 2.49), while the average value for permanent teeth was 8.29 (± 2.3). The average debris index for the 12-year-olds was 0,5 (±0,53), and for the six-year-old children, it was 0,41 (±0,56), which means sufficiently good oral hygiene in both groups.

Conclusion: Despite the significant reduction of dental caries in the world, the data presented in this research indicate that dental caries remains one of the most widespread childhood diseases in the FB&H.

Keywords: oral health, debris index, significant caries index

LEADING CAUSES OF MORTALITY IN THE FEDERATION OF BOSNIA AND HERZEGOVINA (2013-2022)

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Background: Mortality data serves as a critical tool for evaluating and comparing health statuses at local, national, and international levels, especially in light of the challenges posed by the COVID-19 pandemic.

Objective: This study aims to comprehensively analyze the general mortality rate and identify the primary causes of mortality from 2013 to 2022, scrutinizing trends over a decade to discern any significant changes.

Methods: The identification of leading causes of mortality relies on data obtained from the Institute for Statistics of FB&H. Mortality patterns are meticulously examined by assessing the primary causes of death spanning the years 2013 to 2022.

Results: In FB&H, the general mortality rate per 100,000 population exhibited variations over the study period. The rates increased from 875 in 2013 to 965 in 2016, further rising to 1006 in 2019, peaking at 1341 in 2021, and slightly declining to 1075 in 2022. Notably, the emergence of U07.1 as the primary cause of mortality in FB&H in 2020 and 2021, attributed to the COVID-19 pandemic, indicates notable shifts in mortality patterns over time, with mortality from non-communicable diseases (NCDs) predominantly attributed to causes such as I63 (cerebral infarctions) and I21 (myocardial infarction).

Conclusion: The observed increase in the number of leading causes of death underscores potential disruptions in healthcare services in FB&H during 2020 and 2021. This phenomenon may also be attributed to potential underreporting of COVID-19 cases or other factors requiring further investigation. Hence, concerted efforts are imperative to mitigate deaths from NCDs, emphasizing the importance of clear guidelines and targeted recommendations.

Keywords: mortality from NCDs, mortality trends, leading causes of death

NOISE AS A PUBLIC HEALTH PROBLEM

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By definition, noise is any sound that is loud or unpleasant, or any sound that is unwanted. The difference between sound and noise depends on the listener and the circumstances, so loud music can be a pleasant sound for one person and noise for another. However, loud sound in both cases represents a health risk, especially if exposure to that risk is long enough and frequent enough. The main sources of noise are: all types of traffic, industry, energy production, wind turbines. Of great importance, especially for young people, is the noise generated during recreational activities such as: listening to loud music, playing video games, wearing headphones for a long time. Exposure to noise causes a number of health consequences, the most common of which are: hearing damage, hypertension, ischemic heart disease, anxiety, sleep disturbance and reduced success in learning and work. Research also indicates the negative effects of noise on immunity. Although noise has a negative effect on everyone's health, the negative effects on children's health are especially pronounced. Exposure to noise is increasing, especially in industrialized countries, but also in other areas of the world. The World Health Organization particularly associates noise with cities, where according to current data 55% of the world's population lives. By 2050 that percentage is expected to grow to 68%, which is why exposure to noise is a public health problem today, and if measures are not taken, it will be an even bigger problem in the future. In order to prevent the negative outcomes of exposure to noise, noise levels should be reduced to acceptable levels, and the best effects are achieved by reducing noise at the point of origin or in the immediate surroundings. If this is not possible, means for personal hearing protection should be used.

Because of all of the above, it is important to educate the general population about the importance of noise and ways to prevent harmful effects caused by noise, and in primary health care, when assessing individual health risks, include noise, in addition to other factors.

Keywords: noise, impact on health

A CASE OF MUCUS PLUG MIMICKING LUNG CANCER

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Background: Impacted mucus in the respiratory tract may mimic lung cancer and is rarely reported. We report a case with large mucoid plug mimicking a tumor.

Case report: A 62 years old woman with a history of Asthma and positive family history of malignant diseases was admitted to the Clinic for Lung Diseases and TB due to persistent productive cough with mucus, chest pains and shortness of breath, weight loss and tiredness. Chest CT described a mass of open ethology, most likely a tumor which has dimensions of 63x46mms. Prebronchoscopy chest radiograph showed infiltrate in the area of right pulmonary hilum and bronchoscopy found big concentration of mucus in the right main stem bronchus and the branches for the medium and lower lobe of right lung. Mucus was collected and sent out for cytological analysis. No pathological endobronchial changes were found. Repeated bronchoscopy, chest radiograph showed no signs of previously visible infiltrate.

Conclusions: We should always consider performing bronchoscopy when the appearance of the collection of mucus on radiographic imaging can resemble a malignant endobronchial lesion. Familiarity with this phenomenon and its risk factors can help clinicians for differential diagnosis and to avoid necessary workup and delay in diagnosis and treatment.

Keywords: Mucus plug, lung cancer, bronchoscopy, asthma

A CASE OF OCCULT FOREIGN BODY MIMICKING BRONCHIAL CARCINOMA

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Introduction: Bronchial foreign body aspiration can occur in any age group but is a rare problem in adults. We present a rare case of retained foreign body in lungs in adults.

Case report: A 57-year-old woman was admitted to the Clinic of Lung Diseases and TB due to persistent productive cough with white and green mucus, along with a fever for the past month, vomiting and headaches. Chest CT showed a primary infiltrative process, measuring approximately 59x46mm, several discrete micronodules possibly secondary deposits and incipiently enlarged lymph nodes. Bronchoscopy showed a partially necrotic tumor mass but histopathological and cytopathological findings showed no malignant cells. The follow-up chest CT showed significantly regressed consolidation. Then re-bronchoscopy was performed and showed a whitish elastic mass. Histopathological and cytopathological findings showed a foreign body of non-structural morphology, occasionally surrounded by neutrophils. On the second follow up chest CT findings resolved compared to the previous examination.

Conclusion: The foreign body may be present in the bronchi despite complete unawareness of the patient about aspiration. Bronchoscopy is the method of choice for early diagnosis and treatment, whereas with a late diagnosis, a thoracotomy may be needed to manage complications.

Keywords: aspiration, foreign body, bronchial carcinoma, bronchoscopy

CASE REPORT OF A PATIENT WITH ALK-POSITIVE LUNG ADENOCARCINOMA

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Objective: Anaplastic lymphoma kinase (ALK) is a tyrosine kinase that can be aberrantly expressed in several tumor types. In non-small cell lung cancer (NSCLC), chromosomal rearrangements involving the ALK gene loci on chromosome 2 are found in approximately 3 to 5% of NSCLC tumors. The most common ALK rearrangement in NSCLC results in the novel fusion oncogene echinoderm microtubule-associated protein-like 4 (EML4) and ALK.

Case report: A 67-year-old non-smoking patient was diagnosed with ALK-positive lung adenocarcinoma in October 2016. According to the initial CT scan, she had a primary tumor in the left lower lobe of the lung with bilateral lung metastases and mediastinal lymphadenopathy. She was started on platinum-based chemotherapy. Until February 2017, she received 6 cycles of chemotherapy, and the follow-up CT from June 2017 shows the progression of the disease. From then until March 2018, she was treated with the ALK TKI crizotinib. Due to CT-confirmed disease progression, she has since been started on treatment with the ALK TKI alectinib. On the first follow-up CT scan, the regressive dynamics of the primary tumor and bilateral metastases on the lungs were observed, and after that the radiologically stable disease was continuously recorded until today.

Conclusion: We presented a patient with ALK-positive metastatic adenocarcinoma of the lung who has been treated since October 2016. She received crizotinib in the second line for 9 months, and since March 2018 she has been on alectinib therapy, which is well tolerated and quickly achieves regressive dynamics of the disease.

Keywords: non-small cell lung cancer, anaplastic lymphoma kinase, tyrosine kinase inhibitors

PATIENT WITH METASTATIC LUNG ADENOCARCINOMA TREATED WITH PEMBROLIZUMAB: CASE REPORT

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Objective: Pembrolizumab is a humanized anti-programmed death 1 (PD-1) monoclonal antibody that has antitumor activity in advanced non-small cell lung cancer (NSCLC), with increased activity in tumors expressing programmed death 1 (PD-L1) ligand.

Case report: At the end of December 2018, a 65-year-old patient was treated for right-sided pleuropneumonia. The performed MSCT verified a right-sided tumor, pathohistological adenocarcinoma with PD-L1 expression in 100% of cells and EGFR and ALK negative. Brain MR showed metastases. Immunotherapy with pembrolizumab was started and he was treated with a gamma knife for 5 intracranial metastases. Until the end of March 2021. he received 30 cycles of pembrolizumab and has been on a therapeutic break and follow-up ever since. All follow-up investigations show a stable and well-controlled disease.

Conclusion: We presented a patient with lung adenocarcinoma and brain metastases with PD-L1 expression in 100% of tumor cells who was treated for two years with pembrolizumab along with gamma knife for brain changes. For the last three years, he has been on a therapeutic break, and still has a stable disease. Pembrolizumab, as well as some other inhibitors of immune checkpoints, have turned the mNSCLC into a chronic disease in a significant part of patients, which is a big step forward compared to the era before immunotherapy. Patients with a high expression of PD-L1 have the greatest benefit from immunotherapy.

Keywords: NSCLC, pembrolizumab, PD-L1

PATIENT WITH SEVERE ASTHMA: CASE REPORT

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Objective: Severe refractory asthma is defined as "asthma that requires treatment with high-dose inhaled corticosteroids (ICS) plus another controller (and/or systemic corticosteroids) to prevent it from becoming 'uncontrolled' or that remains 'uncontrolled' despite this therapy ". Severe allergic asthma and severe eosinophilic asthma are two defined phenotypes for which there are currently effective targeted biological therapies, namely anti-immunoglobulin E (IgE) and anti-interleukin (IL)-5, 4, 13 antibodies.

Case report: A 68-year-old female patient started treatment for asthma 40 years ago. She was treated for years with high doses of ICS+LABA, along with IV and oral corticosteroids several times a year. She was treated with omalizumab for 6 months in 2019., to which she did not have a satisfactory response. From the end of 2019 until August 2021, she was treated with mepolizumab. Due to extensive skin erythema of the legs, which is considered a very rare side effect of mepolizumab, poor control of asthma symptoms and frequent need for corticosteroids, treatment with benralizumab will begin in March 2022. She is doing well with it and only takes moderate doses of ICS +LABA.

Conclusion: We present a female patient with severe asthma who has been treated with different biological therapy for the past 5 years. At times when severe asthma was not under control, she would switch to another biological therapy.

Keywords: severe asthma, omalizumab, mepolizumab, benralizumab

D-DIMER TEST: A NORMAL RESULT DOES NOT ALWAYS RULE OUT PULMONARY EMBOLISM

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Background: One of currently unresolved question is whether plasma D-dimer assays may be considered as reliable test both for excluding pulmonary embolism (PE) and for screening for patients at the highest risk. We present a rare case of a patient with negative D-dimer in whom PE was confirmed.

Case report: a 49-year-old man was admitted to the Clinic for Lung Diseases and TB due to coughing up bloody sputum, chest pain on the right side that lasted for two days and the pain seriously compromised his breathing. Until then, the patient had no comorbidities. D dimer was performed: 0.30 mg/l (reference values 0-0.55). Chest CT with contrast medium verified persistent pulmonary multilobar thromboembolism with infarction. The patient was treated with unfractionated heparin and with low-molecular-weight heparin. Regression of pulmonary thromboembolism with residual changes corresponding to the type of pulmonary infarction was observed on the control chest CT scan.

Conclusion: D- dimer levels in most cases correlate with the extent of PE on CT scan, but the use of D-dimer alone for the screening and diagnosis of PE is still controversial. That is why we recommend that physicians ignore a normal d-dimer test when there is a high clinical probability of PE.

Keywords: D-dimer, pulmonary embolism, chest CT scan, diagnosis

EVALUATION OF PULMONARY SEQUELAE IN POST-COVID-19 PATIENTS - STRATEGIES OF FOLLOW UP.

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Background: Patients diagnosed with coronavirus disease 2019 (COVID-19) associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection frequently experience symptom burden post-acute infection or post-hospitalisation.

Topic review: We aimed to identify optimal strategies for follow-up that may positively impact the patient's quality of life (QoL). Health consequences that persist beyond the acute infection phase of COVID-19, termed post-COVID-19 condition (also commonly known as long COVID), vary widely and represent a growing global health challenge. Research on post-COVID-19 condition is expanding but, at present, no agreement exists on the health outcomes that should be measured in people living with the condition. The evaluation of most of studies shows clinical evidence in patient follow-up and established the timeframe for "long COVID" as 1-6 months after infection. Targeted studies include the association of the acute phase of COVID-19 infection with pulmonary sequelae monitored by radiological images and follow-up with pulmonary function tests.

Conclusion: Importantly, this statement reviews consequences, symptom burden, disability. Overall, the evidence for follow-up for patients with long COVID is limited.

Keywords: Post-COVID-19, Pulmonary sequelae, COVID-19 infection

MILIARY TUBERCULOSIS

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Background: Prevalence of miliary tuberculosis in the world is only 1-2%, therefore we consider it important to present our experience.

Case report: A previously healthy 32-year-old patient was treated for 19 days at the Clinic for Infectious Diseases for a prolonged febrile syndrome of unclear etiology. Extensive laboratory and multidisciplinary controls were performed. Quantiferon test was positive, afterwards a CT scan of the lungs suggested micronodular changes of a miliary character and suspicion of a specific etiopathogenesis. Upon admission to our clinic, the patient was high-febrile with short periods of afebrility, on oxygen support, with chest pain. A pericardial effusion was recorded on the CT, which was also confirmed on the ultrasound of the heart. The cardiologist indicated the inclusion of systemic corticosteroid therapy. A bronchoscopy was performed. On the seventh day of hospitalization came a positive MGIT TB sputum culture and antituberculotic therapy was initiated (six-month regimen (INH+RF+PZA+MBT)), which the patient tolerates well, no longer requiring oxygen support, extended periods of afebrility, and complete cessation of febrility. Follow-up US of the heart shows regression of the pericardial effusion. Afterwards came a positive TB culture from a lymph node puncture and urine. The patient is hemodynamically stable, afebrile, eupnoic, with a satisfactory clinical and laboratory response to therapy, radiological signs of regression, and is being discharged for home treatment.

Conclusion: Patients with miliary tuberculosis can have variable clinical and laboratory presentations, so any experience in treating these patients is valuable.

Keywords: miliary tuberculosis, mycobacterium tuberculosis, quantiferon test

NEUROENDOCRINE NEOPLASM OF THE LUNG

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Objective: Lung neuroendocrine tumors (NETs) are rare neoplasms which originate from neuroendocrine cells and they include a heterogeneous group of malignancies.

Topic review: Histological differentiation of lung NETs is important because they cover a wide spectrum of neoplasm from indolent to highly malignant tumors. Lung NETs include carcinoid tumors, large cell neuroendocrine cancer (LCNEC) and small cell lung cancer (SCLC). Recently, there have been significant progress in understanding of the molecular characteristics of each major type of lung NET. Major SCLC type comprises the distinct subtypes defined by relative expression of transcription factors: achaete-scute homolog 1 like (ASCL1), neurogenic differentiation factor 1 (NEUROD1), POU class 2 homeobox 3 (POU2F3), and inflamed gene signature.

Conclusion: Prognosis of these tumors depending on the type of NET and therapeutic options that derive from these. Histological and genetical evaluations of these tumors are essential for efficient management and increase of life expectancy.

Keywords: neuroendocrine tumors, molecular characteristic, prognosis

THE IMPACT OF AIR POLLUTION ON RESPIRATORY DISEASES

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Background: Air pollution (AP) represents one of the main environmental threats to public health. It is a heterogeneous mixture of gases, liquids, and solid particles including gaseous air pollutants such as particulate matter (PM) with size 10 microns (PM10) and 2.5 microns (PM2.5), nitric oxides (NOx), sulphur oxides, carbon monoxide (CO), and ozone (O3). PMs are the major causes of acute and chronic respiratory diseases. The impact of air pollution on respiratory diseases are presented.

Topic review: Outdoor and indoor air pollution is a risk factor for asthma. Asthma is related to specific pollutants (e.g. nitrogen dioxide, carbon monoxide, sulfur dioxide, fine particulate matter), while other respiratory diseases are related to total air pollution. Air pollution as a risk factor for COPD, also affects exacerbations of COPD. Toxicological research have shown that PM have several mechanisms of adverse cellular effects, such as cytotoxicity through oxidative stress mechanisms, oxygen-free radical-generating activity, DNA oxidative damage, mutagenicity, and stimulation of proinflammatory factors. The evaluation of most of these studies shows that the smaller the size of PM the higher the toxicity through mechanisms of oxidative stress and inflammation. In large epidemiological cohort studies the relationship between long-term exposure to fine particulate air pollution (PM10 and PM2.5) and increased mortality from lung cancer, especially in combination with other known risk factors, such as smoking, passive smoking, and occupational exposures was proved. Recent data emphasize the importance of water-soluble constituents, such as transitions metals, quinoid substances and stable semiquinone radicals in the carbonaceous section with redox potential. These substances are known to be adsorbed onto the surface cavities of the PM and can be released into the lung alveoli and deposited in the lung parenchyma.

Conclusion: There is emerging evidence from numerous scientific investigations for the relationship between fine airborne particulates of air pollution and health risks to humans.

Keywords: air pollution, asthma, COPD, lung cancer

SMALL BOWEL INTUSSUSCEPTION SECONDARY TO METASTATIC MELANOMA: A CASE REPORT

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Introduction: Intussusception is a rare condition in adults, occurring in only about 5 percent of cases. It typically results from a structural lesion serving as a lead point, unlike in pediatric cases, which are generally idiopathic.

Aim: We report a case involving a 59-year-old male who was referred to the gastroenterology department for a polypectomy.

Method: During pre-procedural preparations, an ultrasound raised suspicions of a mass in the cecum and small intestine region, accompanied by ileus. The patient exhibited symptoms of bloody stool and abdominal pain. Subsequently, an emergency abdominal CT scan was conducted, confirming multiple intestinal masses. The largest mass, located in the small bowel, served as a lead point for intussusception. Additionally, the scan revealed pathological lymphadenopathy and soft tissue implants along the peritoneum. Pathohistological examination confirmed the diagnosis of metastatic melanoma. Notably, the physical examination did not indicate an acute abdomen, presenting a discrepancy with the CT findings.

Results: The gastrointestinal (GI) tract, particularly the small bowel, is the most frequent location for malignant melanoma metastases. Patients with intestinal metastases often exhibit non-specific symptoms or may remain asymptomatic. Many patients may go through life without ever detecting GI tract metastases. Typically, these metastases are identified only when complications arise, such as intussusception.

Conclusion: Malignant melanoma may metastasize to the GI tract, often creating a lead point that precipitates intussusception and intestinal obstruction. An abdominal CT scan is the preferred diagnostic method, and surgical resection stands as the optimal treatment approach.

Keywords: Intussusception, melanoma, metastasis, CT

VARIATIONS OF THE SUPERIOR CEREBELLAR ARTERY AT MR ANGIOGRAPHY

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Introduction: The Superior Cerebellar Artery (SCA) is the most consistent branch of the Basilar Artery (BA). It's most frequent variations include: duplication, hypoplasia, common trunk of SCA with P1 segment of Posterior Cerebral Artery (PCA), early branching, triplication and fenestration.

Aim: To determine the frequency and characteristics of individual variations of SCA on Magnetic Resonance Angiography (MRA).

Methods: This retrospective study included 1000 subjects older than 18 years, who underwent CEMRA (Contrast enhanced MRA), which was performed using 1.5 Tesla machines. Patients with cerebrovascular disease, vascular malformations and brain tumours in the immediate vicinity of the analyzed arteries were excluded from the study.

Results: The average internal diameter of the SCA was 1.24 mm. The SCA were symmetrical in 63.4% of cases and the most common anatomical variation was the duplication of the SCA with 19.8% cases, with bilateral duplication being more common in men than in women (p=0.03). Hypoplasia and fenestration were both present in 0.2% cases. Frequency of SCA and PCA common trunk was 14.2%.

Conclusion: SCA exhibits a wide range of anatomical variations that may have profound clinical implications, influencing surgical approaches, endovascular interventions, and overall patient management strategies. MRA offers a non-invasive, high-resolution visualization of the

Keywords: superior berebellar artery, anatomical variations, magnetic resonance angiography

VALUE BASED APPROACH TO IMPROVING RADIOLOGY WORKFLOW

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Introduction: Quality improvement and process improvement projects occur in many radiology departments. These arise through a variety of pathways including the output of a complaint, root cause analysis or adverse event. Sometimes these arise from individual or departmental priorities. Other times projects are based on what is annoying (pebble in my shoe), a rate limiting step or what can actually be accomplished. However, not all projects are equally impactful at an intuitional level. By aligning radiology department process improvement projects with strategic planning goals and organizational priorities, operational improvements can create value which is meaningful to the institution.

Aim: This review will look at both process improvement techniques and alignment with the organizational goals.

Method: The Baldrige Framework discusses the alignment between the organization profile (mission, vision, and values), strategic plan and operational processes. There are many process improvement systems including lean, six sigma, and theory of constraints. Since process improvement involves change, change management approaches such as Kotter, diffusion of innovation, disaster management and implementation science will be reviewed. The nature of different types of change and the potential impact on the choice of process improvement technique will also be reviewed.

Conclusion: By choosing a process improvement project aligned with organizational priorities and goals and matching the right

Keywords: radiology, process improvement, value based care, lean, change management

TUBERCULOUS CERVICAL LYMPHADENITIS (SCROFULA) IN HIV POSITIVE PATIENT: A CASE REPORT

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Introduction: Tuberculous cervical lymphadenitis is the most common manifestation of extrapulmonary tuberculosis. Though rare in developed countries, it can be seen in immunocompromised patients, especially those who are HIV positive.

Aim: We discuss a patient in his forties who presented with intermittent fever, night sweats, weakness, and weight loss in the last two months, and a neck mass in the last few days.

Method: The patient was admitted to the Clinic for Infectious Diseases. US noted enlarged jugulodigastric lymph nodes. Biopsy was performed, which confirmed tuberculous lymphadenitis. The patient also tested positive for HIV. Antitubercular therapy was initiated. Two months later he was overall feeling better, but he complained about dysphagia.

Results: For better understanding of the condition, CT scan was indicated. Neck CT was performed in non-contrast and contrast-enhanced series. It showed multiple confluent lymph nodes with central low density and peripheral rim enhancement in the oropharynx and hypopharynx on the left side of the neck, in the parapharyngeal space, and pharyngeal mucosal space. The total diameter of the lesion was 96x46x28 mm (CCxLLxAP), which was protruding into the pharyngeal lumen and in contact with the uvula, epiglottis, and left aryepiglottic fold. During this time, the patient was prescribed clarithromycin. On the next check-up, dysphagia was relieved and standard antitubercular therapy was continued.

Conclusion: CT findings of necrotic neck lymph nodes can be associated with necrotic metastases, SCC, papillary thyroid cancer, or other infections. When presented with this striking CT appearance, it is important to think of extrapulmonary TB, especially in the immunocompromised population.

Keywords: TBC, lymphadenitis, HIV positive, scrofula

ASSESSING DIFFUSION TENSOR IMAGING ALONG THE PERIVASCULAR SPACE (DTI-ALPS) IN RELATION TO IDIOPATHIC INTRACRANIAL HYPERTENSION (IIH)

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Introduction: The glymphatic system is an extravascular network of astrocytic channels that facilitate the movement of interstitial fluid and solutes within brain parenchyma. Decreased interstitial fluid egress from the brain has been considered as associated with idiopathic intracranial hypertension (IIH).

Aim: We aim to assess glymphatic function in IIH patients with acute active, chronic active, and treated/cured IIH as well as in healthy controls using Diffusion tensor imaging along the perivascular space (DTI-ALPS) as a possible correlate of Glymphatic function.

Methods: Participants included female patients with IIH (as defined by modified Dandy criteria) and controls matched for body mass index (BMI)≥25, and reproductive status (childbearing age). Chronic and acute IIH were defined as lasting 6+ or <6 months, respectively. Cured IIH was defined as a history of IIH with resolution of symptoms and signs of intracranial hypertension without ICP-lowering medications. Participants with suspected IIH underwent MRI prior to lumbar puncture (LP), and those who underwent LP were offered repeat imaging post LP. DTI- ALPS employing 12-direction DTI sequences on a 3T magnet was employed as an index of glymphatic function. DTI images were reconstructed to produce a color-coded map of the brain. Diffusivities in the direction of the perivascular space, predominantly oriented along the x-axis (right-left direction) and perpendicular to the projection (z-axis) and association fibers (y-axis), were measured by 2 masked readers. ALPS-indices were calculated for each participant.

Results: 16 females with IIH [acute=4, chronic=6, treated/cured=6], and 15 controls were enrolled. The mean ±SD DTI-ALPS for acute, chronic, treated/cured, and controls are 1.26±0.12, 1.71±0.11, 1.52±0.14, and 1.43±0.15, respectively. The overall ALPS difference was significant (p=0.0014) and chronic actives have significantly higher ALPS than acute active(p=0.001) and controls (p=0.014). The interobserver agreement for DTI measurements was good (r=0.86 and 0.90). There were no significant correlation of DTI-ALPS with BMI(r=0.05, p=0.79) or opening pressure (OP)(r=0.22, p=0.49).

Conclusion: Glymphatic function, as approximated by ALPS-indices, is greater in participants with chronic IIH than among controls or participants with active-IIH. According to the lack of association between ALPS-indices and OP, these data suggest a homeostatic – rather than causal – role for the glymphatic function in IIH.

Keywords: idiopathic intracranial hypertension, glymphatic system, glymphatic function

UNDIFFERENTIATED EMBRYONAL SARCOMA OF THE LIVER: A CASE REPORT OF AN ADULT PATIENT MIMICKING ECHINOCOCCAL CYST

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Introduction: Primary undifferentiated embryonal sarcoma of the liver is a rare disease, especially in adulthood.

Aim: Herein, we report a case of a 69-year-old woman with undifferentiated embryonal liver

sarcoma mimicking a hydatid cyst.

Method: The patient initially underwent an abdominal ultrasound examination due to the pain in the right upper quadrant. Sonographically, an echinococcal cyst was suspected, and further investigation was advised. A surgical biopsy performed outside established the final diagnosis of an undifferentiated embryonal liver sarcoma. The patient arrived at our Institution after the surgery due to a postoperative complication - the abscess in the anterior abdominal wall.

Results: CT showed a multilocular cystic mass occupying the entire right liver lobe and communicating with the anterior abdominal wall with air foci and the small solid nodular intramural component. CT findings resembled complicated echinococcal disease, although the intramural solid nodule still raised suspicion for malignancy.

Conclusion: The patient started with chemoradiotherapy but unfortunately stopped it due to the worsening of its clinical condition. When we reported the case, the patient was on palliative care support.

Keywords: Undifferentiated embryonal sarcoma, liver, adult

D-DIMER AS A SENSITIVE AND A VERY NONSPECIFIC PARAMETER FOR THE DIAGNOSIS OF PULMONARY EMBOLISM

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Introduction: Since the beginning of the Covid-19 pandemic there has been an immense increase of CT pulmonary angiogram (CTPA) requests at the Department of Radiology at our hospital. One of the most significant complications of Covid-19 is pulmonary embolism (PE). The gold standard for detecting pulmonary embolism is CTPA.

Aim: The aim of this study was to evaluate if an elevated value of D-dimer in both Covid-19 and non-Covid-19 patients is reason enough for patients to undergo CTPA.

Methods: CTPA was used for PE evaluation. PCR testing was used in order to separate patients into positive and negative Covid-19 groups. Plasma D-dimer levels were measured using the BCS XP Siemens System.

Results: Covid-19 did not cause a significant difference in D-dimer values. Both Covid-19 and non-Covid-19 patients below the threshold of 0,5µg/mL, should not be considered for CTPA. Testing the sensitivity and specificity values at different cut-offs, provided us with an increase in specificity athigher cut-off values, but also a significant decrease in sensitivity.

Conclusion: D-dimer levels should be more often in correlation with clinical tests, since it has a low specificity for pulmonary embolism even at different cut-off values.

Keywords: D-dimer, CT pulmonary angiogram, COVID-19, pulmonary embolism

DYSEMBRYOPLASTIC NEUROEPITHELIAL TUMORS IN ADOLESCENT FEMALE: A CASE REPORT

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Introduction: Dysembryoplastic neuroepithelial tumors (DNET) are benign tumors. Differential diagnosis of DNETs are oligodendrogliomas and gangliogliomas. The most common presentation is epilepsy.

Aim: To present a case of a rare presentation of DNET in an adolescent female.

Method: A 23-year-old female felt insomnia, headache, and muscle pain two months before admission. She was admitted to the Neurology clinic following a seizure-like activity. A magnetic resonance imaging (MRI) scan shows a supratentorial frontobasal left a zone of hypersignal on T2 FSE and FLAIR, hyposignal visualized on T1 without diffusion restriction and significant post-contrast opacification, measures 25x23x22 mm (APXLLXCC). The patient underwent a supraorbital craniotomy, the tumor mass is in the region of the rectus gyrus and olfactory trigone.

Results: The pathohistological examination demonstrates the presence of round, uniform cells diffuse reactivity to glial fibrillary acidic protein (GFAP) and OLIG2. Subsequently, NGS sequencing was done at the Faculty of Medicine Ljubljana, finding subtype of DNET.

Conclusion: Early diagnosis and treatment of DNET can improve the quality of life of patients and reduce unnecessary radiotherapy and chemotherapy. The MRI imaging manifestations of DNET and clinical exams are important to improve diagnostic accuracy.

Keywords: DNET, MRI, diagnostic

EXPLORING INCIDENTAL FINDINGS IN ABDOMINAL CT SCANS: CLINICAL RELEVANCE AND MANAGEMENT CONSIDERATIONS

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Introduction: Abdominal CT imaging frequently reveals unexpected findings beyond the primary diagnostic focus. With the increased use of CT scans and improvements in image quality, the number of incidental findings is increasing. These incidental findings can create diagnostic dilemmas and necessitate appropriate management strategies.

Aim: The purpose of this review is to explore the spectrum and clinical significance of incidental findings identified on abdominal CT scans.

Method: Incidental findings on abdominal CT scans can be broadly classified into two categories: abdominal and non-abdominal findings. Abdominal incidental findings include a wide range of abnormalities, including renal cysts, hepatic lesions, adrenal masses, and gastrointestinal abnormalities. Nonabdominal findings include pulmonary nodules, cardiac abnormalities, abdominal wall lesions, and bone lesions. Some of these incidental findings carry little to no clinical significance and require no additional workup while others require further investigation and management.

Results: Understanding the prevalence, clinical relevance, and potential sequelae of these findings is crucial for radiologists, as well as for the referring physicians that requested the CT scans. Management of incidental findings on abdominal CT can be standardized by creating macros and dictation systems, enhancing efficiency and ensuring consistent reporting practices.

Conclusion: These macro scans can be based on national or international guidelines and/or prevailing local practices which take into account nuances of the population served and the healthcare infrastructure available.

Keywords: incidental findings, abdomen, CT, recommendations

DIAGNOSTIC CHALLENGES IN PATIENT WITH MULTIPLE MALIGNANT DISEASES: A CASE REPORT

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Introduction: X-rays are routinely performed on patients with B-cell chronic lymphocytic leukemia as part of their hematological assessment and treatment. In this patient, a superior multislice CT scan identified a rare lung parenchymal cancer in addition to a stationary pleural effusion at the right base of the chest.

Aim: To present a case of a rare presentation of multiple malignant diseases

Method: Most solitary fibrous tumors (SFTs) that occur in the chest originate from the pleura. Because SFTs are rare in the lung, current reports of lung SFTs include fewer than ten cases. In addition, the patient of our clinic had secondary immunodeficiency due to chemotherapy of the underlying disease, salpingo-ovariectomy and hysterectomy (PHD: mucinous ovarian cystadenoma) and psychosis induced by corticosteroids due to hematological treatment.

Results: Last year, diagnostic work-up revealed a metastasis of urinary tract cancer with foci of squamous differentiation in the left kidney and a metastasis in the right iliac bone, which was her third coexisting cancer. PET CT revealed spread of the disease to the chest, adrenal gland and bones.

Conclusion: This case presents diagnostic challenges in the treatment of patients with rare cancer, especially in the context of coexisting cancers and therapeutic approach.

Keywords: pleura, rare cancer, leukemia, immunodeficiency, metastasis, squamous cell carcinoma

ACUTE CORONARY SYNDROME AS A COMPLICATION OF STRESS ECHOCARDIOGRAPHY

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Brief objective: In this case report we reported a 65-year-old man, who was examined on an outpatient basis, because of exertional angina CCS IV, despite optimal medical treatment. His risk factors for ischemic heart disease were hypertension, insulin dependent diabetes, dyslipidemia and positive family history for cardiovascular diseases.

Topic review: On the previous angiography based on chronic coronary syndrome, made four years year earlier, it was verified two vessel coronary disease. Drug eluting stent was placed in the left coronary artery, with no significant stenosis of right coronary artery. One year earlier, coronarography was made again, three vessel coronary disease was verified and drug eluting stent was placed in the right coronary artery because of significant stenosis, with a passable previously implanted drug eluting stent in the left coronary artery. Diagonal 1 brunch was with no significant stenosis. Now in the electrocardiogram sinus rhythm, with right bundle brunch block, without ischemic changes in the ST segment and T wave. Echocardiographic signs of left ventricular hypertrophy, with initial dilatation of asc aorta, left atrium and right ventricle, competent valves and preserved left ventricular ejection fraction. Stress echocardiography indicated the existence of a high-risk zone in the area of irrigation of the right coronary artery. First and control troponin were negative. Coronarography was made again, with verified medial in stent sub-occlusion of the right coronary artery and drug eluting stent was implanted in medial right coronary artery.

Conclusion: After the procedure patient is subjectively, hemodynamically and electrically stable, on further optimal medical treatment.

Keywords: stress echocardiography, acute coronary syndrome

AFTER PROCEDURE LIFE QUALITY: CORONARY ARTERY BYPASS GRAFTING VERSUS HYBRID CORONARY REVASCULARIZATION

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Background: Coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI) are the two main treatments for patients with multivessel coronary artery disease (MVD). Hybrid coronary revascularization (HCR) combines minimally invasive CABG to the left anterior descending coronary artery (LAD) with PCI for non-LAD lesions, offering safety and feasibility for selected MVD patients.

Aim: This study aimed to assess and compare the health-related quality of life (HRQoL) two months post-procedure among patients who underwent distinct revascularization interventions. The research focused on two groups: one receiving CABG and the other undergoing HCR.

Materials and methods: This observational study was conducted between January 2023 and January 2024 at the Clinic of Cardiovascular surgery of the Clinical Centre University of Sarajevo in Bosnia et Herzegovina. Medical records of total of 60 patients were enrolled, 30 in each group. The first group who underwent for standard CABG operation and second group with HCR (minimally invasive CABG to the LAD and PCI for non-LAD lesions). Health-related QoL was assessed two months after procedure by using generic SF-36 questionnaire. The SF-36 questionnaire was translated and adapted to the Bosnian language. Descriptive statistics data were presented across a one-year timeline among the groups. For parametric data, the independent sample t- test was used, and for nonparametric data, the Mann Whitney U test was used. The statistical significance level was set at $p<0.05$.

Results: Analysis of our data suggests that quality of life was better in

patients undergoing hybrid coronary revascularization. The patients felt better after hybrid coronary revascularization, returned to daily activities faster, and were less emotionally unstable. Ongoing data collection and further analysis are required to validate and strengthen these initial findings.

Conclusion: CABG is the gold standard for revascularization; however, hybrid coronary revascularization is equally effective and less invasive. The quality of life in both the physical and mental aspects is better in patients with hybrid revascularization.

Keywords: heparin allergy, bivalirudin, off pump coronary bypass graft

BIVALIRUDIN AS AN ALTERNATIVE FOR CARDIOPULMONARY BYPASS IN PATIENT WITH HEPARIN ALLERGY

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Brief objective: The aim of this study was to examine efficiency of bivalirudin as direct thrombin inhibitor, in patient with heparin allergy/ hypersensitivity in coronary artery bypass graft surgery, knowing his efficiency in treating heart attack patient undergoing percutaneous coronary intervention.

Topic review: We present a case of a 65-year-old patient hospitalized at our Clinic after coronary angiography, which revealed sever 80% blockage in left main coronary artery along with three-vessel coronary disease. As per hospital s protocol, continuous therapy with heparin was started, after which patient developed systemic rush. Corticosteroid therapy did not show improvement and heparin was stopped. Patient was switched back to acetylsalicylic acid and ticagrelor. Ticagrelor was chosen over clopidgrel because studies show it can be eliminated if necessary, through hemoperfusion catridges during operation. Considering all above, surgeon decided to proceed with off- pump coronary bypass graft surgery (LIMA- LAD mini- thoracotomy) using bivalirudin instead of heparin. Bivalirudin was administered first as a bolus dose, and then continuous intravenous infusion. ACT was monitored for several times during operation. At the end of operation, acetylsalicylic acid and ticagrelor were administered via nasogastric tube. The patient was discharged from hospital without any complication on the sixth postoperative day. Interventional cardiologist will decide on the modality of treatment of residual changes in the coronary vessels

Conclusion: Bivalirudin is adequate replacement for heparin during off pump and on pump cardiopulmonary bypass graft in case of heparin hypersensitivity, due to his fast onset of action and short half- time of elimination. ACT should be monitored often during operation, knowing that bivalirudin has no antidot

Keywords: heparin allergy, bivalirudin, off pump coronary bypass graft

JUSTIFICATION OF PERIPHERAL ARTERY DISEASE SCREENING IN A POPULATION OF PATIENTS IN THE THIRD AGE OF LIFE THROUGH CLINICAL AND FINANCIAL COST-BENEFIT ANALYSIS

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Background: Atherosclerosis and its consequences such as (stroke, abdominal aortic aneurysm rupture, and limb amputation) are very widespread in Western countries, and the incidence of atherosclerosis is overgrowing in developing countries. Atherosclerosis is a disease that progresses silently for several decades before it results in the above-mentioned clinical consequences. Ultrasound—B-mode, Doppler mode—provides a fast, cost-efective way to visualize plaque.

Aim: The research aims to examine the clinical justification of vascular ultrasound screening of the population of the third age of life.

Materials and Methods: The research is conducted according to the type of prospectively designed transversal study with retrospective analysis of the sample. The research is a project of the Federal Ministry of Education and Science. 826 respondents of the third age (≥60 years) were analyzed. Respondents (826) were divided by gender: men (n=473, 57.3%) and women (n=353, 42.7%). Categorization of patients according to the severity of the findings was performed based on the morphological and hemodynamic characteristics of the analyzed arteries.

Results: The presence of atherosclerosis was noted in 527 (63.8%), and stenosis ≥ 50% was recorded in 80 subjects (9.7%) A statistically significant diference, between groups, in stenosis ≥ 50% was recorded in the arteries of the lower extremities (p=0.033) and in the presence AAA diameter 0d 3 to 5 cm (p=0.039)

Conclusion: With the assessment of multiple vascular territories using Ultrasound (Color Doppler), we found a high prevalence of atherosclerosis in the arterial system, and a significant proportion of participants with stenosis ≥50% (9.7%).

Keywords: atherosclerosis, peripheral arterial disease, screening method, Duplex ultrasonography

LEFT ILIAC ARTERIOVENOUS FISTULA DUE TO ANEURYSM RUPTURE AND RIGHT ILIAC ARTERY ANEURYSM, ABDOMINAL AORTIC ANEURYSM: SURGICAL TREATMENT

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Objective of the review: Arteriovenous fistula (AVF) is an uncommon consequence of spontaneous rupture of an arterial aneurysm into the adjacent venous system. Because of the rarity of this condition, data are scarce and treatment decisions are challenging.

Topic Review: We describe the case of a 66-year-old patient who underwent surgical treatment for a left iliac AVF caused by a ruptured common iliac artery (CIA) aneurysm, an abdominal aortic aneurysm, and a right CIA aneurysm. The right internal iliac artery was preserved due to the need to vascularize the pelvis and the terminal colon. The patient had a benign postoperative course with a resolution of left leg swelling and respiratory problems (pulmonary hypertension). Iliaco-iliac AVF is a rare disease occurring in <1% of all CIA aneurysms. There are two strategies for treating aneurysmal AVFs: open surgery and endovascular treatment. Open surgery involves repair of the fistula, usually with direct suture, and reconstruction of the aortoiliac aneurysm with a synthetic graft. The advantage of this technique is that it treats the AVF. Its drawbacks include difculty in controlling bleeding and invasiveness. Endovascular treatment is less invasive and does not require abdominal laparotomy. The disadvantage is that the fistula cannot be closed, so there is a risk of endoleak type 2.

Conclusion: Although rare, iliac AVF can cause acute heart failure refractory to therapy and hemodynamic instability. In patients with acute heart failure, especially when combined with a pulsatile mass and a unilateral swollen leg, AVF should be suspected. Regardless of the condition diagnosed preoperatively, surgical treatment has a good outcome.

Keywords: arteriovenous fistula, common iliac artery aneurysm, abdominal aortic aneurysm, surgical treatment

PARTIAL ANOMALOUS PULMONARY VENUS RETURN IN SEPTUAGENERIAN

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Objective: Partial anomalous pulmonary venous return with sinus venosus atrial septal defect is incidental finding in adults. Extraordinary, rare finding is in septuagenerian. This congenital heart disease is presented with overflow throughout the lungs. Consequences are pulmonary hypertension with high pulmonary resistance, dilatation of the right heart chambers. Adult cardiologists very rare think about such lesion in advanced age.

Methods: This is a case report about 71-years old women patient with shortness of breath and atrial fibrillation. Diagnostic clue was high positioned ASD, sinus venosus type. We searched for PAPVR and approved by CT scan drainage of the right superior and medium pulmonary vein into vena Cava Superior, enormously dilated right heart chambers. Coronarography was negative. Right heart angio showed pulmonary hypertension and pulmonary resistance between 4-5 Woods units. We indicated surgery with high risk. Surgery was performed after meticulous diagnostic procedures. We used double patched technique in order to tunneled pulmonary flow throughout sinus venosus ASD into left atrium. With second pericardial patch we enlarged Cavo-Atrial junction. Weaning from cardio-pulmonary bypass was step by step with measurement of the pulmonary artery pressure. At the end of operation pulmonary artery pressure was 40 mmHg. The patient was three day dependent on pulmonary vasodilators. Extubated on the first post-operative day. Lady was discharged on the seventh post-operative day.

Conclusion: This case report is specific because of the age of the patient and according to our knowledge and available literature is the oldest one who underwent such kind of procedure. Clinical recovery was excellent except permanent atrial fibrillation but with good ventricular response. Team approach to such complex situation resulted in an excellent success of clinical appearance and recovery of the patient.

Keywords: partial anomalous pulmonary venous return, sinus venosus atrial septal defect, septuagenarian

POST INFARCTION VSD AND ENDOCARDITIS MITRAL VALVE

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Brief objective: The aim of our evaluation was to define the outcome of surgical repair of postinfarction VSD and endocarditis of mitral valve

Topic review: Ischemic septal rupture producing ventricular septal defect (VSD) is a very serious complication of acute myocardial infarction. Acute therapeutic options are often difficult, because the tear in the septum is complex with surrounding edematous and necrotic tissue. The situation is even more difficult if patient also have mitral valve endocarditis. We represent a very rare case of two postinfarction VSD, one perimembranosus regugitation due to endocarditis. Elective surgery is performed after 3 weeks of antibiotic therapy. Patient go to mitral valve repaire phisio ring 32, tricuspide valve reapire MC3 ring 32 and VSD closure using double patch technique, PTFEE closure and aneurysma repair sec. dor. Preoperative and echocardiography after cardiac surgery was evaluated, with no sign of VSD, and normal function of mitral, and tricuspide valve.

Conclusion Prophylaxis of endocarditis in patient with postinfarction VAS is very important, because even VSD complicating myocardial infarction can lead to endocarditis and have an extremely high in-hospital mortality rate. Elective surgery in this patient was performed after 1-2 weeks of antibiotic therapy.

Keywords: VSD, post -IM, endocarditis, surgical repair

RESULTS OF EVLA TREATMENT OF VSM WITH LARGER DIAMETER

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Introduction: Insufficiency of the venous system of the lower extremities is mostly closely related to insufficiency of the great saphenous vein. The normal diameter of the VSM is up to 5 to 7 mm, anything over is considered a dilated vein if the reflux is above 500 ms.

Methods and patients: Study includes patients treated with EVLA treatment with a diameter of VSM larger than 15 mm at distance of 2 to 3 centimeters from the saphenofemoral junction. The research included patients treated in the period from January 2015 to December 2024. Before the treatment, the diameter and reflux of the VSM were measured and candidates for this study were patients with a diameter greater than 15 mm and a reflux greater than 500 ms. All patients were clinically and diagnostically processed and followed for a year after the treatment.

Aim: To determine the effectiveness of the EVLA treatment of VSM with a diameter greater than 15 mm within one year.

Results: Occlusion of these VSM shows satisfactory results with over 90% success rate within one year of treatment.

Conclusion: Treatment of VSM with a larger diameter (15 mm and more) is a safe method and there are no statistically significant differences compared to EVLA treatment of VSM with a smaller diameter.

Keywords: VSM (Great saphena vein), EVLA (Endovenous laser ablation), diameter, reflux

REVERSE LEFT HEART REMODELING AFTER AORTIC VALVE REPLACEMENT AND MITRAL VALVE COMMISSUROPLASTY IN PATIENT WITH SEVERE BICUSPID AV AND SEVERE MITRAL VALVE REGURGITATION: A CASE REPORT

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Brief objective: The aim of this study is to present reverse remodeling of the left heart after aortic valve replacement and mitral valve commissuroplasty based on severe bicuspid AV insufficiency with severe mitral valve regurgitation.

Topic Review: There have been few studies on the effect of left ventricular (LV) reverse remodeling after aortic valve replacement (AVR). This study aimed to present reverse remodeling of the left ventricle and atrium after aortic valve replacement and mitral valve commissuroplasty in a 49-year -old man with signs of severe heart failure, based on severe bicuspid AV insufficiency with severe mitral regurgitation. Preoperative and subsequent echocardiography for 1,3, 6 and 12 months after cardiac surgery was evaluated. LV end-diastolic and end-systolic diameters, as well as LV end-diastolic and end-systolic volume index and left atrium volume index decreased, then normalized and LV ejection fraction increased after cardiac surgery. Atrial fibrillation verified at the first examination was medically converted to sinus rhythm during the treatment of heart failure in the preoperative period, has been maintained all the time. The patient at the first examination with NYHA IV assessment, after treatment by a cardiac surgeon and cardiologist is now in NYHA class I.

Conclusion: Aortic valve replacement and mitral valve commissuroplasty in a patient with severe heart failure with reduced ejection fraction (HFrEF) based on severe bicuspid AV insufficiency with severe mitral regurgitation, leads to reverse left heart remodeling and increased LV ejection fraction.

Keywords: Bicuspid aortic valve regurgitation, aortic valve replacement, reverse remodeling

THE IMPORTANCE AND SOME CHARACTERISTICS OF PERFORATOR VEINS FOR EVLA TREATMENT

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Background: Perforator veins are veins that perforate the deep fascia of the muscles to connect the superficial veins to the deep veins. Pathological perforator veins have a reflux greater than 500 ms, and diameter larger than 3.5 mm.

Aim: To determine that one of the reasons for the large number of recurrences in stripping is the non-treatment of perforated veins.

Materials and methods: In this study we examined two groups of patients and measured the perforator vein characteristics diameter, insufficiency, arrangement of perforators and monitored the amount of energy and time spent in EVLA treatment of perforators in both groups of patients. The placement of lower leg perforators referred to the front, lateral and posterior sides and the height to the proximal, medial and distal third of the lower leg. The first group in which stripping and varicotomy of the lower extremities. The groups consist of 70 patients, who were followed for a year after the treatment.

Results: Result shows that the diameter of the perforator and insufficiency is statically greater in the first group and that the consumption of energy and time for perforator treatment in the second group is lower and the number of complications is lower.

Conclusion: To reduce the number of complications and patients' dissatisfaction with the treatment, it is necessary to treat insufficient lower leg perforators with EVLA treatment along with VSM and VSP EVLA treatment.

Keywords: mucus plug, lung cancer, bronchoscopy, asthma

THORACIC ENDOVASCULAR AORTIC REPAIR (TEVAR) - OUR EXPERIENCES (YEAR 2021- 2023)

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Objective of the review: Arteriovenous fistula (AVF) is an uncommon consequence of spontaneous rupture of an arterial aneurysm into the adjacent venous system. Because of the rarity of this condition, data are scarce and treatment decisions are challenging.

Topic Review: We describe the case of a 66-year-old patient who underwent surgical treatment for a left iliac AVF caused by a ruptured common iliac artery (CIA) aneurysm, an abdominal aortic aneurysm, and a right CIA aneurysm. The right internal iliac artery was preserved due to the need to vascularize the pelvis and the terminal colon. The patient had a benign postoperative course with a resolution of left leg swelling and respiratory problems (pulmonary hypertension).

Iliaco-iliac AVF is a rare disease occurring in <1% of all CIA aneurysms. There are two strategies for treating aneurysmal AVFs: open surgery and endovascular treatment. Open surgery involves repair of the fistula, usually with direct suture, and reconstruction of the aortoiliac aneurysm with a synthetic graft.

The advantage of this technique is that it treats the AVF. Its drawbacks include difficulty in controlling bleeding and invasiveness. Endovascular treatment is less invasive and does not require abdominal laparotomy. The disadvantage is that the fistula cannot be closed, so there is a risk of endoleak type 2.

Conclusion: Although rare, iliac AVF can cause acute heart failure refractory to therapy and hemodynamic instability. In patients with acute heart failure, especially when combined with a pulsatile mass and a unilateral swollen leg, AVF should be suspected. Regardless of the condition diagnosed preoperatively, surgical treatment has a good outcome.

Keywords: arteriovenous fistula, common iliac artery aneurysm, abdominal aortic aneurysm, surgical treatment