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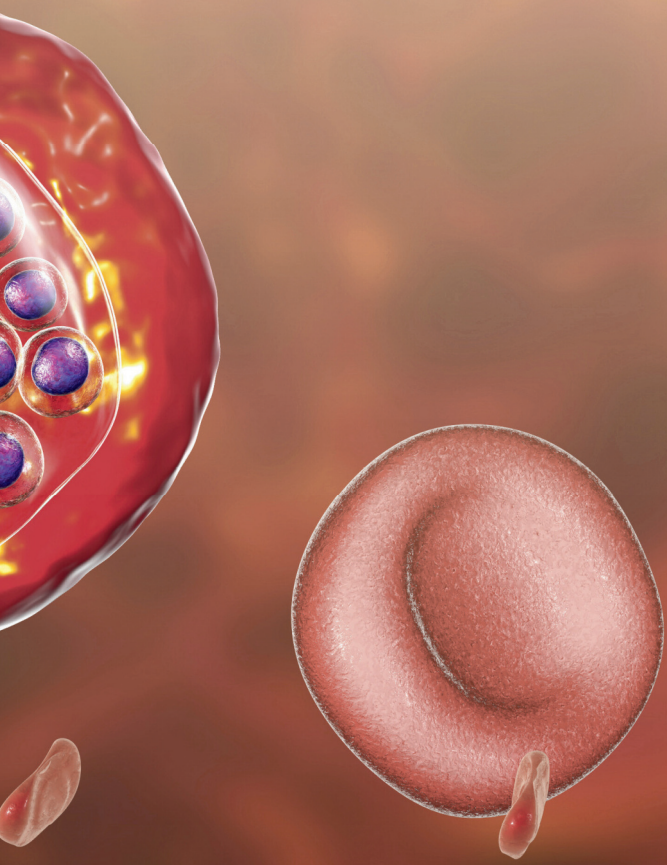

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AN OVERVIEW OF MYCOLOGICAL REFERRALS AT THE CLINIC OF DERMATOLOGY OF THE CLINICAL CENTER OF SERBIA

Snežana Minić

Clinic of Dermatology, Clinical Center of Serbia, Faculty of Medicine, University of Belgrade, Belgrade, Serbia
Email: drsnezanaminic@gmail.com

Introduction: Fungal skin, hair, and nail infections are superficial fungal infections caused by dermatophytes affecting the skin, nails, and hair. These infections are classified based on the infection depth, the causative fungi's origin, and their anatomical location. Superficial tinea infections, such as tinea corporis, tinea cruris, and tinea pedis, affect only the outer keratinized layers of the skin, nails, and hair. In contrast, deep tinea infections, like kerion (an inflammatory form of tinea capitis) and Majocchi's granuloma, penetrate deeper into the skin or hair follicles, causing more severe inflammation. Clinically, fungal infections present differently depending on their location. Tinea capitis affects the scalp and hair and is often seen in children, while tinea barbae involves the beard area in adult males. Tinea corporis manifests on the trunk and limbs as annular, scaly plaques with central clearing, and tinea cruris involves the groin, commonly seen as erythematous, pruritic lesions. Tinea pedis, the most common dermatophyte infection, affects the feet, particularly between the toes. Tinea unguium (onychomycosis) involves the nails, leading to thickening, discoloration, and eventual onycholysis. Diagnosis of tinea infections involves clinical examination, potassium hydroxide (KOH) preparation, fungal culture, and sometimes biopsy. Treatment of tinea infections depends on the location and severity. Topical antifungals like clotrimazole, miconazole, and terbinafine are first-line therapies for superficial infections, applied twice daily for 2-4 weeks. Systemic antifungals, such as terbinafine, itraconazole, or fluconazole, are reserved for extensive, recalcitrant cases or deep infections like tinea capitis and onychomycosis. Terbinafine is particularly effective for onychomycosis and tinea capitis, requiring 6-12 weeks of treatment. Adjunctive therapies, including antifungal shampoos (e.g., selenium sulfide or ketoconazole) for scalp infections and hygiene measures to prevent reinfection, are crucial for successful outcomes.

Methods: At the Clinic of Dermatology and Venereology, University Clinical Center of Serbia, from January to September 2024, 1926 patients were examined with suspected fungal infections of the skin, nails, or hair. After clinical examination, all patients underwent a native examination of skin scarification and a mycological culture.

Results: Of all referred patients, mycosis was found natively in 675, and the species

was isolated by culture in 283. The most common were patients with fungal nail infection, while tinea barbae was the rarest.

Conclusions: Prevention of recurrence involves maintaining good hygiene, keeping affected areas dry, and avoiding shared personal items. Education on proper use of antifungals and adherence to treatment regimens is essential, as incomplete treatment can lead to chronic infections or resistance. Fungal infections are common and often easily treatable, but misdiagnosis or inadequate treatment can lead to complications. General practitioners should be familiar with the clinical presentations, diagnostic methods, and treatment strategies to manage these infections and prevent recurrences effectively.

Keywords: mycosis, fungal infections, tinea infections, antifungal therapy

EVALUATION OF PREMENOPAUSAL WOMEN WITH HIRSUTISM

Boris Ilić

PMG Tuzla, Tuzla, Bosnia and Herzegovina
Email: ilicscud@gmail.com

Background: Hirsutism is a clinical diagnosis defined by the presence of excess terminal hair growth (dark, coarse hairs) in androgen-dependent areas (eg, upper lip, chin, midsternum, and lower abdomen, upper arms, upper and lower back, and inner thigh/buttocks) in which women typically have little or no hair. Although women with hirsutism typically present because of concerns regarding their excessive hair growth, most also have an underlying endocrine disorder that should be identified. Important clues to the severity of androgen excess and the presence of an underlying disorder can be obtained by the history, physical examination, and appropriate laboratory testing.

Review: The most important goals of the evaluation include: distinguish true hirsutism from other causes of bothersome hair growth, determine if the patient is taking any drugs that could cause excessive hair growth, identify the most serious causes of hirsutism, identify polycystic ovary syndrome, identify non classic congenital adrenal hyperplasia, identify other uncommon causes of hirsutism and determine the degree of emotional distress caused by the excess hair.

Keywords: hirsutisms, premenopausal women, evaluation

HYPOSENSITIZATION

Leila Muslibegović

Trondheim Hudlegesenter, Trondheim, Norway
Email: leilamostar@gmail.com

Background: The prevalence of allergies is increasing in modern societies. Traditional treatments, such as antihistamines and corticosteroids, alleviate symptoms for most patients. However, for those who do not achieve satisfactory control, desensitization (allergen immunotherapy) can be a viable option. This review explores available treatment options, administration methods, potential side effects, and the expected outcomes of hyposensitization.

Review topic: Allergen immunotherapy, also known as desensitization or hyposensitization, is a medical treatment for environmental allergies and asthma. It involves gradually exposing a patient to allergens over an extended period to modify the immune system's response and reduce allergic reactions.

Conclusion: Desensitization is an effective therapeutic option for patients who do not achieve adequate allergy control with conventional treatments.

Keywords: hyposensitization, allergen immunotherapy, desensitization, allergy

MANAGEMENT OF SEBORRHEIC DERMATITIS - OVERVIEW OF TREATMENT AND PREVENTION STRATEGIES

Nermin Šehić

PMG Tuzla, Tuzla, Bosnia and Herzegovina
Email: nermin.n.sehic@gmail.com

Objective: Seborrheic dermatitis is a chronic, relapsing inflammatory skin disorder affecting both infants and adults, with a peak incidence in the third and fourth decades. The objective of this review is to provide an overview of its pathogenesis, clinical presentation, and current management strategies, with a focus on evidence-based treatment options and long-term control measures.

Review: Seborrheic dermatitis primarily affects sebaceous gland-rich areas, presenting as erythematous plaques with greasy, yellowish scales on the scalp, face, and trunk. Although its exact pathogenesis remains unclear, it is linked to sebaceous gland activity, Malassezia yeast colonization, and an altered immune response. The condition is more prevalent in individuals with HIV and Parkinson's disease, often requiring more aggressive treatment. Management is centred on symptom control and relapse prevention. First-line treatments include topical antifungal agents such as ketoconazole and ciclopirox, which not only resolve acute flare-ups but also reduce recurrence with intermittent use. High-potency corticosteroid shampoos or lotions are effective for scalp involvement, while low-potency corticosteroid or antifungal creams are recommended for facial and truncal lesions. In refractory cases, systemic antifungals like oral itraconazole may be warranted. Preventive strategies involve regular use of medicated shampoos and emollients.

Conclusion: Seborrheic dermatitis requires individualized, long-term management to control symptoms and prevent relapse. A combination of antifungal and anti-inflammatory therapies remains the cornerstone of treatment, with emphasis on maintaining remission while minimizing corticosteroid-related side effects.

Keywords: seborrheic dermatitis, management

SPECIALTIES OF THE TREATMENT OF HYPERTENSION IN PATIENTS WITH PSORIASIS

Zoran Vrućinić

Center for Teledermatology, Banja Luka, Bosnia and Herzegovina
Email: teledermatologija@gmail.com

Background: Psoriasis is a chronic inflammatory disease that affects 1-2% of the adult general population. In addition to the cutaneous, there are also extracutaneous manifestations with comorbidities that significantly reduce the quality of life of patients. Metabolic syndrome and cardiovascular events are much more common in patients and represent additional risks for mortality. Although the etiopathogenetic connection between these conditions has not yet been clarified, it seems that they share common pathophysiological pathways in the form of similar inflammatory mediators that trigger diseases. Considering the increased prevalence of cardiovascular comorbidities in patients, psoriasis should be approached as a multisystemic disease.

Review: An extensive search of publications in the Pub Med databases was carried out, The Cohrane Registry and the US National Library of Medicine National Institutes of Health for the period 2014/01/01 - 2025/01/01 in order to evaluate the modality of published works. An initial search was then carried out for keywords: use of antihypertensive drugs and psoriasis, antihypertensive side effects. Antihypertensive drugs are often associated with the onset or worsening of psoriasis. It is important to recognize this connection at the very beginning, considering that it is a skin side effect that significantly affects the quality of life, represents a great psychological burden and stigmatization for the patient, and has a significant impact on patient-doctor compliance. There was no significant difference between ACE inhibitors, BB (beta blockers), calcium antagonists (CCB) ARBs (angiotensin II receptor antagonists) and diuretics in terms of comparative risk of psoriasis. Therefore, a rational approach to antihypertensive therapy of patients with psoriasis is needed. It is important to emphasize the importance of a proper hygienic-dietary lifestyle and nutrition regimen, both for psoriasis and for metabolic syndrome, hypertension and cardiovascular diseases in general, in terms of smoking cessation, BMI reduction, healthy sleep and sufficient physical activity, with the aim of rational use of medications and reducing the rate of polypharmacy and ensuring the safest possible level of pharmacovigilance.

Conclusion: This review article confirmed the association between antihypertensive drugs and psoriasis; ACE inhibitors, BBs, ARBs, CCBs and thiazide diuretics increase the risk of psoriasis. There was no significant difference between ACE

inhibitors, BBs, ARBs, CCBs and diuretics in terms of comparative risk of psoriasis. Careful monitoring of skin side effects during the use of antihypertensive drugs is recommended, with a special focus on the possible incidence of psoriasis.

Keywords: antihypertensives, adverse drug reactions, psoriasis

TOPIC REVIEW: DIAGNOSING AND TREATING MYCOSIS FUNGOIDES IN PEDIATRICS: WHAT ARE THE GUIDELINES?

Amra Osmančević[1,2]

[1]Department of Dermatology and Venereology, Institute of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg,Gothenburg, Sweden
[2]Region Västra Götaland, Sahlgrenska University Hospital, Department of Dermatology and Venereology, Gothenburg, Sweden
Email: amra.osmancevic@vgregion.se

Purpose: To present the proposal for the first and the latest guidelines regarding diagnostic approaches, staging recommendations, and treatment choices in pediatric patients with mycosis fungoides (MF). There is a lack of guidelines on pediatric MF, and these recommendations have been developed on behalf of the three international societies ISCL, EORTC, and USCLC. These guidelines, proposed by the expert group, are based on literature research and expert consensus methods. The literature regarding MF in the pediatric population is scarce, and the existing data comprises retrospective studies, case reports, and case series studies. A modified Delphi process was conducted using questionnaires covering topics such as the definition, characteristics, staging, and treatment modalities for pediatric MF. Most children suffering from MF have an indolent disease, classified as stadium I- IIA. Hypopigmented and folliculotropic MF are the most common clinical types in the pediatric population. The aggressive type of MF is seldom seen in children. Diagnostic tools include clinical presentation, histopathology with immunophenotyping, and molecular biology. Ultrasound diagnosis is recommended when screening for lymph node involvement in the indolent phase of the disease, as palpable lymph nodes are common in children due to the increased incidence of infectious diseases. Therapeutic recommendations are adjusted to the stage of the disease. The upcoming guidelines, which are expected to be published in 2025, are an important tool to guide dermatologists when facing pediatric MF. These guidelines reassure dermatologists that most pediatric patients with MF have an indolent disease and a good prognosis.

Keywords: mycosis fungoides (MF), pediatric, diagnostics, treatments

ACUTE LIVER FAILURE IN AUTOIMMUNE LIVER DISEASE

Dženana Hodžić-Salčin[1], Mirza Prijić[1], Aida Brzika[2], Amra Puhalović[1,4], Amila Mehmedović[1,3]

[1]Gastroenterohepatology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]General Hospital Travnik, Travnik, Bosnia and Herzegovina
[3]Faculty of Health Studies, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[4]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Objective: Acute liver failure is a life-threatening condition characterized by hyperbilirubinaemia, elevated liver enzymes, hyperammonemia, and abnormal coagulation. It leads to severe liver dysfunction, multiorgan failure, and death. It manifests with jaundice, nausea, abdominal pain and encephalopathy.

Review topic: Patient with hyperbilirubinaemia was hospitalized at the Hematology Clinic, Clinical Centre University of Sarajevo, where hemolytic anemia was ruled out as the cause of the increase in bilirubin, and the patient was transferred to the Gastroenterohepatology Clinic for further diagnostic plan in terms of autoimmune liver diseases. The patient was icteric, in poor general condition, and afebrile. The input value of bilirubin was 803 umol/L and maximum value reaches 1016 umol/L, at the expense of direct bilirubin. Laboratory findings show high values of liver transaminases (AST 394, ALT 277, GGT 250), prolonged INR and APTT , while the ammonia value is within normal limits. Hepatitis markers antiHBs and antiHBc were positive and further microbiological and immunological tests were done. ASMA antibodies for autoimmune hepatitis were positive. Ultrasound showed chronic cholecystitis. MRCP did not show dilated bile ducts.

In cooperation with the Clinic for hemodialysis, hemoperfusion with bilirubin filters was done, according to protocol. Corticosteroid therapy was included (Solumedrol). The patient's condition began to improve. Laboratory findings showed a significant decrease in bilirubin to a total of 71 umol/L before discharge from our Clinic for continued treatment. Biopsy of the liver was planned.

Conclusion: Hemoperfusion with bilirubin filters is good support therapy in patients with autoimmune liver diseases and increased bilirubin levels.

Keywords: liver failure, autoimmune hepatitis, hemoperfusion

HEPATOCELLULAR CARCINOMA AND CHRONIC VIRAL HEPATITIS - MULTICENTRIC VIEW

Amila Mehmedović[1], Goran Bokan[2], Ivana Đuković-Savović[3]

[1]Gastroenterohepatology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Internal Medicine Clinic, Department of Gastroenterology and Hepatology, University Clinical Centre of the Republic of Srpska, Bosnia and Herzegovina
[3]Clinic for Infectious Diseases, Medical Center of Montenegro, Montenegro

Objective: Hepatocellular carcinoma (HCC) is a leading cause of cancer-related mortality globally, predominantly associated with chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) infections. These infections drive persistent liver inflammation, culminating in cellular dysregulation, fibrosis, and cancer. Despite advancements in targeted therapies, drug resistance and the lack of reliable biomarkers for patient stratification still terribly hinders the treatment of viral HCC.

Review topic: On a sample of 65 patients, taken from three clinical centers Sarajevo, Banja Luka and Podgorica, the results were obtained: Among patients with HCC, 10-15% were infected with HCV, 25%–35% are infectedwith HBV, less than 5% are infected with both viruses, and 30%–40% are infected with neither virus. Among patients with HCV or HBV -or HBV-related cirrhosis, low numbers of platelets or increased levels of AFP were risk factors for HCC. Once HCV-related cirrhosis is established, HCC develops at an annual rate of 1%–4%. The incidence of cirrhosis (and consequently HCC) 25–30 years after HCV infection ranges from 15% to 35%. Risk factors for HCC include comorbidities (co-infection with HBV or HIV, diabetes, obesity, steatosis), viral genotype (HCV 1b), level of alcohol consumption and age.

Keywords: HCC, viral hepatitis, risk factors

RADIOLOGICAL PERSPECTIVES IN LIVER TRANSPLANTATION: ENHANCING PREOPERATIVE AND POSTOPERATIVE MANAGEMENT

Lejla Prnjavorac, Vesna Sarajlić

Radiology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Objective: The objective of this review is to shed light on the role of radiologists in liver transplantation, focusing on imaging techniques for preoperative assessment, post-transplant monitoring, and complication management to optimize patient outcomes.

Review topic: Liver transplantation is a life-saving procedure for patients with end-stage liver disease or acute liver failure. As a critical component of the multidisciplinary management of liver transplantation, radiologists play an essential role in the preoperative, intraoperative, and postoperative care of these patients. This review focuses on the radiologist's perspective of liver transplantation, with anemphasis on imaging techniques and their contribution to patient management. Preoperatively, radiologists are integral in assessing liver pathology, staging tumors, evaluating liver vasculature, and identifying potential donor grafts through modalities such as ultrasound, CT,MRI and MRCP. These imaging tools help in the selection of suitable candidates for transplantation and in planning the surgical approach. During the post-transplant phase, imaging plays a key role in monitoring graft function, detecting complications such as rejection, infection, biliary complications, and vascular abnormalities, and guiding therapeutic interventions. Advanced imaging technologies, particularly contrast-enhanced MRI and CT provide valuable insights into the early identification of complications and post-transplant outcomes.

Conclusion: The collaboration between transplant surgeons, hepatologists, and radiologists is crucial for optimal patient outcomes, and an in-depth understanding of radiological principles is fundamental for improving diagnostic accuracy and therapeutic strategies.

Keywords: liver transplantation, abdominal imaging, preoperative assessment

OUTCOME OF MULTISTAGE POSTBARIATRIC SURGERY: A SERIES OF 116 PROCEDURES IN 75 CASES

Mufid Burgić[1], Khalid Al Hammdany[1], Adi Rifatbegović[2], Musfaha Burgić[2]

[1]Al Shamal Medical Center, Department of Plastic Surgery, Doha, Qatar
[2]Clinic of Plastic and Maxillofacial Surgery, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
Email: mburgicmd@gmail.com

Background: With the increased popularity of bariatric surgery, the demand for multistage and/or combined body-contouring procedures is growing and resulting in single recovery period, and high patient satisfaction. The purpose of this study was to show our experience and determine the safety, complication rates and effectiveness in multi-staged operations.

Patients and methods: A total of 75 massive weight loss patients (61 women and 14 men) underwent multistage body contouring surgery between 2018 and 2024. The procedures included: abdominoplasty, lower trunk lifting with or without gluteal auto augmentation +/- fat grafting, upper trunk lifting, brachioplasty, mastopexy, gynecomastia correction, thigh lifting and liposuction. Data on variables, such as sex, age, preoperative body mass index (BMI), postoperative complications (both major and minor) and the aesthetic satisfaction were evaluated.

Results: The study included 75 patients who underwent 116 body-contouring procedures. The median age was 32 years (range 17-58). The mean preoperative weight reduction was 27-64 kg (average 47.5 kg). Majority of included patients were women (81.33%). Most patients had an abdominoplasty (33.06%) or breast mastopexy (17.2%). The most common complication was wound dehiscence and happened in 7 patients (9.3%). Further, seroma occurred in 6 patients (8%), wound infection in 4 patients (5.3%) and hematoma in 2 patients (2.6 %) which required operative management. There were no cases of deep venous thrombosis and pulmonary thromboembolisms. Patients' satisfaction about overall aesthetic was high (65%).

Conclusions: The key to achieving successful patient outcomes after massive weight loss is careful evaluation and selection of proper candidates for surgery. Multistage postbariatric operations are very effective and safe.

Keywords: multi-stage surgery, body contouring, complications, outcome, risk factors

CHOOSING THE BEST SUBSTITUTE FOR DURAL REPAIR FOLLOWING AN OSTEOPLASTIC CRANIOTOMY

Bruno Splavski[1,2], Boris Božić[2]

[1]Department of Neurosurgery, Dubrovnik General Hospital, Dubrovnik, Croatia
[2]Faculty of Applied Health Sciences, University of Zagreb, Zagreb, Croatia
Email: splavuno@gmail.com

Objective: The importance of selecting optimal substitutes for dural repair after various cranial surgeries is emphasized to minimize the risk of postoperative iatrogenic amyloid transmission.

Review topic: Repairing dural defects following an osteoplastic craniotomy for various endocranial pathologies is a challenging task. The primary goal is to achieve a watertight dural closure that promotes tissue regeneration and minimizes postoperative complications. Selecting suitable dural substitutes is essential to prevent iatrogenic amyloid intracranial transmission associated with cadaveric dural allografts. Such an angiopathy is a rare subtype of cerebral amyloid angiopathy mainly associated with neurosurgical procedures involving cadaveric dural transplants, which typically manifests after a latency of three to four decades, presenting with symptoms such as intracerebral hemorrhage and/or seizures. Therefore, neurosurgeons have to remain cautious about the possibility of intracranial iatrogenic amyloid transmission risks if using cadaveric allografts or prion-like contaminated instruments.

Conclusion: To prevent intracranial amyloid transmission, dural substitutes should imitate the natural dura structure and incorporate safety precautions. Revisiting dural graft selection standards and prioritizing safer, biocompatible materials, such as organic and synthetic polymers, as well as biodegradable composite integrative substitutes, should be an urgent priority in the neurosurgical community.

Keywords: dural substitutes, amyloid transmission, cerebral amyloid angiopathy, iatrogenic, cadaveric allografts

CRANIAL NERVE REPAIR - TURNING DREAMS INTO REALITY

Ibrahim Omerhodžić

Department of Neurosurgery, Clinical Center University of Sarajevo and Faculty of Medicine University of Sarajevo, Bosnia and Herzegovina
Email: ibrahim.omerhodzic@mf.unsa.ba

Objective: Cranial nerve (CN) injuries - whether traumatic (e.g., due to skull base fractures), tumor-related (e.g., CN VIII schwannoma), or even iatrogenic (resulting from surgical procedures) - lead to significant patient morbidity, causing functional and psychosocial impairments. One of the most common and pronounced iatrogenic injuries is facial nerve damage, often occurring during skull base surgeries, particularly in the resection of large cerebellopontine angle tumors. This can result in various complications, including corneal damage due to incomplete eyelid closure and subsequent drying, leading to visual disturbances. Additionally, it may cause impaired fluid swallowing, nasal airway dysfunction, oral dysfunction (affecting speech and mastication), and psychological distress due to facial muscle paralysis. Optimizing CN injury treatment requires thorough consideration of patient prognosis, detailed history-taking, physical examination, and understanding patient expectations. The neurosurgeon must carefully weigh the risks and benefits of highly complex microsurgical repair procedures.

Patients and methods: This study primarily focuses on iatrogenic cranial nerve injuries and presents our current treatment and rehabilitation approaches. We report a series of nine patients who underwent cranial nerve repair, reconnection, or transplantation over five years (2020–2025). Surgeries included:

- three olfactory nerve repairs

- two trigeminal nerve repairs

- four facial nerve repairs

A key highlight of our work is the facial nerve transplantation in a case of facial nerve glioma. Following histopathological confirmation, we performed reoperation with complete nerve transection and grafting using an intercostal (Th VII) nerve graft. Additionally, we present the fibrin glue reconnection technique for trigeminal nerve repair.

Results: seven patients showed good recovery: one patient had minimal recovery (thoracic nerve graft after CN VII glioma resection, 6-month follow-up); one patient (olfactory meningioma, right CN I) showed no improvement post-repair.

Conclusion: In cases of morphologically damaged cranial nerves, the neurosurgeon must carefully evaluate: The extent of functional impairment, patient expectations, and the neurosurgical team's capacity to provide effective intervention. Mastery of microsurgical nerve repair techniques and in-depth anatomical knowledge are critical for

successful outcomes. With meticulous preoperative planning and precise surgical execution, cranial nerve repair is achievable - transforming both patient and surgeon aspirations into reality.

Keywords: cranial nerves, nerve injury, nerve repair, nerve grafting, facial nerve

NEUTROPHIL-LYMPHOCYTE RATIO AS A PROGNOSTIC INDICATOR FOR RECURRENCE OF LUMBAR SPINE DISC HERNIATION AFTER SURGERY

Bekir Rovčanin, Faruk Osmankadić, Amer Milaimi, Elmedina Đono, Almir Džurlić, Haso Sefo, Ibrahim Omerhodžić

Department of Neurosurgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: bekir_rovcanin@hotmail.com

Description: The Neutrophil-Lymphocyte Ratio (NLR), a simple and cost-effective biomarker derived from routine complete blood counts, has garnered attention in recent years for its potential role in various clinical settings, including spinal surgery. Elevated baseline NLR is associated with reduced overall survival and poorer functional recovery, while showing no significant correlation with mortality or disease-free survival. Additionally, elevated NLR levels measured postoperatively were linked to increased complications, underscoring NLR's potential as an objective tool for enhancing patient selection and shared decision-making in spinal surgical interventions. In our study, we retrospectively investigated baseline NLR as a predictor of lumbar disc recurrence following surgery, as well as its impact on radiological findings related to spinal degeneration.

Keywords: lumbar spine, disc herniation, NLR, recurrence

QEVO® ASSISTED ANATOMICAL INSPECTION OF THE UPPER FOURTH VENTRICLE – TECHNICAL INSIGHT IN TELOVELAR APPROACH

Adi Ahmetspahić[1,2], Elma Suljagić -Ljubović[1], Faruk Alagić[1], Elmedina Đono[1]

[1]Department of Neurosurgery, Clinical Center University of Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, School of Science and Technology, Sarajevo, Bosnia and Herzegovina
Email: adi.ahmetspahic@ssst.edu.ba

Background: 1 - 5% of all intracranial lesions are fourth ventricle tumors. The classic approach includes medial suboccipital craniotomy followed by transvermian or telovelar approach. While the transvermian approach itself correlates with cerebellar mutism, telovelar approach carries disadvantages regarding the maximum superior extension which might impact the radicality of resection. Although rigid endoscopes have been standardized in microsurgical assistance, they might have limitations regarding the need to install full endoscopic equipment during the operative procedure, especially in limited resources. As an alternative option, a microscope-integrated tool QEVO® (Carl Zeiss, Oberkochen TM) could be used purely in microsurgical assistance. Even introduced in neurosurgical practice in 2017, there is a lack of reports on its usefulness in fourth ventricle tumors.

Methods: Study period implies January 2024 – Feburary 2025. Inclusion criteria was utilization of QEVO® device during resection of the fourth ventricle tumors with upper extension. Technical details were presented through edited HD video description. Postoperative outcome was assessed by the patients' Karnofsky Performance Scale (KPS).

Results: One adult and one pediatric case matched inclusion criteria. There were no intraoperative nor postoperative complications related to the usage of the device. Pathohistological findings showed Pilocytic astrocytoma in pediatric and Ependimoma in an adult case. The intraoperative course was uneventful with no endoscopic signs of residual tumor.

Conclusion: QEVO® provides superior upper fourth ventricle anatomical exposure during tumor resection. It certainly extends approach possibilities by providing clear visualization of microscopic hidden structures in selected cases. To determine the device's influence in radicality of resection larger series is needed. Conflict of interest: Nothing to report. Disclosure: No financial or commercial interest of the study.

Keywords: endoscopic assistance, microsurgical tumor resection, fourth ventricle

RADIAL NERVE INJURIES AFTER HUMERAL SHAFT FRACTURE

Mirsad Hodžić[1], Adnan Čičkušić[1], Nedim Smajić[2]

[1]Department of Neurosurgery, University Clinical Center Tuzla, Bosnia and Herzegovina
[2]Department of Ortopedic Surgery, University Clinical Center Tuzla, Bosnia and Herzegovina

Introduction: The anatomic position of the radial nerve which turns around the distal portion of the humeral shaft in contact with the bone is the reason for its high incidence of injury during the fracture. Wrist drop, or the inability to extend the hand, is the most common presentation. Palsy regresses spontaneously, but in a certain cases surgery may be required to achieve neurological recovery. Surgical exploration and fracture repair has a good radial nerve recovery. The aim of this study was to present our experiance in treatment of radial nerve injuries in humeral shaft fracture.

Methods: We conducted a retrospective study of twenty cases of radial nerve injury after humeral fracture treated surgically. Neurological status, electromyoneurography, time of treatment, surgical approach, type of radial nerve surgery and clinical improvement were recorded. The primary outcome was incidence of a traumatic nerve palsy, and the secondary outcome was nerve recovery. Surgical intervention was indicated if functional recovery of the radial nerve was not present after three months expectant management.

Results: The study included 20 patients out of 166 humeral shaft fractures operated on in the period of ten years. The largest number of fractures were stabilized initialy by open reduction (83%). The fractures were located in mid third of the shaft in eleven cases (55 %) and distal third in nine (45%). Primary nerve injury occurred in 15 (75%) patients, while secondary (iatrogenic) nerve injury occurred in 5 (25%) patients. Out of all studied patients, 15 (75%) acquired complete nerve palsy, while 5 (25%) acquired incomplete nerve palsy.

Conclusion: In a shaft humeral fracture, radial nerve lesion symptoms may be seen and resolve spontaneously in most of the cases. If neurological symptoms do not improve, electromyoneurography should be performed to determine the degree of damage. Surgical intervention was indicated if functional recovery was not present after thee months expectant management.

Keywords: radial nerve injuries; humeral shaft fracture; surgical treatment

SPINAL INFECTION: CONSERVATIVE VS SURGICAL TREATMENT: EXPERIENCE FROM THE CANTONAL HOSPITAL ZENICA

Anes Mašović, Fahrudin Alić, Nadija Ekinović

UNUBIH, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: anes_masovic@yahoo.com

Background: Spinal infection are challenging clinical conditions that require timely diagnosis and appropriate treatment to prevent serious complications. This study presents the experience of the Cantonal Hospital Zenica in menaging spinal infections, with the focus on the choice between conservative and surgical treatment approaches.

Review: Patients treated at the hospital presented with a range of symptoms, most commonly severe back pain, fever and neurogical deficits. Diagnosis was primarily established through MRI, blood tests and microbiological analyses. Conservative treatment, consisting of targeted antibiotic therapy and supporative care, was applied in patients without neurogical deficit or spinal instability. Surgical intervention was reserved for cases with neurogical deterioration or failure of conservative management. Surgical procedures included debridement and abscess drainage.

Conclusion: The experience from the Cantonal Hospital Zenica highlights importance of an individualized approach to spinal infection between conservative and surgical treatment depends on the severity of the infection , the presence of neurogical symptoms, and the patient s overall condition.

Keywords: spinal infection, neurogical deficit, surgical treatment

TRANSFORMATION IN SILENCE – THE EVOLUTION OF NEUROSURGICAL PRACTICE AT THE "VASO ĆUKOVIĆ" SPECIAL HOSPITAL IN RISAN

Veselin Popović

„Vaso Ćuković" Special Hospital in Risan, Risan, Montenegro
Email: vpop80@gmail.com

Description: This paper provides an overview of achievements in the field of neurosurgery at the "Vaso Ćuković" Hospital in Risan. The hospital, a legacy of Risan's benefactor Vaso Ćuković, has made significant strides in neurosurgery. Despite facing numerous challenges, the hospital successfully meets patient needs while continually enhancing its neurosurgical capacities. Following a brief introduction that includes historical facts about the hospital and highlights key figures in neurosurgery, the paper outlines the facility's capacities and offers a chronological review of its achievements.Thanks to the dedication of its medical staff, the number of surgeries has been consistently rising. Between 2020 and 2024, a total of 1,630 surgeries were performed, including 387 brain tumor procedures. In the same period, 919 spinal surgeries were carried out—though it is worth noting that no spinal instrumentation surgeries took place during the COVID-19 period.

Review: The paper lists standard surgical procedures employed at the hospital and includes illustrative case examples.

Conclusion: the Risan Hospital demonstrates outstanding competence, commitment, and innovation, largely due to its exceptional collaboration with the Neurosurgery Clinic in Belgrade and the Military Medical Academy (VMA) in Belgrade.

Keywords: neurosurgery development, history

BRIEF REVIEW OF 3D ECHOCARDIOGRAPHY

Austin Robinson

Scripps Clinic, San Diego, California, USA
Email: robinson.austin@scrippshealth.org

Objective: Cardiac surgery and cardiology care are increasingly dependent on advanced visualisation for diagnosis, prognosis and procedural guidance.

Review topic: This abstract/oral presentation will address some emerging uses of advanced cardiac imaging, including: 3D echocardiography for the assessment of left ventricular/right ventricular volumes and function 3D echocardiography for the assessment of valve structure and function, with a focus on transoesophageal assessment of the mitral valve Cardiac MRI for the assessment of cardiomyopathies and ventricular arrhythmia risk stratification Coronary CT angiography for the assessment of coronary artery stenosis and atherosclerotic burden.

Conclusion: Attention will be paid to the specific application of these modalities within Bosnia and Herzegovina, including partnerships with radiology and software limitations.

Keywords: cardiac imaging 3D echocardiography, cardiac magnetic resonance imaging, coronary artery computed tomography

CASE OF SURGICAL REMOVAL GLOMUS CAROTICUM TUMOR IN 39-YEAR OLD FEMALE

Tarik Selimović[1], Muhamed Djedović[1,2], Tarik Mašić[1,2], Damir Kurtagić[1], Lejla Divović-Mustafić[1,3], Edin Kabil[1,2], Kenana Aganović[1,3], Amel Hadžimehmedagić[1,2], Amar Milaimi[1]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Faculty of Dentistry, International Burch University, Sarajevo, Bosnia and Herzegovina
Email: tarikselimov@gmail.com

Objective: Glomus caroticum tumor, also known as carotid body paraganglioma, is a rare, slow-growing, hypervascular tumor arising from chemoreceptor cells at the carotid bifurcation. Although typically benign, these tumors can be locally invasive and pose significant surgical challenges due to their close proximity to vital neurovascular structures. While preoperative embolization is often used to reduce intraoperative bleeding, some cases are managed successfully without embolization.

Review topic: We report the case of a 39-year- old female who presented with a progressively enlarging, painless right-sided neck mass. Imaging studies, including Doppler ultrasonography and contrast-enhanced CT, confirmed the presence of a hypervascular mass at the carotid bifurcation, consistent with a glomus caroticum tumor. Due to patient-related factors and surgical team preference, the tumor was excised without preoperative embolization. Careful dissection allowed for complete tumor removal while preserving the integrity of the carotid arteries and adjacent cranial nerves. Intraoperative blood loss was controlled using meticulous hemostatic techniques. The postoperative course was uneventful, and histopathological analysis confirmed the diagnosis of a benign paraganglioma. This case demonstrates that glomus caroticum tumors can be successfully managed without embolization when a meticulous surgical approach is employed. While embolization can reduce intraoperative bleeding, its omission does not preclude safe and effective resection, especially in cases where the risks of embolization outweigh its benefits. Careful preoperative planning, intraoperative vigilance, and expertise in vascular surgery are essential to achieving favorable outcomes.

Conclusion: Although embolization is a valuable adjunct in the management of carotid body tumors, selected cases can be managed successfully without it. This case highlights the feasibility of direct surgical resection with careful intraoperative hemostasis and neurovascular preservation, emphasizing the importance of individualized treatment planning.

Keywords: glomus caroticum tumor, carotid body paraganglioma, surgical resection, hypervascular tumor, non-embolized approach

SURGICAL MANAGEMENT OF ABDOMINAL AORTIC ANEURYSM IN AN OBESE PATIENT ON OZEMPIC THERAPY: CASE REPORT

Muhamed Djedović[1,2], Alma Krvavac-Hafizović[1], Alma Krajnović[1], Vedad Dedić[1], Samed Djedović[3]

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Medical Institute Bayer, Tuzla, Bosnia and Herzegovina
Email: djedovicm5@gmail.com

Objective: Abdominal aortic aneurysm (AAA) is a life-threatening condition often requiring surgery, particularly in patients with extreme obesity and comorbidities.

Review topic: This case report describes a 54-year-old male with a 105 mm AAA, severe obesity (>160 kg), type 2 diabetes, and a history of two myocardial infarctions. The patient had experienced a 20 kg weight loss over two months due to Ozempic (semaglutide) therapy, along with gastrointestinal issues like constipation and slow digestion. Preoperative imaging revealed significant aortic dilation and vascular abnormalities. Cardiac assessment and laboratory tests, including low globulin levels, were also performed. Surgical Intervention: After comprehensive preoperative evaluation, the patient underwent complex surgery, including AAA resection, aorto- bilateral iliac artery reconstruction with a Dacron graft, (left anastomosis on the AIE, right anastomosis on AIC right before bifurcation) and suturing of the left internal iliac artery. Postoperatively, the patient developed respiratory failure, requiring mechanical ventilation, slow peristalsis and acute renal complications, necessitating hemodialysis. Postoperative Course: By postoperative day five, the patient showed significant improvement, with restored peristalsis, enhanced consciousness, and stabilization of respiratory and renal functions. He was successfully weaned from mechanical ventilation and transferred to the local hospital on postoperative day nine, hemodynamically stable and afebrile.

Conclusion: This case underscores the complexities of managing AAA in high-risk patients, particularly those with obesity and gastrointestinal side effects from medications like Ozempic. Despite these challenges, the patient recovered, highlighting the potential for positive outcomes in high-risk surgeries.

Keywords: abdominal aortic aneurysm, surgical treatment, ozempic

CASE SERIES OF MYXOMA DETECTION IN THE HEART WITHIN A ONE-MONTH PERIOD IN OUR CENTER

Tarik Selimović[1], Muhamed Djedović[1,2], Lejla Divović-Mustafić[1,3], Behija Berberović-Hukeljić[1,4], Zina Lazović[1], Damir Kurtagić[1], Armin Šljivo[1], Nermir Granov[1,2] Amar Milaimi[1]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Sarajevo School of Science and Technology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[4]Faculty of Dentistry, International Burch University, Sarajevo, Bosnia and Herzegovina
Email: tarikselimov@gmail.com

Objective: To present a case series of cardiac myxomas diagnosed within a one-month period in our center, emphasizing clinical presentation, diagnostic methods, and surgical outcomes.

Review topic: Cardiac myxomas are the most common primary heart tumors, often manifesting with non-specific symptoms such as dyspnea, embolic events, or constitutional signs. Early diagnosis through echocardiography is crucial to prevent complications like stroke or cardiac obstruction. In this series, we analyze multiple cases diagnosed within a short timeframe, highlighting the importance of early detection and surgical intervention.

Conclusion: Prompt recognition and surgical excision of cardiac myxomas are essential to prevent life-threatening complications. Increased clinical awareness and routine echocardiographic screening may improve early detection rates and patient outcomes.

Keywords: cardiac myxoma, primary heart tumor, echocardiography, embolism, surgical excision.

ENDOSCOPIC HARVESTING OF THE LIMA GRAFT FOR MIDCAB OPERATIONS

Emir Mujanović[1,2], Nermin Mušanović[1], Mirza Jahić[1], Suad Keranović[1], Samed Djedović[1], Elmir Jahić[1,2]

[1]Medical Institute Bayer, Tuzla, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Tuzla, Tuzla, Bosnia and Herzegovina
Email: emir.mujanovic@mib.institute

Objective: The technique of left internal mammary artery (LIMA) harvesting for minimally invasive coronary artery bypass grafting (MIDCAB) can vary according to the revascularization approach utilized.

Review topic: Initially, the LIMA was dissected under direct vision through a left thoracotomy, while later the same was obtained through a fully endoscopic approach, with each technique being associated with potential advantages and disadvantages. LIMA dissection under direct vision, although by far the most commonly used method, can be problematic when dealing with the proximal portion of the graft, and is also potentially associated with "steal syndrome" due to inadequate division of proximal side branches.The endoscopic approach allows for harvesting the LIMA graft over its full length, especially at the proximal level, but has an unavoidable long learning curve. An additional benefit is related to reduction of postoperative pain due to less degree of ribs lifting and traction, when compared to the direct vision approach.

Conclusion: In this paper, the authors present their initial experience with endoscopic dissection of the LIMA graft for MIDCAB operations.

Keywords: LIMA, endoscopic approach, MIDCAB operations

ENDOVASCULAR THERAPY OF COMPLEX AORTIC PATHOLOGY: ADVANCES IN FENESTRATED AND BRANCHED PROSTHESES AND SURGEON-MODIFIED PROSTHESES WITH 3D PRINTING TECHNIQUES

Amir Arnautović

Clinic of Vascular and Endovascular Surgery, University Hospital Düsseldorf, Düsseldorf, Germany
Email: amir.arnautovic@med.uni-duesseldorf.de

Objective: Endovascular therapy has increasingly become the preferred approach in managing complex aortic pathologies, particularly for patients with intricate anatomical challenges.

Review topic: At the Department of Vascular and Endovascular Surgery at University Hospital Düsseldorf, we have gained significant experience in treating aortic arch pathologies through the use of fenestrated and branched prostheses, alongside already established methods such as the placement of carotid-subclavian bypasses or debranching of the supra-aortic branches to create a landing zone for the standard tube endoprosthesis. These approaches have proven to be highly effective for patients with specific needs, such as the involvement of vital aortic branches, including the brachiocephalic trunk, left common carotid, and left subclavian artery. Endovascular therapy of the reno-visceral aortic segment has already become the method of choice for treating thoraco-abdominal aortic aneurysms in Germany. In addition to these standard endovascular approaches, we have integrated advanced surgical techniques utilizing 3D printing to modify prostheses for a better anatomical fit, particularly in urgent symptomatic aortic aneurysms. Surgeon-modified prostheses allow for a more personalized approach, improving outcomes by adapting the grafts to the individual patient's vascular morphology. Our results demonstrate the feasibility and safety of these methods, which are revolutionizing the field of endovascular therapy for acute complex aortic pathologies

Conclusion: The advancements in fenestrated, branched, and surgeon-modified prostheses, including 3D printing techniques, enhance the effectiveness and personalization of endovascular therapy for complex aortic pathologies. These innovations improve patient outcomes and expand treatment options, particularly for acute and anatomically challenging cases.

Keywords: endovascular therapy, aortic pathology, fenestrated prostheses, branched prostheses, modified prostheses, 3D printing

PEAK WALL STRESS IN ABDOMINAL AORTIC ANEURYSMS: A SUPERIOR PREDICTOR OF RUPTURE RISK?

Haris Vukas[1,2], Muhamed Djedović[1,3], Ruvejda Dizdarević[2], Farah Dedović[2]

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina
[3]Medical Faculty, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: haris.vks77@gmail.com

Objective: The purpose of this topic review is to investigate the possible benefit of peak wall stress (PWS) over aneurysm diameter to determine the risk of rupture for abdominal aortic aneurysms (AAAs).

Review topic: Given that PWS can take into consideration the intricate geometry and mechanical behavior of aneurysm walls, it could be utilized as a more accurate predictor of rupture risk. One important technique for determining PWS is finite element analysis (FEA), which simulates the distribution of stress across the aneurysm wall. According to studies, even in individuals with comparable aneurysm sizes, PWS is noticeably higher in acute AAAs than in elective instances. Furthermore, studies show that FEA-derived PWS measurements exhibit respectable dependability among several operators, consistent with published intraclass correlation coefficients. Regardless of these benefits, PWS evaluation comes with difficulties, including blood pressure fluctuations, estimating limitations for wall thickness, and the unpredictable impact of intraluminal thrombus. Additionally, PWS results may change as a result of aneurysm decompression after rupture, making risk assessment more difficult. To increase prediction accuracy and clinical relevance, continued efforts are being made to incorporate personalized wall strength data and improve automated analytic approaches.

Conclusion: PWS shows potential as a better predictor of AAA rupture risk. By offering patient-specific risk assessment, PWS may enhance decision-making in AAA management, while more research is required to develop its clinical applicability further.

Keywords: abdominal aortic aneurysm (AAA), peak wall stress (PWS), rupture risk, biomechanics, vascular mechanics, aneurysm rupture, finite element analysis, aortic wall integrity, risk prediction models

STANFORD A DISSECTION AS AN EFFECT OF LONG-TERM NON-CONTROLLED HYPERTENSION IN A YOUNG FEMALE PATIENT

Lejla Divović-Mustafić[1,2], Muhamed Djedović[1,3], Nermir Granov[1,3], Tarik Selimović[1], Nada Malešić[1], Behija Berberović-Hukeljić[1,4]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Dentistry International Burch University, Sarajevo, Bosnia and Herzegovina
[3]Faculty of Medicine University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[4]Sarajevo School of Science and Technology, Medical School, Sarajevo, Bosnia and Herzegovina
Email: lejla.divovic@mail.com

Background: We present a case of a 21-year-old female patient hospitalized at Clinic for cardiovascular surgery, KCUS, after CT diagnosed Stanford A dissection, due to uncontrolled hypertension. As she was pregnant, abdominal ultrasound, which was performed, found a fetus mortus in utero, as a result of dissection.

Aim: The Aim of this review was to show how uncontrolled hypertension, which the patient has had since 2017. due membranoproliferative glomerulonephritis typ 2 (pH verified) have had consequences.

Materials and methods: All started with weakness, dizziness, urge to defecate and to vomit after a physical activity. As we already knew the diagnosis, a heart ultrasound is performed, which records the existence of a dissection flap with AR 1-2+ with pericardial effusion up to 21 mm. First, a caesarean section operation is performed. Then cardiac surgery is performed: reparation aortae asc. cum teflon

Results: Initially, postoperative hypertension was corrected by therapy. Increased creatinine values were under the control of a nephrologist, who decides on conservative treatment, because good diuresis. Cardiac ultrasound was satisfactory, and the patient is discharged on the eighth postoperative day as recovered.

Conclusion: Year has passed and the echocardiographic findings on the heart are normal, but advised nephrological and immunological processing has not yet been completed. The next pregnancy should be planned and under the control of the team. The given recommendations for blood pressure below 120/80 mmHg should be strictly followed.

Keywords: high blood pressure, dissection type Stanford A, membranoproliferative glomerulonephritis

SUCCESS OF POSTERIOR BRANCH OF GSV (PASV) TREATMENT DURING EVLA TREATMENT IN PATIENTS TREATED AT THE CHICAGO VEIN INSTITUTE SARAJEVO

Alma Krvavac-Hafizović[1], Hasib Mujić[2], Anel Okić[3], Namik Hadžiomerović[2], Vedad Dedić

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Chicago Vein Institute Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: alma_krvavac@hotmail.com

Background: The posterior branch of the great saphenous vein (GSV), located on the inner side of the leg, plays a crucial role in venous return to the heart. This study aims to evaluate the success of treating the posterior branch of the GSV (PASV) with endovenous laser ablation (EVLA) in combination with mini phlebectomy and sclerotherapy.

Aim: Assessing the rate of recanalization of the PASV at six- and twelve-months following treatment

Materials and methods: The study was conducted on 57 patients with insufficient PASV who were treated at the Chicago Vein Institute Sarajevo between October 2014 and December 2023. The focus was on assessing the rate of recanalization of the PASV at six and twelve months following treatment. The relationship between laser power, energy delivered, and the occurrence of PASV recanalization within the first year was analyzed. All patients underwent comprehensive clinical and diagnostic evaluations before treatment. Parameters such as laser power (W) and energy delivered (J) were closely monitored during the procedure.

Results: The results demonstrated that the combination of EVLA, mini phlebectomy, and sclerotherapy significantly reduced the rate of PASV and GSV recanalization, with the recanalization rate recorded at 4.47%.

Conclusion: The use of EVLA in combination with mini phlebectomy and sclerotherapy yields favorable long-term outcomes for PASV and GSV occlusion. These findings corroborate the efficacy of this multimodal approach, aligning with results from similar studies.

Keywords: GSV-great saphenous vein, PASV ramus posterior of great saphenous vein, EVLA - endovenous laser ablation, mini phlebectomy, sclerotherapy

SURGICAL ASPECTS OF PERIPHERAL ARTERY DISEASE MANAGEMENT: EVIDENCE, GUIDELINES, AND CONTROVERSIES

Rijad Drnda[1], Muhamed Djedović[1,2], Lejla Divović-Mustafić[1], Edin Kabil[1,2], Amel Hadžimehmedagić[1,2], Bedrudin Banjanović[1,2], Samed Djedović[3], Aida Sivić[1]

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Medical Institute Bayer, Tuzla, Bosnia and Herzegovina
Email: rijad.drnda@hotmal.com

Objective: Peripheral artery disease is a chronic condition that requires lifelong management. It remains one of the major causes of morbidity and has a serious impact in life quality. The dilemma between conservative and surgical treatment is still relevant today; however, thanks to numerous prospective studies, a certain consensus has been reached. The objective was to present the efficacy and safety of surgical therapy in peripheral artery disease, and to provide recent guidelines in the management of this disease.

Review topic: An unsystematic electronic literature search was conducted using the MEDLINE / PubMed® database, ClinicalTrials, Google Scholar, European Journal of Vascular and Endovascular Surgery, European Heart Journal (EHJ) to identify original articles, review articles and editorials, case studies, cohort studies. Contemporary attitudes about the treatment of peripheral artery disease were analyzed, as well as the impact of surgical treatment: bypass surgery and endovascular surgery. The guidelines provided by world organizations are clearly defined and graded based on the quality and strength of the evidence.

Conclusion: A detailed anamnesis, serious, thorough and realistic assessment of the patient's general condition, neurological status and imaging findings are necessary, in order to compile all these factors to obtain a positive benefit-risk ratio of surgical involvement and set an indication for possible surgery. Understanding when and how to surgically approach is defined to some extent, however, the need for prospective controlled studies is further needed, with a focus on improving the functional outcome.

Keywords: peripheral artery disease (PAD), endovascular treatment, open surgical revascularization, hybrid revascularization

SURGICAL TREATMENT OF GIANT POPLITEAL ARTERY ANEURYSM WITH "IN TOTO" ANEURYSM REMOVAL

Aida Sivić[1], Amel Hadžimehmedagić[1,2], Ilirijana Haxhibeqiri-Karabdić[1], Nermir Granov[1], Samed Djedović[3], Muhamed Djedović[1,2]

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Medical Institute Bayer, Tuzla, Bosnia and Herzegovina
Email: aida.si@hotmail.com

Objective: A popliteal aneurysm is an abnormal dilation (widening) of the popliteal artery. It is the most common peripheral artery aneurysm and is often associated with aneurysms in other locations, especially the abdominal aorta (AAA). A popliteal aneurysm thromboses when a blood clot forms inside the aneurysm, leading to partial or complete blockage of blood flow. This can cause acute (thrombosed popliteal aneurysm) or chronic limb ischemia, requiring urgent medical attention. The main risk factors are: large aneurysm size (>2 cm, especially >2.5 cm) , Smoking & Hypertension , Diabetes & Hyperlipidemia , Older age (>60 years) , Male sex (6:1 ratio), History of aneurysms elsewhere (e.g., abdominal aortic aneurysm – AAA)

Review topic: A 57-year-old male, an active smoker, presented with progressive intermittent claudication in the left leg after walking approximately 100 meters. A computed tomography (CT) scan revealed abdominal aorta: Aneurysmal dilation measuring 42 mm. Right popliteal artery: Fusiform aneurysm measuring 25.5 mm. Left popliteal artery: Aneurysmal dilation up to 58 mm with thrombosis. Given the presence of a thrombosed left popliteal aneurysm and the patient's worsening symptoms, surgical intervention was deemed necessary to prevent further ischemic complications. The patient underwent a vascular reconstruction procedure(popliteal artery aneurysm resection and femoro-popliteal reconstruction with interposition of venous graft (GSV)

Conclusion: Early diagnosis and timely surgical intervention are crucial to prevent limb-threatening complications. Long-term follow-up, smoking cessation, and cardiovascular risk reduction strategies are essential to optimize patient outcomes and prevent recurrence.

Key words: aneurysm of the popliteal aorta, surgical treatment

SURGICAL TREATMENT OF GLOMUS CAROTICUM TUMOR IN A YOUNG FEMALE WITHOUT EMBOLIZATION CASE STUDY

Tarik Selimović[1], Damir Kurtagić[1], Ilvana Selman[1], Aida Topić[1], Tarik Mašić[1,2], Amel Hadžimehmedagić[1,2], Nermir Granov[1,2], Muhamed Djedović[1,2]

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: tarik.selimov@gmail.com

Objective: Glomus caroticum tumor, known as carotid body paraganglioma, is a rare, slow-growing hypervacular tumor arising from chemoreceptor cells at the carotid bifurcation. Although usually benign, these tumors can be locally invasive and pose significant surgical challenges due to their proximity to vital neurovascular structures. While preoperative embolization is often used ti reduce intraoperative bleeding, some cases are managed successfully without embolization.

Review topic: We report the case of a 29-year-old female who presented with a progressively enlarging, painless right-sided neck mass. Imaging studies, including Doppler ultrasonography and contrast-enhanced CTA, confirmed the presence of a hypervascular mass at the carotid bifurcation, consistent with a glomus caroticum tumor. Due to patient-related factors and surgical team preference, the tumor was excised without preoperative embolization. Careful dissection allowed for complete tumor removal while preserving the integrity of the carotid arteries and adjacent cranial nerves. Intraoperative blood loss was controlled using meticulous hemostatic and surgical techniques. The postoperative course was uneventful, and histopathological analysis confirmed the diagnosis of a benign paraganglioma. This case demonstrates that glomus caroticum tumors can be successfully managed without embolization when a meticulous surgical approach is employed. While embolization can reduce intraoperative bleeding, its omission does not preclude safe and effective resection, especially in cases where the risks of embolization outweigh its benefits. Careful preoperative planning, intraoperative vigilance, and expertise in vascular surgery are essential to achieving favorable outcomes.

Conclusion: Carotid body tumors, though rare should be considered in the differential diagnosis of lateral neck masses. This case highlights the feasibility of direct surgical resection with careful intraoperative hemostasis and neurovascular preservation, emphasizing the importance of individualized planning.

Keywords: glomus caroticum tumor, carotid body paraganglioma, hypervascular tumor, neurovascular structures, surgical extraction, non-embolization approach

TREATMENT OF SIGNIFICANT CAROTID STENOSIS AFTER RADIOTHERAPY FOR NECK TUMOR

Muhamed Djedović[1,2], Aida Sivić[1], Alen Ahmetašević[1], Rijad Drnda[1], Zina Lazović[1], Bilal Imširović[3], Zoran Tošić, Haris Vukas[1], Samed Djedović5

[1]Clinic of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Polyclinic Dr. Al Tawil, Sarajevo, Bosnia and Herzegovina
[4]Public Health Institution "Health Center Brcko", Brcko, Bosnia and Herzegovina
[5]Medical Institute Bayer, Tuzla, Bosnia and Herzegovina
Email: djedovicm5@gmail.com

Objective: Radiotherapy (RT) plays a key role as primary or adjuvant therapy in patients with head and neck cancer. However, ionizing radiation is known to affect microvascular endothelial cells and accelerate atherosclerotic changes in large blood vessels. Radiation-induced carotid stenosis is one of the adverse effects of RT. Treatment of carotid artery stenosis involves surgical or endovascular treatment. Several factors must be considered when choosing a technique, due to the unique challenges posed by radiation-induced vascular changes. Due to the specific anatomical and pathological nature of post-radiation carotid stenosis, which differs from classic atherosclerotic lesions, an open surgical approach is considered to carry a higher risk compared to endovascular treatment, especially with regard to cranial nerve injury.

Review topic: We present the case of a 63-year-old male patient who was hospitalized at the Clinic for Cardiovascular Surgery, Clinical Center University of Sarajevo, due to significant stenosis of the right ACI (75%). The patient had chemotherapy and radiotherapy (42 cycles) due to epipharyngeal Tm and meta changes in the neck, 19 years ago. The patient was surgically treated for significant stenosis, planned by eversion of CEA, due to the impossibility of the latter, the surgical strategy was changed intraoperatively and transection of the ACE with bulbar suture and reinsertion of the ACE into the ACE was performed.

Conclusion: Given the characteristics of the lesion and the cumulative incidence, carotid stenoses after radiation or caused by radiation require more attention than carotid stenoses caused by atherosclerotic plaque in planning the type of treatment.

Keywords: radiotherapy, carotid stenosis, carotid endarterectomy, carotid artery stenting

2024 STRESS ULCER PROPHYLAXIS IN ICU PATIENTS, GUIDELINES AND CONTROVERSIES

Adnan Begović

UCSD USA California San Diego
Email: abegovic@health.ucsd.edu

Objective: To discuss the new stress ulcer prophylaxis guidelines for ICU adult patients and the controversies surrounding them. The updated guidelines were developed by a consensus of a multiprofessional panel of experts based on low to moderate certainty of evidence. Some recommendations are open to debate and controversy.

Review topic: After 25 years, the stress ulcer prophylaxis guidelines have been revised by SCCM/ASHP, presenting 13 recommendations in a PICO format. Three significant randomized controlled trials SUP-ICU, PEPTIC and REVISE have contributed to our understanding of stress ulcer prophylaxis, though the REVISE trial was not included in the latest guidelines. The updated guidelines endorse stress ulcer prophylaxis for patients with coagulopathy, shock, liver disease, and those in neurocritical care. However, there is no specific recommendation for prophylaxis in mechanically ventilated patients. It may be controversial. Both proton pump inhibitors (PPIs) and histamine-2 receptor antagonists (H2RAs) are regarded equally effective for stress ulcer prophylaxis, whether given intravenously or orally. It's advised that prophylaxis be discontinued once the underlying indications are resolved. Importantly, these therapies (PPIs and H2RAs) are not linked to an increased risk of pneumonia or C. difficile infection (CDI). Yet, no studies have conclusively shown a mortality benefit from stress ulcer prophylaxis. The SUP-ICU and PEPTIC trials suggested a possible interaction between the intervention effect and disease severity, indicating a potential for increased mortality in certain subgroups. Additionally, no studies have made a distinction between bleeding from stress ulcers and bleeding from other causes. While early enteral nutrition may provide some protective effects against stress ulcers in critically ill patients and could reduce the need for pharmacological prophylaxis, the new recommendations promote its use in adult critical care settings.

Conclusion: The new stress ulcer prophylaxis recommendations are meant to be considered alongside the patient's clinical status, but they are not without their controversies.

Keywords: stress ulcer prophylaxis, ICU, guidelines

C-ANCA VASCULITIS PRESENTING WITH DIFFUSE ALVEOLAR HEMORRHAGE AND RENAL INVOLVEMENT: THE CRITICAL ROLE OF EARLY INTUBATION AND CORTICOSTEROID THERAPY

Selma Bajat, Manja Spahalić

University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina
Email: bajatselma1@gmail.com

Introduction: Anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitides (AAV) are rare systemic autoimmune disorders marked by necrotizing inflammation of small to medium-sized vessels. C-ANCA, typically directed against proteinase 3 (PR3), is most commonly linked to granulomatosis with polyangiitis (GPA). AAV often presents with multi-organ involvement, particularly affecting the respiratory tract and kidneys. One of the most severe pulmonary manifestations is diffuse alveolar hemorrhage (DAH), which may rapidly lead to respiratory failure and requires urgent recognition and management. Diagnosing AAV is especially challenging when it presents with features overlapping infectious or inflammatory pulmonary disease. Hemoptysis, fever, and radiographic infiltrates frequently result in empiric antibiotic therapy, potentially delaying appropriate immunosuppressive treatment. The diagnostic process becomes even more complex in patients with environmental exposures, such as zoonotic contact or recent flooding, which may point to endemic infections like leptospirosis or Q fever.

Case study: We present the case of a 53-year-old male with progressive hemoptysis and systemic symptoms, ultimately diagnosed with C-ANCA-associated vasculitis complicated by DAH and renal involvement. The decision for elective endotracheal intubation was key to preventing patient self-inflicted lung injury (P-SILI) and allowed for effective management of severe alveolar bleeding. Early administration of high-dose corticosteroids played a critical role in halting disease progression and stabilizing organ function.

Conclusion: This case underscores the importance of maintaining a high index of suspicion for vasculitis in complex pulmonary presentations and highlights the need for early, multidisciplinary intervention to improve outcomes in patients with AAV complicated by DAH and renal injury.

Keywords: C-ANCA vasculitis, diffuse alveolar hemorrhage, elective intubation, corticosteroid therapy, acute respiratory distress syndrome (ARDS), renal involvement

COMPARISON OF DIFFERENT SCORING SYSTEMS IN PREDICTING THE SEVERITY OF ACUTE PANCREATITIS

Nerma Čustović[1], Belma Kadić[2], Edna Čurevac[2], Azra Alihodžić[2], Nađa Zubčević[1], Amila Mehmedović[1], Aida Saray[1], Amra Puhalović[1], Aida Pilav[1], Adela Sinančević[1], Muris Bečirčić[3], Haris Kurić[3]

[1]Clinic of Gastroenterohepatology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Clinic of Anesthesiology and Resuscitation, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Clinic of Radiology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: belma.zoljic@gmail.com

Background: Prompt diagnosis and stratification of severity of acute pancreatitis (AP) are of great importance for adequate treatment.

Objectives: Aim of our study was to compare accuracy, sensitivity and specificity of six scoring systems for their assessment of severity and mortality in patients with AP: the Ranson´s score, Glasgow-Imrie criteria, BISAP score, APACHE II score and modified CTSI score.

Materials and methods: This cross-sectional study included 109 patients aged 18-75 diagnosed with acute pancreatitis. Predictive accuracy of each score was determined by the ROC (Receiver Operating Characteristic) analysis. In assessing the severity of the disease, cut off values, sensitivity and specificity were calculated for each score. RESULTS CTSI had the highest AUC for predicting severe form of acute pancreatitis, followed by Ranson´s score and Glasgow-Imrie criteria. In predicting mortality Glasgow-Imrie criteria had higher values than Ranson´s score and CTSI. BISAP score and APACHE II score showed the lowest value of AUC for both outcomes.

Conclusion: Early identification of high-risk and low-risk patients on admission is crucial for the selection of those patients who would benefit the most from close surveillance and an aggressive approach, as well as to avoid unnecessary overtreatment and reduce the financial implications for low-risk patients.

Keywords: Acute pancreatitis, Ranson´s score, Glasgow-Imrie criteria, BISAP score, APACHE II score, modified CTSI score.

PALLIATIVE CARE IN THE INTENSIVE CARE UNIT

Martina Marić, Mirza Oruč, Amina Helvida-Lušija

University of Zenica, Faculty of Medicine, Zenica, Bosnia and Herzegovina

Introduction: The transition from active, invasive interventions to comfortable care for patients in the intensive care unit is often fraught with misunderstandings, conflicts, and moral dilemmas. Lack of training in palliative care, organizational factors, end-of-life decisions, lack of defined inclusion criteria, and a life-saving culture in the intensive care unit are barriers to providing palliative care.

Objective: The objectives of this paper are: to analyze, through a scientific review of the literature, the most common challenges and ethical dilemmas of palliative care in the ICU, and to provide practical advice to medical staff.

Material and methodology: Throughout the research, we used a scientific review of the literature. Key sources of information included academic journals and relevant databases, such as PubMed, Google Scholar, ResearchGate, ScienceDirect, American Journal of Hospice and Palliative Medicine, and Critical Care Medicine.

Discussion: The work through a scientific review shows the most common challenges and ethical dilemmas that limit the adequate and complete integration of palliative care in the intensive care unit. The challenge and ethical dilemma that dominated the work are the lack of clearly defined criteria for the inclusion of palliative care in the ICU, and the limitation or discontinuation of treatment. This review provided a foundation for further research and analysis, as well as a basis for drawing conclusions about current practice and challenges in this area.

Conclusion: Adequate provision of palliative care in intensive care units is essential to enable a "good death" for critically ill patients. There is a need to introduce adequate staff education, improve interpersonal communication, clear and ethically based decision-making guidelines, a multidisciplinary approach, and early introduction of palliative care for the purpose of better quality and more humane care for patients in the ICU.

Keywords: palliative care, intensive care, challenges, ethical dilemmas

RARELY DIAGNOSED DESCENDING NECROTIZING MEDIASTINITIS

Senita Beharić

Clinical of Anesthesia and Resuscitation, Intensive Care, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: beharics@gmail.com

Objective: Mediastinitis is severe inflammation or infection that involves mediastinum - central compartment within thoracic cavity. Descending necrotizing mediastinitis (DNM) is one of the most lethal forms of acute mediastinitis, and most caused by odontogenic, pharyngeal or deep neck infections (DNI). Mortality rate of DNM is 25%–40% in literature. We experienced a patient with severe DNM, hospitalized and successfully treated in our ICU during two-month period.

Review topic: Delay in diagnosis is one of main causes for high mortality in patients with DNM. If physician suspects DNM from a medical interview, radiographic evaluation should be performed as soon as possible. Chest X-ray findings of DNM, including widening of retrovisceral space with or without air-fluid, anterior displacement of the trachea, mediastinal emphysema, and widening of superior mediastinal shadow are observed in only 25% of patients. Although chest X-ray was insufficient for an early diagnosis of DNM, CT images clearly indicated DNM.

Conclusion: Descending necrotizing mediastinitis (DNM) is serious condition that puts patient's life at risk and so requires a timely and correct treatment. In most cases, it already presents at an advanced degree of diffusion, thus rapid diagnosis, with support of neck and chest CT, plays fundamental role to reduce mortality and morbidity. In association with surgical treatment, multidisciplinary cooperation with the thoracic and ENT surgeons, radiologist and infectious disease specialist is fundamental to promptly treat and monitor progress of treatment.

Keywords: descending necrotizing mediastinitis, disease management

SPECIFIC ASPECTS OF CARDIAC SURGICAL INTENSIVE CARE: MECHANICAL CIRCULATORY SUPPORT

Ermina Mujičić

Department of Cardiovascular Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dr.emujicic@gmail.com

Introduction: Cardiac surgical intensive care represents a particularly demanding field of critical care medicine, given the complexity of patient conditions following open-heart procedures. One of the key challenges in this setting is the management of patients with severe heart failure where conventional therapy proves insufficient. In such cases, mechanical circulatory support (MCS) enables the maintenance of systemic perfusion and provides a time window for myocardial recovery, heart transplantation, or long-term therapy.

Review topic: This presentation analyzes the fundamental principles, indications, types of devices (IABP, ECMO, VAD), the specific aspects of their application in the postoperative period, and the most common complications and management strategies. Emphasis is placed on the importance of a multidisciplinary approach and early identification of patients who may benefit from MCS.

Conclusion: Effective use of these systems requires highly specialized personnel and continuous monitoring of hemodynamic parameters to ensure optimal support and reduce the risk of adverse outcomes.

Keywords: cardiac surgical intensive care, mechanical circulatory support, multidisciplinary approach

QUALITY OF LIFE IN FAMILIES OF CHILDREN WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES DURING THE COVID-19 PANDEMIC

Anka Vukićević[1], Ranka Ogurlić[2], Emira Švraka[3]

[1]Health Insurance Fund of Montenegro, University of Montenegro, Faculty of Medicine, Department of Applied Physiotherapy, Podgorica, Montenegro
[2]Public Health Institution Health Center Herceg Novi, Herceg Novi, Montenegro
[3]Cerebral Palsy Association of Federation of Bosnia and Herzegovina, Sarajevo, Bosnia and Herzegovina
Email: ankavukicevic77@gmail.com

Introduction: Quality of life is the degree of what makes life good. Contemporary research on disability increasingly relies on examining the quality of life of the whole family.

Aim: To determine the difference in the quality of life of families of users of day care centers for children with intellectual and developmental disabilities and families of employees in day care centers in Montenegro in the domain of family relationships, during the COVID-19 pandemic.

Methods: The study included 41 families of children with intellectual and developmental disabilities (19 families of children with autism, 13 families of children with cerebral palsy, six families of children with Sy. Down, three families of children with epilepsy) and 69 families of employees of day care centers whose children do not have intellectual and developmental disabilities. Data were collected using the Family Quality of Life Questionnaire, which contains nine domains of quality of life.

Results: A statistically significant difference was found in relation to the degree of help in solving family problems p=0,010 and help with family chores p=0,007. The degree of help in solving family problems is rated by the majority of respondents in both groups as very much 22 (53.7%) and quite a bit 5 (12.2%) in the test group, and 45 (65.2%) as very much and 17 (24.6%) as quite a bit in the control group.

Conclusion: The family relationships are important for the quality of family life, especially in times of emergency, which indicates the need to develop family support services.

Keywords: family quality life, intellectual and developmental disabilities, family relationships

THE INFLUENCE OF SOCIAL MEDIA ON MENTAL HEALTH OF YOUNG PEOPLE

Vesna Horvat, Ajna Čustović

Department of Psychiatry, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Objective: This paper will explore the influence of social media on mental health of young people and the most researched positive and negative outcomes.

Review topic: Technology has become an integral part of life in the 21st century. Social media is a type of internet service that represents the global revolution in communication between people. According to the WHO, mental health is a state of well-being in which an individual realizes himself, endures regular life problems, works creatively and makes a diverse contribution to his social group. The use of social networks can be very useful for social connections, a sense of belonging and acceptance, but it can also have psychologically negative effects such as internet addiction and a pressure to maintain "perfect" virtual identities and potential impacts on mental health. In the context of mental health, the anxiety and depression have been most extensively studied, while self-esteem, fear of missing out, social comparison, and loneliness have shown themselves to be mediators/moderators in the association between social networks and mental health. A study conducted in six European countries on 10930 adolescents showed a positive association between frequent social network use (based on participant self-assessment) and depression.

Conclusion: This review article presents the main findings in this field with the clear conclusion that further longitudinal and experimental studies are required to clarify the causal direction of this relationship and the potential protective and risk factors, especially in the context of the alterations in the importance of social networks in maintaining social contacts.

Keywords: internet, social media, mental health in young people

PSYCHIATRIC COMORBIDITIES AND ABUSE OF PSYCHOACTIVE SUBSTANCES IN ADOLESCENTS

Rasema Okić, Amila Serhatlić

Institution for Addiction Diseases of Canton Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: zalcnarc@bih.net.ba

Introduction: Psychiatric disorders and abuse of psychoactive substances are often associated in the adolescent population, where comorbidities such as anxiety and depressive disorders, ADHD, and behavioral disorders may increase the risk of developing addiction.

Aim: This study investigates the frequency and types of psychiatric comorbidities in adolescents, as well as their influence on substance abuse patterns.

Methods: The research includes adolescents (aged 13–20 years) who during the period from 11.6.2024. until 11.6.2025. used the services of the Counseling Center for Juveniles and Adolescents of the Institute for Addiction Diseases. Their psychiatric findings, medical history, and substance use data were analyzed, with marijuana and amphetamines (speed) identified as the most commonly used substances. Special focus was placed on the association of specific psychiatric disorders with the type and intensity of substance abuse.

Results: The results indicate a high degree of comorbidity, with certain psychiatric disorders increasing adolescents' vulnerability to developing addiction. The most common comorbidities identified were anxiety-depressive disorder, behavioral disorders, and acute polymorphic psychotic disorder. Furthermore, the study showed an increase in the number of girls using psychoactive substances, with the average age of use ranging from 15 to 17 years.

Conclusion: These findings may contribute to a better understanding of risk factors and the improvement of preventive and therapeutic strategies aimed at early intervention in adolescents at increased risk for developing addiction.

Keywords: adolescence, substance abuse, psychiatric disorder

DIGITAL MENTAL HEALTH: THE FUTURE IS NOW

Davor Mucić

"Little Prince Treatment Centre" Copenhagen, Denmark
Email: dmucic@gmail.com

Objective: to emphasizes the importance of embracing technological advancements while critically evaluating current practices to maximize their potential, by introducing a forthcoming book titled "Digital mental health: the future is now", set to be published by Springer in February 2025, which explores the transformative role of digital health technologies in mental health care.

Review topic: Over a decade ago, the advent of the digital health era was anticipated; however, it was the COVID-19 pandemic that acted as a pivotal catalyst, accelerating the integration of digital tools into clinical practice. This paradigm shift fundamentally redefined the delivery of mental health services, breaking traditional boundaries and enhancing accessibility to care. The adoption of digital health technologies represents more than an incremental improvement; it marks a revolutionary change. These tools have significantly expanded the potential for accurate diagnosis, effective treatment, and efficient healthcare delivery, reaching across national and cultural borders.

Conclusion: Establishing and promoting best practices is essential to ensure these tools are used effectively and ethically. By reflecting on the journey so far and looking toward the future, this lecture underscores the critical need for a cohesive, innovative approach to digital mental health, paving the way for enhanced global mental health care delivery.

Keywords: digital mental health

ADVANCEMENTS IN TELEPSYCHIATRY

Davor Mucić

"Little Prince Treatment Centre" Copenhagen, Denmark
Email: dmucic@gmail.com

Objective: to provide a comprehensive overview of the current landscape of telepsychiatry, encompassing cutting-edge technologies, clinical applications, and ethical considerations.

Review topic: The lecture begins by exploring the evolution of telepsychiatry, highlighting its growth and adaptation in response to the changing healthcare landscape, particularly during the COVID-19 pandemic. It delves into the various modalities of telepsychiatry, including real-time videoconferencing, asynchronous communication, and mobile applications, showcasing their strengths and limitations. Further, the integration of Artificial Intelligence (AI) in telepsychiatry, with an examination of AI-driven assessment tools, predictive analytics, and personalized treatment recommendations will be outlined. The lecture elucidates how AI augments the diagnostic and therapeutic capabilities of telepsychiatrists, improving the precision and efficacy of mental health interventions. Ethical considerations in telepsychiatry are discussed in-depth, addressing issues of patient confidentiality, informed consent, and the responsible use of technology. Attendees will gain insights into the ethical frameworks and guidelines essential for maintaining the highest standards of care in virtual mental health settings.

Conclusion: The lecture concludes by emphasizing the growing importance of telepsychiatry as a means to address mental health disparities, improve access to care, and enhance the overall patient experience. It underscores the need for continued research, education, and collaboration to ensure the continued success and ethical practice of telepsychiatry.

Keywords: telepsychiatry, artificial intelligence

CHILDREN'S SENSITIVITY TO SENSORY INPUTS

Emira Švraka[1], Anka Vukićević[2], Ranka Ogurlić[3], Kenan Galijašević[4]

[1]Cerebral Palsy Association of Federation of Bosnia and Herzegovina, Sarajevo, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]University of Montenegro, Faculty of Medicine, Department of Applied Physiotherapy, Montenegro
[3]Public Health Institution Health Center Herceg Novi, Montenegro
[4]Medical Faculty, University of Zenica, Zenica, Bosnia and Herzegovina
Email: goldy_emi@yahoo.com

Objective: To introduce the "Sensory portrait of a child" checklist into wide application for the purpose of a timely expert and caregiver's assessment of children's sensitivity to sensory inputs, especially problems with the internal senses, proprioception and vestibular sense.

Review topic: For sensorimotor development in the first seven years of life, the integration of sensory information that appears in movements, speech and play is especially important and is the basis for the more complex integration of sensory information that is needed for reading, writing and good behavior. Sensory processing disorders (SPDs) occur in many individuals with autism spectrum disorder and in other populations with neurodevelopmental disorders, it is important to distinguish between typical and atypical functioning in sensory processes and to identify early phenotypic markers for developing SPDs. Checklist "Sensory portrait of a child" is a 54-item caregiver-report and professional measure of a child's sensory processing characteristics. The checklist should help better understand of a child's sensitivity to sensory information. The checklist assesses seven sensory systems: touch, movement/vestibular sense, body position/proprioception, auditory, visual, oral and smell. Increase body awareness (proprioceptive and kinesthetic) using obstacles, resistance activities, compression and traction of joints, starting with a symmetrical flexion pattern organized by the midline, such as holding on a rocking pillow.

Conclusion: The application of a new research instrument as an example of good inclusive practice is also a diagnostic tool for sensory problems of preschool children and the adoption of an early intervention program and represents a benefit for the entire community.

Keywords: children's sensitivity to sensory inputs, diagnostic tool

DIFFUSE PERSONALITY DISORDER AND OBSESSIVE-COMPULSIVE DISORDER (OCD)

Svjetlana Loga- Zec[1], Gorana Sulejmanpašić[2], Amra Memić-Serdarević[2]

[1]Institute of Pharmacology, Toxicology and Clinical Pharmacology, Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Department of Psychiatry, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: svjetlana.loga@mf.unsa.ba

Introduction: Obsessive-compulsive disorder (OCD) is characterized by intense anxiety, recurrent obsessions and/or compulsions. It causes clinically significant suffering, disturbances in interpersonal, work and social functioning. Obsessions are intrusive and repetitive thoughts, and the person perceives them as extremely powerful and disruptive to normal daily functioning. Compulsions represent repeated behaviors in which a person feels compelled to perform such "rituals", because in this way it alleviates anxiety and believes that it reduces the possibility of an accident or disaster. The most common forms of compulsions are related to cleanliness and tidiness (eg, washing hands, cleaning).

Objective: to present the evaluation and therapeutic approach to obsessive-compulsive disorder in the period of early adolescence.

Case report: the paper presents the case of female patient S.I (2008), hospitalized for the second time in the Clinic for Psychiatry, within the Department of Child and Adolescent Psychiatry. Admission is realized due to psychological and behavioral deterioration in the form of verbal aggressiveness, self-destructiveness, threats of suicide, as well as the presence of obsessive thoughts and compulsive actions related to cleanliness, washing hands and belongings.

Conclusion: based on psychological exploration and clinical characteristics of the disease, it is primarily a mixed personality disorder in comorbidity with obsessive-compulsive disorder. During hospitalization, the patient is involved in psychotherapeutic and sociotherapeutic work along with pharmacological treatment. The patient's mother was provided with appropriate support in terms of the advised work of psychoeducation.

Keywords: early adolescence, psychotherapeutic and counseling support, pharmacotherap

TRENDS IN ADDICTIVE BEHAVIORS AMONG YOUTH

Nermana Mujčinović

Public Health Institution - Institute for Addiction Diseases of the Zenica-Doboj Canton, Bosnia and Herzegovina
Email: nermanam@yahoo.com

Introduction: Addiction is defined as a chronic and relapsing disease that does not develop suddenly. This characteristic allows for the implementation of targeted preventive actions to mitigate its development. Effective prevention requires continuous research on addictive behaviors and the identification of vulnerable individuals in need of special attention.

Aim: This study aims to analyze the prevalence of both chemical and behavioral addictions among high school students, including the use of hookah, energy drinks, and self-medication with sedatives.

Methods: A cross-sectional study was conducted on a sample of 575 third-grade high school students in the ZDK. After data cleaning, 563 valid questionnaires were analyzed. The survey was anonymous, consisting of closed-ended questions. Data were processed using SPSS software.

Results: Among the surveyed students, 30.9% reported smoking cigarettes, 37.7% used hookah, and 62.2% consumed energy drinks. Alcohol consumption was reported by 35.2%, while 16.7% had tried or regularly used marijuana. Self-medication with sedatives was reported by 21.3%. Additionally, 86.7% of students recognized excessive internet use as a potential addiction, with 73.3% expressing a desire to reduce their usage. Gambling behaviors were also present, with 8.9% of students reporting occasional or frequent gambling activities.

Conclusion: The findings provide valuable insights for designing future prevention programs and intervention strategies. The study highlights the need for school-based preventive measures and broader public awareness campaigns to address addictive behaviors among youth.

Keywords: addiction, substance use, behavioral addiction

OCCURRENCE OF ANXIETY AND ACCOMPANYING SYMPTOMATOLOGY IN CHILDREN AND ADOLESCENTS

Merjem Mujanović-Kriještorac

Faculty of Health Studies, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Introduction: Anxiety among children and adolescents is an increasingly significant issue in modern society. Changes in family, school, and social environments, along with pressures to succeed and adapt, contribute to the emergence of anxiety symptoms.

Objective: The aim of this study was to assess the prevalence of anxiety symptoms among youth and identify the most common factors contributing to their development.

Methods: The research was conducted through personal engagement as part of doctoral studies. A total of 100 participants – 38 parents and 62 adolescents aged 10 to 18 years – took part. It was carried out at the "Sanus Amor" center, focused on physical therapy, with manual programs designed to combat anxiety. The survey followed ethical principles, with parents providing consent for their and their children's participation, remaining anonymous and voluntary. All participants completed a modified self-assessment anxiety scale, covering school stress, peer relationships, and family support.

Results: Mild to moderate anxiety symptoms were reported by approximately 38% of participants, with 14.44% of parents and 23.56% of adolescents experiencing these symptoms. The most frequently reported symptoms included insomnia, tension, difficulty concentrating, low appetite, and somatic complaints such as headaches.

Conclusion: The results highlight the need for preventive programs in schools and parental education. Early intervention is crucial for preserving mental health.

Keywords: anxiety, adolescents, mental health

LEVEL OF SELF-ESTEEM AND DEPENDENCE OF ADOLESCENTS ON SOCIAL NETWORKS

Belma Šljivo[1], Kenan Galijašević[2], Hana Muslić[3]

[1]Assistant, Scientific Field of Health Care, Faculty of Medicine, University of Zenica, Zenica, Bosnia and Herzegovina
[2]Assistant Professor, Study Program Health Care, Faculty of Medicine, University of Zenica, Zenica, Bosnia and Herzegovina
[3]Student, Study Program General Medicine, Faculty of Medicine, University of Zenica, Zenica, Bosnia and Herzegovina
Email: belma.sljivo@unze.ba

Introduction: Social networks are a medium where adolescents present their desired self-image by creating unique profiles. The consequence of the uncontrolled use of social networks is a significantly disturbed educational and social component of the environment, which increases the feeling of not belonging, desensitization, and the level of self-esteem in adolescents. A virtual representation of oneself is often different from a real depiction, especially when it comes to physical characteristics.

Aim: To determine adolescents' attitudes and practices regarding the role of social networks, and connection between addiction to social networks and respondents' opinions about their own self-esteem.

Methods: With the help of Google Forms tools, a survey questionnaire was created with descriptive data of respondents, the Social Media Use Scale (SMUS) and the Rosenberg Self-Esteem Scale. The survey was conducted in February and March 2025.

Results: 93 adolescents participated in the research, of which 78.3% were students, 20.7% were high school students and 1% were elementary school students. The average score of the Social Media Use Scale was (M=16.8). Of the total number of respondents based on the Rosenberg scale, 49 participants had scores less than 15, indicating lower self-esteem. Based on the results, a moderate positive correlation was found in the relationship between social media addiction and adolescents' level of self-confidence.

Conclusion: Social media use and self-esteem levels are two interrelated constructs. Based on the results, a moderate positive correlation was found in the relationship between social media addiction and adolescents' level of self-confidence.

Keywords: adolescents, social networks, addiction, self-esteem

THE IMPACT OF PHYSICAL ACTIVITY ON THE MENTAL HEALTH OF ADOLESCENTS

Ranka Ogurlić[1], Emira Švraka[2], Anka Vukićević[3]

[1]Public Health Institution, Health Center Herceg Novi, Herceg Novi, Montenegro
[2]Cerebral Palsy Association of Federation of Bosnia and Herzegovina, Sarajevo, Bosnia and Herzegovina
[3]Faculty of Medicine, Department of Applied Physiotherapy, University of Montenegro, Podgorica, Montenegro
Email: rankaogurlic@gmail.com

Objective: Adolescence is a period of exploration of identity, life path and coping with various challenges. It is a critical period accompanied by physical, emotional and social changes that cause the development of psychological problems. Physical activity in adolescence is an important influential factor in improving mental health.

Topic Review: Adolescent mental health is a complex concept of various factors and a major global problem. Every seventh adolescent has mental health problems, and 40% of adolescents have depression and anxiety. Regular physical activity has a relevant impact on negative psychological responses, unproductive thoughts and everyday worries because it reduces these symptoms, increases self-confidence and strengthens social skills. It functions as a social support system, alleviates feelings of loneliness, encourages socialization, social connection and develops interpersonal relationships. It is an effective method of stress control, individual coping strategies and a preventive mechanism for suicidal behavior. Physical activity affects neurochemical mechanisms by releasing serotonin, endorphins and dopamine, and the activation of these natural antidepressants has a positive effect on mood and motivation. Aerobic exercises improve mood and cognitive functions, strength training self-efficacy, team sports social skills and a sense of community, and mind-body exercises emotional reaction and stress.

Conclusion: Physical activity in adolescence affects mental state, subjective well-being and intellectual functions. Global and effective implementation of a continuous, adaptive physical activity program would significantly affect the reduction of mental health problems in adolescents.

Keywords: adolescents, mental health, mental well-being, physical activity

STRUGGLE WITH ONESELF: OBSESSIVE-COMPULSIVE DISORDER (OCD)

Gorana Sulejmanpašić[1], Amra Memić-Serdarević[1], Svjetlana Loga-Zec[2]

[1]Department of Psychiatry, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Institute of Pharmacology, Toxicology and Clinical Pharmacology, Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: gorana.sulejmanpasic@mf.unsa.ba

Introduction: Obsessive-compulsive disorder (OCD) belongs to the group of anxiety disorders and is characterized by the appearance of obsessive thoughts and compulsive actions. The course of the disease is chronic, and recovery can be long and slow depending on the severity of the disease and the therapeutic response.

Objective: to present the evaluation and therapeutic approach to obsessive-compulsive disorder in the period of early adolescence.

Case presentation: the case of patient H.E (2010), first hospitalized in the Clinic for Psychiatry, within the Department of Child and Adolescent Psychiatry. Changes on the psychological and behavioral level were manifested in the sense of a reduction in social interactions, a certain relaxation in school achievement, occasional self-harming behavior, panic attacks of fear, as well as unusual forms of behavior "climbing up and down the stairs several times, touching every other pillar on the street, walking on the bathroom tiles according to a certain schedule".

Conclusion: point out the importance of this clinical entity, which has a wide differential diagnostic spectrum, with special emphasis on the necessity of active involvement of the child's family in the planning of treatment and in the same procedure itself, psychotherapy treatment (individual and group), with appropriate pharmacotherapy.

Keywords: early adolescence,cognitive-behavioral psychotherapy, pharmacotherapy

PEER VIOLENCE - VIOLENCE AMONG CHILDREN (BULLYING)

Nermina Ćurčić-Hadžagić

Department of Psychiatry, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nermina.curcic@gmail.com

Objective: to provide a brief overview of the peer violence, violence among children.

Review topic: We talk about violence between children when one or more children repeatedly and intentionally disturb, attack or injure another child who cannot defend himself. It can take the form of threats, physical harm, rejection, mocking, teasing, gossiping, taking things, destroying things. Unfavorable family factors that contribute to peer violence are: criminality of parents, mental disorders, unemployment or overwork of parents, poverty, family discord, weak parental supervision, physical abuse, poor emotional connection between parents and children. Unfavorable factors from the old school are: lack of supervision and monitoring, inadequate behavior of teachers, lack of intervention and prevention programs. Although direct violence is a much bigger problem among boys, much of it also takes place among girls. Approximately 40 to 75% of bullying and violence occurs during recess at school - on the school playground, corridors. In the case of peer violence, you should intervene immediately, stop the violence as soon as you see or hear it happening. It is necessary to inform and involve the parents of both the bully and the victim. Include the child in psychological treatment and, if necessary, in the treatment of a child psychiatrist. In cases of severe forms of violence, involve the police.

Conclusion: The key steps for a safe school are: responsibility and commitment of adults in the school, participation of children, involvement of parents and the local community, creation of a "safety net".

Keywords: peer violence, children, school

AUTISM SPECTRUM DISORDER AND RARE GENETIC DISORDER

Nermina Kravić[1,4], Mensuda Hasanhodžić[2,4], Lejla Avdić[3,4]

[1]Department of Psychiatry, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[2]Department for Pediatrics, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[3]Department of Neurology, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[4]School of Medicine, University in Tuzla, Tuzla, Bosnia and Herzegovina
E-mail: kravic.nermina@gmail.com

Introduction: Autism spectrum disorder (ASD) - a phenotypically heterogeneous group of neurodevelopmental syndromes, with polygenic heritability, characterized by a wide range of impairments in social communication and restricted repetitive behaviors. Although certain cause is still not known, genetic, environmental, and immunological factors play an important role in the etiology of ASD. Through follow up of findings about immunological specificities, anti-neuronal antibodies, specifies of food intake and gastro-entero-colitis in autism, propensity of children with ASD for respiratory and other infections, approach to autism as mitochondrial disease - gives many challenges in treatment of the most common problems in ASD as aggression, hyperactivity, epilepsy and other comorbidities and other behavioral states.

Aim: was to emphasize new findings in looking at ADS as a multifactorial origin of encephalopathy with multisystem processes in different body systems.

Case report: Boy aged 22 years old, through gene analysis were identify as Succinil semialdehyde dehydrogenase deficiency (SSADHD) (ALDH5A1: 6-24528277-G-A (GRCh37); NP_0010711.1:p.Gly409Asp.) rare monogenic disorder (OMIM: #271980) of the degradation pathway of the key inhibitory neurotransmitter of the central nervous system, ?-amino butyric acid (GABA). SSADH deficiency describes a rare neurometabolic disease that causes global developmental delay, intellectual disability, hypotonia, and behavioral abnormalities, often classified as an autism spectrum disorder. A special burden to the patients and families is a sleep disorder with hyper fragmentation of sleep cycles, as well as epilepsy.

Conclusion: The treatment of persons with autism spectrum disorder should consider a wide range of comorbid states and asks for a multidisciplinary approach.

Keywords: autism spectrum disorder, Succinil semialdehyde dehydrogenase deficiency (SSADHD)

THE IMPACT OF SOCIAL MEDIA ON CHILDREN'S MENTAL HEALTH IN BOSNIA AND HERZEGOVINA

Melisa Musić[1], Amer Smajkić[2]

[1]School of Medicine, University of Tuzla, Tuzla, Bosnia and Herzegovina
[2]Chicago Child Psychiatry Associates, Chicago, IL, USA

Objective: This paper aims to provide a comprehensive overview of the impact of social media use on the mental health of children in Bosnia and Herzegovina, with a focus on trends, risks, and protective strategies.

Topic review: Social media plays a significant role in the everyday life of children. Alongside its benefits, such as communication, creative expression, and access to educational content, it also brings numerous risks and negative aspects. The average time spent online is three to six hours per child. An increase in stress and anxiety, feelings of isolation and loneliness, and self-confidence and self-image problems are the most common harmful repercussions of social media use in children. Compared to the perfect life of influencers, cyberbullying among peers, especially through comments and texting, and applications that are designed to be addictive, is how social media affects mental health in children. Famous people and influencers play a role in defining self-image, alongside filters used on pictures, making girls and boys feel that they are not good enough. Scrolling through social media before sleep is a habit, and it does affect circadian rhythm and melatonin production, leading to insufficient rest hours and poor performance when it comes to schoolwork and a bad mood in general. Cyberbullying is not a thing that lacks in the back, and is one of the biggest problems globally, and in Bosnian-Herzegovinian society, which goes side-by-side with sharing photos without consent, leading to depression, dragging, and self-harm. Strategies for social media use are based on recognizing negative content, setting boundaries in parenthood, and following useful websites. Parents and the school system are crucial for prevention, based on open communication without judging, as well as parental control with confidence, then involving schools through consulting centers and adults who use social media moderately. Social media use among children has led to the appearance of new trends in Bosnia and Herzegovina, including influencers, such as vloggers and TikTokers, the popularity of short videos, and applications that maintain mental health, such as those focusing on breathing and meditation.

Conclusion: Social media is useful, but also brings a lot of challenges and potential dangers with it. Balance, education, and support are essential for overcoming difficulties that appear in mental health in children. Parents, teachers, children, and society together can make a change.

A CASE OF NEUROFIBROMATOSIS TYPE II ASSOCIATED WITH SPINAL EPENDYMOMAS

Emina Terko[1], Edin Čampara[1], Adnan Al-Tawil[2], Nevena Mahmutbegović[1]

[1]Clinic of Neurology, Clinical Center University of Sarajevo, 71000 Sarajevo, Bosnia and Herzegovina
[2]Clinic of Radiology, Clinical Center University of Sarajevo, 71000 Sarajevo, Bosnia and Herzegovina
Email: emina.terko@gmail.com

Objective: The aim of this review is to present a clinical case of Neurofibromatosis type II (NF2), highlighting the challenges in diagnosis, treatment, and management, particularly in cases with multiple central nervous system tumors.

Review topic: Neurofibromatosis type II (NF2) is a rare autosomal dominant disorder characterized by bilateral vestibular schwannomas resulting from mutations in the NF2 gene on chromosome 22. Patients commonly present with symptoms such as hearing loss, tinnitus, vertigo, and balance disturbances. Additional tumors, including meningiomas and ependymomas, may also occur. This review presents a case of a 44-year-old woman with progressive neurological symptoms. Imaging revealed bilateral vestibular schwannomas, a large compressive tumor on the right side, and multiple spinal lesions likely consistent with ependymomas. Her condition deteriorated rapidly, with worsening neurological signs including spastic quadriparesis and hydrocephalus, despite neurosurgical intervention. This case underscores the aggressive nature NF2 can exhibit and the limitations of current treatment strategies in advanced cases.

Conclusion: This case highlights the potentially severe progression and poor prognosis associated with NF2, particularly in the presence of multiple tumors. Early and regular monitoring, along with advancements in treatment, are crucial for improving outcomes.

Keywords: neurofibromatosis type II, bilateral vestibular schwannoma, ependymoma

AN UNCOMMON PRESENTATION OF HEREDITARY NEURALGIC AMYOTROPHY: THE ROLE OF GENETIC TESTING

Nejra Masić[1], Nevena Mahmutbegović[1], Ines Madžak[2]

[1]Neurology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nejra.masic@gmail.com

Objective: The aim of this review is to present a case of hereditary neuralgic amyotrophy (HNA), emphasizing its clinical heterogeneity and diagnostic complexity, especially in atypical presentations.

Review topic: Hereditary neuralgic amyotrophy (HNA) is a rare autosomal dominant disorder, most commonly presenting with recurrent episodes of brachial plexus neuropathy, leading to muscle weakness and atrophy. In addition to peripheral nerve involvement, some patients may exhibit dysmorphic features such as hypotelorism, blepharophimosis, ptosis, epicanthal folds, microstomy, and other craniofacial anomalies. Due to the wide variability in presentation, HNA is frequently underdiagnosed. A 24-year-old female patient initially presented with tongue weakness and speech difficulties. Seven months later, she developed right leg weakness and a tremor affecting all extremities. Neurological examination showed tongue fasciculations, right-sided hyperreflexia, and subjective right leg weakness. Extensive neuroradiological, laboratory, and electrophysiological evaluations, including cerebrospinal fluid analysis for oligoclonal bands, were inconclusive. The patient was referred abroad, where genetic testing identified a heterozygous pathogenic variant in the SEPTIN9 gene, consistent with a diagnosis of HNA. This case highlights an atypical disease course, with cranial and lumbosacral nerve involvement, beyond the classical brachial plexus features.

Conclusion: Hereditary neuralgic amyotrophy is a rare and underrecognized neurological disorder with a broad phenotypic spectrum. Atypical presentations involving cranial or lower limb nerves may delay diagnosis. Genetic testing is essential for confirmation and appropriate management.

Keywords: hereditary neuralgic amyotrophy, SEPTIN9, brachial plexus neuropathy

BIOMARKERS IN THE DIAGNOSIS AND PROGNOSIS OF MULTIPLE SCLEROSIS: CURRENT INSIGHTS AND FUTURE DIRECTIONS"

Enra Mehmedika-Suljić

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: enra.suljic@gmail.com

Objective: The aim of this review is to explore the current landscape of biomarkers in multiple sclerosis (MS), focusing on their role in early diagnosis, monitoring disease activity, and predicting disease progression.

Review topic: Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system, characterized by inflammation, demyelination, and neurodegeneration. Early diagnosis and accurate prediction of disease progression are critical for improving patient outcomes. Recent advances in biomarker research have shown promising potential in diagnosing MS and predicting its clinical course. This review explores the current understanding of biological markers in MS, focusing on their roles in diagnostic processes, monitoring disease activity, and forecasting long-term progression. We discuss various types of biomarkers, including genetic, proteomic, and neuroimaging markers, and their implications for personalized treatment strategies. Despite the progress, challenges remain in the validation and widespread clinical application of these biomarkers. The future of MS diagnosis and prognosis lies in the integration of multiple biomarker platforms, which may lead to more precise and individualized patient management.

Conclusion: Biomarkers offer significant potential for enhancing the diagnosis and management of multiple sclerosis, though further research is needed to fully integrate them into clinical practice.

Keywords: multiple sclerosis, biomarkers, diagnosis

BIOMARKERS OF HEMORRHAGIC TRANSFORMATION IN ACUTE ISCHEMIC STROKE

Nevena Mahmutbegović, Hamza Jatić, Emir Hasanbegović

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nevenaradulovic@hotmail.com

Objective: The aim of this review is to highlight the emerging roles of S100 proteins and NSE as biomarkers for hemorrhagic transformation in acute ischemic stroke.

Review topic: Hemorrhagic transformation (HT) is a serious complication following acute ischemic stroke (AIS) that can lead to increased morbidity and mortality. It involves bleeding within the infarcted brain tissue, which significantly worsens clinical outcomes. The pathophysiology of HT remains complex, involving reperfusion injury, blood-brain barrier disruption, and inflammation. Biomarkers have emerged as valuable tools for predicting the occurrence of HT following AIS. S100 proteins, particularly S100B, have been investigated as biomarkers for neuronal injury and brain damage in AIS. Elevated levels of S100B are associated with poor prognosis and are thought to reflect the extent of neuronal damage and subsequent reperfusion injury, both of which can contribute to hemorrhagic transformation. Another critical biomarker in the context of AIS is Neuron- Specific Enolase (NSE), a marker of neuronal injury. While NSE has been primarily linked to ischemic brain injury, emerging evidence suggests that higher NSE levels may also correlate with an increased risk of hemorrhagic transformation.

Conclusion: Biomarker-based prediction models, including those incorporating S100B and NSE, could help refine treatment strategies, and optimize anticoagulation therapies, potentially minimizing the risk of HT.

Keywords: hemorrhagic transformation, S100 proteins, Neuron-Specific Enolase (NSE)

CASE REPORT OF WERNICKE'S ENCEPHALOPATHY: UNRECOGNIZED AND OFTEN MISUNDERSTOOD DISEASE

Emir Hasanbegović, Enra Mehmedika-Suljić

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: hasanbegovicem@gmail.com

Objective: To present the diagnostic and therapeutic modules of Wernicke's Encephalopathy (WE)

Review topic: Wernicke's Encephalopathy (WE) is the best-known neurologic complication caused by thiamine deficiency, often observed in patients with chronic alcohol use, malnutrition, or certain comorbid medical conditions. We present a case of a 53-year-old male with a history of alcohol abuse and untreated gastrointestinal disease who developed classic symptoms of WE, including confusion, ataxia, and ophthalmoplegia. However, early recognition and prompt treatment with thiamine supplementation led to substantial clinical improvement. The case emphasizes the importance of considering WE in the differential diagnosis of altered mental status, particularly in patients with risk factors such as alcohol use disorder or malnutrition.

Conclusion: This report highlights the critical role of timely thiamine administration in preventing irreversible brain damage and minimizing associated complications.

Keywords: Wernicke encephalopathy, thiamine deficiency, alcohol abuse

EARLY IDENTIFICATION AND INTERVENTION OF POST-STROKE SPASTICITY

Amra Sarić

Dalhousie University Queen Elizabeth II Health Science Center Nova Scotia Rehabilitation Center Halifax, NS, Canada
Email: amra.saric@nshealth.ca

Objective: To identify risk factors for the development of post-stroke spasticity (PSS) and to review the importance of early identification and management strategies for patients with post-stroke spasticity.

Review topic: Post-stroke spasticity is a complex disorder that can be difficult to identify and treat. More than two-thirds of stroke survivors develop post-stroke sequelae, including post-stroke spasticity and impaired motor function. Early recognition of spasticity and identification of predictors, may result in earlier treatment and possibly better outcomes. Factors predictive of post-stroke spasticity include severe paresis, low Barthel index score, hemi hypesthesia, low quality of life score, and impaired sensorimotor function, among others. Brain imaging showing large lesions involving motor network areas is a precondition of post-stroke spasticity. Earlier treatment within three months post-stroke should be initiated. Treatment may include pharmacological management, chemodenervation procedures (e.g., Botulinum toxin injections), traditional approaches (e.g., therapeutic exercise, task specific training, functional electrical stimulation, constraint induced movement therapy, splinting, casting, hand exoskeletons), and new approaches (e.g., transcranial magnetic stimulation, extracorporeal shockwave therapy, transcranial focused ultrasound). When injected less than three months post-stroke, Botulinum toxin injection may result in improved muscle tone.

Conclusion: Early identification and management of patients with high-risk development of post-stroke spasticity is recommended. It is important to establish anti-spasticity treatment before secondary complications have developed to optimize functional recovery. An interdisciplinary approach is necessary for developing best practice guidelines and treatment.

Keywords: post-stroke spasticity, predictors, interventions, Botulinum toxin

EPILEPSY AND SLEEPING-BIDIRECTIONAL INTERACTION

Sabrina I. Hadžiosmanović

General Hospital Pljevlja, Pljevlja, Montenegro
Email: hadziosmanovicsabrina@yahoo.com

Objective: The aim of this review is to explore the complex, bidirectional relationship between sleep and epilepsy, highlighting how sleep architecture significantly influences the manifestation of epilepsy—both in terms of seizure aggravation and potential remission.

Review topic: Sleep plays a crucial role in physiological restoration, adaptation, and memory consolidation. It significantly interferes with epilepsy presentation, contributing to its as well remission, as well as aggravation. Sleeping has influence on epilepsy considering many sleeping features like sleep lasting, sleep deprivation and disturbed sleep structure. Also, maintenance of the sleep-wake cycle and circadian rhythm should be considered. Very specific sleep disorders, depending of different sleep stage, autonomic and somatic manifestation of sleep and involuntary periodic movement in sleep could be misdiagnosed as epilepsy. Sleeping facilitates interictal electroencephalographic epileptiform discharges. The connection between epilepsy and sleeping considers dichotomy, epilepsy connected to sleep and epilepsy impact on sleep. The former implies that specific epileptic syndromes and entity are depending on sleep. First seizure in sleep is imperatively pointed out. The latter differs sleep structure disruption, antiepileptic medication influence and exacerbation of psychiatric comorbidities. Sudden unexpected death in epilepsy is fatal outcome of epilepsy in sleep. Also, epilepsy does not exclude out sleep disorders

Conclusion: Epilepsy and sleeping present electrophysiological and phenotype continuum with multiple bidirectional influences deeply devoted to hypesynchronous network utilisation, both using the same pathway to sustain itself.

Keywords: epilepsy, sleeping

FIRST EPILEPTIC SEIZURE IN ADULT AS A PREDICTOR OF DIAGNOSIS DYKE–DAVIDOFF–MASSON SYNDROME: CASE REPORT

Binasa Bašić[1], Elma Milanović-Šunj[2], Emir Begagić[2], Adnana Ljevaković[1], Selma Kadić[4]

[1]Department of Neurology, General Hospital Travnik, Travnik, Bosnia and Herzegovina
[2]Neurology Clinic, Clinical Centar University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Department of Neurosurgery, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
[4]Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centar University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: drbinasa@gmail.com

Objective: Our aim is to present a brief overview of the first clinical presentation, evaluation, and well-controlled Dyke-Davidoff-Masson syndrome with dual antiepileptic drugs.

Review topic: Dyke-Davidoff-Masson syndrome (DDMS) is a rare condition, primarily presenting in childhood. Adult presentation of DDMS is unusual and has been rarely reported in the medical literature. The clinical presentation includes contralateral hemiparesis with upper motor neuron-type facial paresis/palsy, focal or generalized epileptic seizures, and intellectual disability along with learning disabilities. When this disease is diagnosed in childhood, epileptic seizures are usually pharmacoresistant. The onset of seizures in adulthood, the absence of intellectual disability, and well-controlled epilepsy with dual antiepileptic therapy make our case exceptional. We report a case of a 28-year-old man who presented with focal and generalized epileptic seizures, ptosis on the right, facial asymmetry, and right-sided hemiparesis. Brain imaging (MRI) showed cortical atrophy of the left hemisphere, particularly pronounced in the temporo-occipito-parietal areas, reduction in brain parenchyma, and marked ventriculomegaly on the left. EEG revealed seizure activity. Well-controlled epilepsy was achieved with the combination of levetiracetam and lacosamide at an appropriate dose.

Conclusion: Well-controlled epilepsy can improve quality of life and reduce the need for surgery.

Keywords: Dyke-Davidoff-Masson syndrome, epileptic seizures, pharmacoresistant epilepsy, adulthood

GLOSSOPHARYNGEAL NEURALGIA

Amar Hadžagić, Benjamin Hećo, Amira Beganović-Petrović

Clinic of Neurology, Clinical Center of the University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: hadzagicamar@gmail.com

Objective: The aim of this review is to present a diagnostically and therapeutically responsive case of glossopharyngeal neuralgia in a patient with significant comorbidities and recurrent painful episodes.

Review topic: Glossopharyngeal neuralgia is a rare cranial nerve disorder characterized by sudden, severe, unilateral pain in areas innervated by the glossopharyngeal nerve. Symptoms are brief and triggered by actions like swallowing or talking. Etiology can be idiopathic or secondary to anatomical changes such as cervical spine degenerations, vascular compression, or tumors. A 58-year-old male patient was admitted for evaluation of recurrent sharp, stabbing pain on the left side of the neck, lasting 5–7 minutes and triggered by speaking, chewing, and swallowing. The first episode, occurred in 2019, and recurred in March 2025. There was no family history. Comorbid conditions included polycythemia vera, arterial hypertension, angina pectoris, and degenerative spinal disease. Neurological examination and EEG were unremarkable. CT scans of the brain and neck as well as brain MRI showed no significant findings. Thyroid ultrasound showed a multinodular goiter with normal hormone levels. Cervical ultrasound showed reactive lymphadenopathy. The patient is awaiting thyroid scintigraphy and endocrinology consultation.

Conclusion: Glossopharyngeal neuralgia was diagnosed according to ICHD-3 criteria based on clinical presentation and diagnostic findings. Due to good response to carbamazepine and absence of alarming features, outpatient monitoring and endocrinological follow-up are advised.

Keywords: glossopharyngeal neuralgia, carbamazepine, multinodular goiter

HYPOFIBRINOGENEMIA AFTER THROMBOLYTIC TREATMENT OF ISCHEMIC STROKE: CAN WE PREDICT SYMPTOMATIC INTRACRANIAL BLEEDING?

Marija Bender[1], Korina Šimić[2], Davor Batinić[1], Ibrahim Stiglić[3], Anita Ivanković[1], Sandra Lakičević[1], Bejana Purišević[1], Nataša Pejanović-Škobic[1], Matea Markotić[1], Nikolina Pravdić[1]

[1]Neurology Clinic, University Hospital Mostar, Mostar, Bosnia and Herzegovina
[2]School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina
[3]Faculty of Health Studies, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: marijabender@yahoo.com

Objective: The aim of this review is to highlight the role of fibrinogen depletion as a predictive marker for symptomatic intracerebral hemorrhage (sICH) following intravenous thrombolysis (IVT).

Review topic: Symptomatic intracerebral hemorrhage (sICH) is the most serious complication of intravenous thrombolysis (IVT), yet its underlying mechanism remains poorly understood. Recent studies have identified fibrinogen depletion 2 hours after IVT as a promising predictor of sICH. Alteplase has a short half-life, meaning that 75 % of the drug is eliminated from plasma approximately 10 minutes after administration. Despite this, the effect on coagulation lasts longer and is most evident in fibrinogen depletion. When administered intravenously, alteplase binds to fibrin in a blood clot, which activates plasminogen to plasmin and leads to fibrinolysis. Recent studies demonstrated that fibrinogen depletion, defined as reduction of fibrinogen level below 200mg/dL 2 hours after IVT or reduction > 50% of baseline fibrinogen value 2 hours after IVT, is a significant predictor of sICH. Almost one-third of all sICH could be attributed to fibrinogen depletion. This phenomenon evolves shortly after drug application, reaches a maximum of 3 to 6 hours post-treatment, and usually normalizes within 36 hours.

Conclusion: Fibrinogen monitoring should be implemented in daily clinical practice after IVT to identify patients at high risk of major bleeding. This could guide further treatment and potentially prevent devastating complications.

Keywords: fibrinogen, hemorrhage, stroke, thrombolytic therapy

MUSIC AND THE BRAIN - THERAPEUTIC USE OF MUSIC IN NEUROLOGICAL DISORDERS

Amra Sarić

Dalhousie University Queen Elizabeth II Health Science Center Nova Scotia Rehabilitation Center Halifax, NS, Canada
Email: amra.saric@nshealth.ca

Objective: To describe the therapeutic use of music in neurological disorders and to explore a neuroplasticity model of music therapy.

Review topic: Neurologic music therapy is the therapeutic application of music to cognitive, sensory, and motor dysfunction due to neurological disease of the human nervous system. Therapy is based on neuroscience research regarding how music is processed and perceived in the brain. The idea of music therapy goes back thousands of years, but growing interest in music therapy began in the 20th century, particularly over the last several decades. Clinical applications in neurology include stroke, Parkinson's disease, multiple sclerosis, Huntington's disease, and pediatric neurologic disorders. Music therapy may induce and stimulate neuroplastic changes through rhythmic and repetitive elements that promote brain restructuring and emotional processing. Research showed that neurological music therapy is an effective therapeutic technique in stroke recovery, particularly for motor, speech, language, and cognitive interventions. Neuroimaging demonstrated neuroplastic changes in cortical and subcortical levels. Music therapy may improve balance, freezing of gait, and motor performance in Parkinson's disease. In multiple sclerosis, music therapy showed positive results regarding motor and non-motor functions, including gait parameters, walking speed, coordination, dexterity, fatigue level, and mood. Music therapy in pediatrics is particularly effective in improving mood, communication, social skills, and quality of life.

Conclusion: Neurologic music therapy effectively supports the brain recovery process and improves perceptual, cognitive, language, and motor functions

Keywords: neurologic music therapy, neuroplasticity, stroke, Parkinson's disease

NEUROLOGICAL RELAPSE OF ACUTE MYELOID LEUKEMIA: MIMICKING A GUILLAIN-BARRÉ SYNDROME

Renata Mikulić[1], Ivana Mihalj[1], Anita Ivanković[1,2], Nikolina Pravdić[1,2], Danijela Karaban[1], Nataša Pejanović-Skobić[1,2], Sandra Lakičević[1,2], Marin Ćović[1], Matea Markotić[1], Sijana Demirović[1,2], Asja Hodžić[1], Davor Batinić[1,2]

[1]Department of Neurology, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina
[2]School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina
Email: renata5jelic@gmail.com

Objective: To present a rare case of isolated peripheral nervous system (PNS) relapse of acute myelomonocytic leukemia (AML), manifesting as a Guillain-Barré-like syndrome.

Review topic: Herein, we report the case of a 69-year-old male patient, previously treated with chemotherapy for AML, diagnosed three years prior, who presented with tingling in the right inguinal region, instability, and symmetrical bilateral lower-limb weakness one month prior to hospital admission. Nerve conduction studies revealed acute polyradiculoneuritis, while magnetic resonance imaging (MRI) of the lumbosacral spine suggested polyradiculoneuritis of unclear etiology, raising suspicion of neuroleukemiosis. Further investigations, including cerebrospinal fluid (CSF) analysis, confirmed the relapse of the primary disease. The cytological findings of the CSF showed numbers of immature cells (blasts), and some myelocytes, monocytes and promonocytes. The patient was transferred to the hematology department to start treatment with intrathecal drug administration of cytarabine and methotrexate. Upon completion of the treatment, follow-up neuroimaging, including MRI of the cervical, thoracic, and lumbosacral spine show a regressive dynamic of thickening at the level of lumbar segments of spinal nerves, as well as a stationary finding in the area of spinal roots of the cervical and thoracic segments. Neurological deficit after the administration of medications showed mild improvement, with mobility being limited to the use of assistance.

Conclusion: Clinicians should consider AML relapse in the differential diagnosis of patients presenting with new neurological symptoms and a prior history of the disease.

Keywords: acute polyradiculoneuritis, acute myeloid leukemia (AML), relapse

BOSTON CRITERIA AS NEURORADIOLOGICAL BIOMARKERS FOR CEREBRAL AMYLOID ANGIOPATHY

Emina Cedić-Vuga, Selma Šabanagić-Hajrić

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: cedicemina@gmail.com

Objective: Our objective is to present the neuroradiological biomarkers of cerebral amyloid angiopathy (CAA), with a particular focus on the revised Boston Criteria 2.0 from 2022, which serve as the diagnostic standard for CAA and are crucial for establishing an accurate diagnosis.

Review topic: Cerebral amyloid angiopathy is a disease that affects small and medium-sized arteries of the brain and leptomeninges, caused by the accumulation of amyloid- in their walls. This leads to vascular fragility, an increased risk of hemorrhage, and progressive damage to the brain parenchyma. All diagnostic categories of the Boston Criteria 2.0 require the presence of intracranial hemorrhage, transient focal neurological episodes, subarachnoid hemorrhage, cognitive impairment, or dementia. Neuroimaging, when strictly applied in accordance with the diagnostic criteria defined in the Boston Criteria, in combination with clinical reasoning, can significantly contribute to establishing a definitive diagnosis in suspected cases of cerebral amyloid angiopathy. In older adults, cerebral amyloid angiopathy (CAA) is the most common cause of intracranial lobar hemorrhages. We will present a female patient who is over 50 years old, who was diagnosed with CAA based on typical clinical symptoms, including transient focal neurological episodes, cognitive impairment, and early-stage dementia. Her MRI/MRA brain scans revealed recurrent cerebrovascular insults, most likely due to possible CAA, as suggested by the application of the revised Boston Criteria 2.0. The patient's condition continues to be monitored.

Conclusion: A thorough understanding and correct application of the Boston Criteria 2.0, along with the identification of both hemorrhagic and non- hemorrhagic neuroradiological markers, can facilitate faster and more reliable diagnosis of cerebral amyloid angiopathy.

Keywords: cerebral amyloid angiopathy (CAA), Boston Criteria 2.0, neuroimaging, MRI

RECURRENT GUILLAIN-BARRÉ SYNDROME: TOPIC REVIEW OF TWO PATIENTS WITH ANTECEDENT TRIGGERS

Matea Markotić[1], Davor Batinić[1, 2], Marija Bender[1,2], Inge Klupka-Sarić[1,2], Anita Ivanković[1,2], Sandra Lakičević[1,2], Nataša Pejanović-Skobić[1,2], Nikolina Pravdić[1,2], Renata Mikulić[1], Jelena Novak[1]

[1]Neurology Clinic, University Hospital Mostar, Mostar, Bosnia and Herzegovina
[2]School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina
Email: matea.baranik@hotmail.com

Objective: This topic review aims to explore recurrent GBS through two cases, highlighting common patterns, and current management strategies. While it is classically a monophasic illness, recurrence occurs in approximately 2-6% cases, posing diagnostic and therapeutic challenges.

Review topic: Case 1 - Male patient: Patient experienced initial GBS episode in 2016, preceded by a throat infection. Clinical features included ascending weakness and areflexia, managed successfully with intravenous immunoglobulin (IVIG). In 2022, patient presented with similar symptoms following COVID-19 infection. Electrophysiological studies confirmed acute demyelinating polyneuropathy, consistent with GBS. Patient responded well to IVIG and made a near-complete recovery. Case 2 – Female patient: Patient experienced initial GBS episode in 2018, following a gastrointestinal infection, presenting with ascending weakness and areflexia, managed successfully with intravenous immunoglobulin (IVIG). She recovered fully after IVIG treatment. In 2021, the patient again experienced a recurrence of GBS following COVID-19 infection, again exhibiting classic signs of motor and sensory dysfunction. The patient was treated with IVIG with a favorable clinical response.

Conclusion: Recurrent GBS remains a rare but significant clinical entity. These two cases emphasize the importance of recognizing infection-related triggers, particularly COVID-19, and suggest the need for long-term follow- up to understand immunological mechanisms underlying recurrence and to guide prevention strategies.

Keywords: Guillain-Barré recurrence; autoimmune neuropathies; COVID-19; intravenous immunoglobulin (IVIG)

ROLE OF BIOMARKERS IN DIAGNOSIS AND STAGING OF ALZHEIMER'S DISEASE

Selma Šabanagić-Hajrić

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: selmahajric@gmail.com

Objective: The aim of this review is to present the updates on diagnosis and staging of Alzheimer's disease with emphasis on role of biomarkers.

Review topic: Alzheimer's disease (AD) is neurodegenerative disorder with various pathobiological subtypes and clinical presentations. The majority of AD biomarkers can be classified into pathophysiologic and topographic biomarkers. Pathophysiologic biomarkers include amyloid positron emission tomography (PET), cerebrospinal fluid (CSF) concentrations of amyloid and tau proteins, and plasma concentrations of amyloid, tau, and other protein biomarkers. Topographic biomarkers are related to the regional consequences of AD pathology, such as regional hypometabolism on fluorodeoxyglucose (FDG)-PET, tau PET, and regional/local atrophy on structural magnetic resonance imaging (MRI). The main clinical value of their uses is to discriminate between phenotypes that are associated with AD vs. non-AD pathologies, and to measure the advances in underlying biology such as plasma and CSF levels of phosphorylated tau (pTau).

Conclusion: Identifying the correct stage of Alzheimer's disease helps in managing risk, diagnosis, and management decisions. Biomarkers help identify patients with AD or those likely to develop AD and could potentially benefit most from therapy. Biomarkers are useful tools for early AD diagnosis that is essential for informed discussion, appropriate care, support, and individualized treatment.

Keywords: alzheimer disease, biomarkers, diagnosis

THE ROLE OF SERUM IGM ANTI-GM1 AS BIOMARKER IN MULTIFOCAL MOTOR NEUROPATHY

Amina Kačar, Admir Mehičević, Hamza Jatić, Dženita Imamović

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dr.aminakacar@gmail.com

Objective This review highlights the importance of anti- GM1 antibody, specifically IgM type, in the diagnosis and management of patients with multifocal motor neuropathy.

Review topic: Multifocal motor neuropathy (MMN), is a rare, acquired, immune-mediated motor neuropathy characterized by progressive asymmetric weakness without sensory problems. Absence of upper motor neuron involvement is almost a rule. Other clinical features include muscle cramps, fasciculations, and an increase of weakness in cold conditions. Electrodiagnostic studies often reveal an asymmetric motor neuropathy with characteristic conduction block. Serum IgM anti-ganglioside antibodies (anti-GM1) are present in the majority of the patients and they more often have severe weakness, disability, and eventual axon loss than seronegative patients. A 50-year-old male presented with 7-year-long history of progressive motor weakness. The patient experienced fasciculations, which were particularly noticeable in the arms. Initially was misdiagnosed with motor neuron disease. Neurological examination on admission revealed flaccid quadriplegia, areflexia, muscle atrophy, without sensory loss and upper motor neuron signs. Electrophysiological testing showed severe axonal motor neuron loss. Elevated anti-GM1 IgM titer was consistent with the diagnosis of MMN and IVIg therapy was initiated, which led to subjective improvement without measurable changes in disability scores (INCAT score and RODS-MMN).

Conclusion: Anti-GM1 IgM antibodies are a valuable biomarker in MMN, aiding in early recognition to prevent unnecessary delays on therapy and heavier disability.

Keywords: serum IgM anti-GM1, multifocal motor neuropathy

UNCOVERING A HIDDEN MYASTHENIC CRISIS: FROM NEUROPATHY SUSPICION TO FINAL DIAGNOSIS

Hamza Jatić[1], Amina Ademović-Mrkaljević[2], Azra Šero[1], Nevena Mahmutbegović[1], Senad Drnda[1]

[1]Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Brčko District Hospital, Brčko, Bosnia and Herzegovina
Email: hamzajatic@gmail.com

Objective: To highlight a rare case where both myasthenic crisis and differential diagnostic considerations such as CIDP are discussed.

Review topic: Myasthenic crisis (MC) is a life-threatening manifestation of myasthenia gravis (MG) defined by respiratory insufficiency requiring ventilatory support. Although many cases present gradually, timely recognition and prompt immunotherapy can significantly improve prognosis. A 71-year-old male was admitted urgently due to progressive limb weakness and inability to walk, which began during a prior hospitalization in a pulmonary clinic for suspected viral infection. His medical history included arterial hypertension, ischemic stroke (2017), and pulmonary embolism (2019). Initial diagnostic considerations included chronic inflammatory demyelinating polyneuropathy. On admission, neurological examination revealed ptosis, bulbar symptoms, and flaccid paraparesis. Neurophysiological testing and magnetic resonance imaging did not support the diagnosis of inflammatory neuropathy. Laboratory evaluation showed elevated acetylcholine receptor antibodies. Based on clinical findings and serology, a diagnosis of myasthenic crisis was established. The patient was treated with intravenous immunoglobulins for five days alongside antihypertensive, anticoagulant, and supportive therapy, resulting in marked neurological improvement.

Conclusion: This case underlines the importance of considering MG in elderly patients with flaccid paralysis and bulbar symptoms. Early diagnosis and immunotherapy are crucial for favorable outcomes.

Keywords: myasthenic crisis, myasthenia gravis, acetylcholine receptor antibodies

VISUAL EVOKED POTENTIALS-ROLE AND SIGNIFICANCE IN THE DIAGNOSIS OF DEMYELINATING DISEASES

Amira Beganović-Petrović

Clinic of Neurology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: amira_beganovic@yahoo.com

Objective: The aim of this review is to explore the role of Visual Evoked Potentials (VEPs) in the diagnosis and monitoring of demyelinating diseases, particularly multiple sclerosis (MS). This review will focus on how VEPs, as a non-invasive neurophysiological tool, assist in detecting subclinical lesions of the visual pathway, helping to demonstrate dissemination in time and space, especially when magnetic resonance imaging (MRI) is insufficient for diagnosis. Additionally, it will examine the significance of prolonged P100 wave latency as an indicator of visual pathway demyelination, even in the absence of clinical symptoms.

Review topic: Visual evoked potentials (VEPs) are a non-invasive neurophysiological method that allows the detection of subclinical lesions of the visual pathway, which makes them important in the diagnosis of demyelinating diseases, especially multiple sclerosis (MS). According to the 2024 McDonald criteria, VEP is used as an additional tool to demonstrate dissemination in time and space, especially when magnetic resonance imaging (MRI) is not sufficient for diagnosis. Prolongation of the P100 wave latency in VEPs indicates demyelination of the visual pathway, even in the absence of clinical symptoms.

Conclusion: By including VEPs, diagnostic accuracy increases and allows for earlier diagnosis of MS, which is crucial for timely initiation of therapy and slowing disease progression.

Keywords: visual evoked potentials, P100 wave, MS

OUTCOME AND UTILITY OF FIRST DORSAL METACARPAL ARTERY FLAP FOR FINGER DEFECTS

Malik Jakirlić, Sanela Brzika, Nedim Katica, Vanis Dujso

Clinic of Plastic and Reconstructive Surgery, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: malikjak@yahoo.com

Background: The First Dorsal Metacarpal Artery (FDMA) Flap or Foucher's flap is an island pedicle flap proximally based on the first dorsal metacarpal artery and veins. A branch of the radial sensory nerve is incorporated in the flap to make it a sensate flap.

Objective: The aim of our study was to evaluate the functional and aesthetic outcomes of the seven FDMA flaps done over a period of four years for reconstruction of the distal thumb soft tissue defects and one defect over the proximal phalanx of the index finger.

Methods: This prospective study was performed between 2018 and 2022 at the Clinic of Reconstructive and Plastic Surgery. We present a series of six cases of distal thumb soft tissue defects and one patient with defect over the dorsal aspect of the index finger that were reconstructed with the FDMA flap.

Results: In six patient donor site was grafted by a full-thickness skin graft harvested from the groin and in one case was closed primary. All flaps survived and one case that was closed primary had donor site complication that was related to primary closure of the skin. All the patients had good fine touch and average two-point discrimination of 8.7 mm. Conclusion: FDMA flap is a useful and reliable flap to cover the defects of the dorsal aspect and to a certain extent the volar aspect of the thumb. We showed that can be used to cover the defects over proximal phalanx of the index finger. The flap provides adequate soft tissue coverage and good aesthetic results.

Keywords: FDMA flap, FDMA, Foucher's flap, kite flap

SURGICAL TREATMENT OF CHRONIC LEG ULCER - TREATMENT OF CHRONIC WOUNDS

Indira Džeko, Mahira Tanović

Surgery Department, Cantonal Hospital "Dr. Safet Mujić", Mostar, Bosnia and Herzegovina

Background: A chronic leg ulcer is a defect in the skin below the knee that does not heal within six weeks, significantly impacting the patient' s quality of life and representing a challenge for medical treatment. The most common causes are venous insufficiency (70%), arterial disease (10%), and mixed etiology (15%), while other factors include pressure ulcers, diabetes, and trauma. Chronic localized ulcers (CLU) have a prevalence ranging from 1.9% to 13.1% in the community.

Case report: This case describes a 62-year-old female patient with a comminuted fracture of the proximal tibia, chronic osteomyelitis, and an ulcerative lesion on the anteromedial surface of her right leg, present for four years. After several surgical interventions, including the removal of osteosynthetic material and sequestrectomy, the patient underwent ulcer treatment. Initial debridement of all ulcers was performed, the smaller ulcer was closed by approximating the edges, and the larger ulcer was treated with curettage and application of A-cell sheet material, followed by negative pressure therapy (VAC system). Despite various treatments, including antibiotics and compression stockings, the ulcer did not heal after four years. A preoperative wound swab was sterile, indicating no bacterial infection. The use of A-cell sheet material and negative pressure therapy, along with the creation of holes in the anteromedial surface of the tibia using a drill has proven effective in the treatment.

Conclusion: This technique facilitates the release of bone marrow elements, which play a crucial role in promoting wound healing. This approach may be beneficial for broader implementation in treating similar cases of chronic, non-healing ulcers.

ALCAPA SYNDROME-THIEF WITH A THOUSAND FACES

Mirza Halimić, Alimira Kadić, Zijo Begić, Selma Dizdar, Semra Cepić-Kapić

Pediatric Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: halimicm@gmail.com

Introduction: Anomalous origin of the left coronary artery from the pulmonary artery (ALCAPA) syndrome is a potentially lethal and rare congenital cardiac anomaly (for approximately 1 in 300,000 live births).

Objectives and review topic: ALCAPA syndrome mostly presents in the first few months of life. Left untreated, the mortality rate in the first year of life is 90% secondary to myocardial ischemia or infarction and mitral valve insufficiency leading to congestive heart failure. ALCAPA can be found both in infants and in older individuals, with the absence or presence of strong collateral circulation from the right coronary artery, with different clinical presentations. Clinical diagnosis of ALCAPA can be demanding.. This paper presents 3 patients with ALCAPA syndrome as well as the variations in their age, clinical presentation, modality of treatment.

Conclusion: Prognosis for patients with ALCAPA syndrome is dramatically improved as a result of both early diagnosis and improvements in surgical techniques, including myocardial preservation.

Keywords: ALCAPA, heart failure, clinical presentations, infant, older age, treatment

ATRIOVENTRICULAR REENTRANT TACHYCARDIA (AVRT) IN CHILDREN

Almira Kadić

Pediatric Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: almira.kadic@yahoo.com

Introduction: Atrioventricular Re-entry Tachycardia (AVRT) is a form of paroxysmal supraventricular tachycardia that occurs in patients with accessory pathways, usually due to formation of a re-entry circuit between the AV node and accessory pathway. General characteristics of AVRT include an abnormally fast heart rate which can be as high as 220-320 bpm in younger children. In antidromic AVRT, anterograde conduction is via the accessory pathway (AP), producing a regular wide complex rhythm. This can be difficult to distinguish from ventricular tachycardia (VT).

Case report: A 3-year-old male child with multiple hospitalizations (the first at 50 days old) due to tachyarrhythmias - the PSVT type, triggered by systemic infection. After a short period and first-line antiarrhythmic therapy, progresses to AVRT (antidromic) with a VT pattern and severe hemodynamic instability. Echocardiography shows a structurally normal heart. After three episodes of AVRT, a 24-hour Holter ECG reveals signs of WPW syndrome with preexcitation. An indication for electrophysiological study and radiofrequency ablation is established. The procedure is performed at 2.5 years of age, identifying an accessory pathway in the right lateral area of the tricuspid valve responsible for tachycardia. Cryoablation and RF ablation are performed. Post-procedure, the ECG was normal, without preexcitation.

Conclusion: Radiofrequency ablation is a safe and effective curative option for pediatric patients with refractory tachyarrhythmias.

Keywords: arrhythmias, AVRT, radiofrequency ablation, body of the abstract with separated paragraphs of different section

CASE REPORT OF A NEWBORN WITH CARDIOGENIC SHOCK AS A CONSEQUENCE OF SUPRAVENTRICULAR TACHYCARDIA

Iva Mandić, Svjetlana Kelava, Helena Karlović

Clinic for Children's Diseases, University Clinical Hospital Mostar, Mostar, Bosnia and Hercegovina
Email: icvitkovic11@gmail.com

Introduction: Shock in neonates is a critical emergency requiring prompt recognition and intervention. While septic shock is the most common etiology, cardiogenic shock due to arrhythmias such as supraventricular tachycardia (SVT) is a rare but important differential diagnosis. SVT can lead to myocardial dysfunction, reduced cardiac output, and life-threatening circulatory failure. However, due to its nonspecific presentation, SVT-induced cardiogenic shock may initially be misdiagnosed (1,2).

Objective: To present a case of neonatal cardiogenic shock caused by SVT and to highlight the importance of including arrhythmias in the differential diagnosis of neonatal shock.

Review topic: SVT is the most common arrhythmia in neonates. Clinical signs may include poor feeding, irritability, pallor, or cyanosis, and sustained tachycardia can cause hemodynamic compromise. Early electrocardiographic monitoring is essential for diagnosis, especially when arrhythmias are intermittent or initially absent. Management includes acute cardioversion with adenosine or amiodarone and long-term prophylaxis with beta-blockers. Misdiagnosis as sepsis is common, particularly when tachycardia is not immediately evident (3,4). In this case, a 27-day-old neonate presented with signs of shock and severe metabolic acidosis. Initial treatment for presumed septic shock was initiated. After stabilization, the infant developed SVT, which was successfully treated pharmacologically. Propranolol was introduced for long-term control, and no recurrence was observed (5).

Conclusion: Although rare, SVT-induced cardiogenic shock must be considered in any neonate presenting with unexplained decompensation. Continuous cardiac monitoring and awareness of arrhythmic causes are essential for accurate diagnosis and timely therapy. This case underscores the importance of maintaining a broad differential diagnosis in critically ill neonates.

Keywords: cardiogenic shock, supraventricular tachycardia, neonate

CLINICAL CHARACTERISTICS OF THE HENOCH-SCHONLEIN PURPURA IN PEDIATRIC POPULATION: A SINGLE CENTER EXPERIENCE

Emina Karčić-Muračević[1], Kovačević Mirza[2,3], Melica Imamović- Bošnjak[4], Demir Muračević[5], Amila Alić[1], Neira Tursum[6]

[1]Department of Pediatrics, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
[1]Department of Anesthesiology, Resuscitation and Intensive Care, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
[3]Faculty of Medicine, University of Zenica, Zenica, Bosnia and Herzegovina
[4]Emergency Department, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
[5]Department of Surgery, Cantonal Hospital Zenica, Primary Health Centar Kakanj, Bosnia and Herzegovina
Email: eminakarcic@live.com

Aim: To analyze demographic data, clinical symptoms and laboratory data in pediatric patients with Henoch-Schoenlein purpura (HSP) admitted to the pediatric department.

Methods: Medical records of 22 pediatric patients presented with HSP were retrospectively analyzed. Demographic data, clinical presentation, season of symptom onset and laboratory data were collected at the hospital admission in the period between 2015-2023.

Results: The lowest number of the patients with HSP were detected in 2015. (1 patients, 4.55%), and the highest in 2022. (8 patients, 36.36%). Of the 22 patients, 15 (68.18%) were male and 7 (31.82%) were female. The average age of the monitored patients was 6.11 year (p= 0.272). There was no statistical significant difference in demographic parameters, while there was significant difference when we speak about season of the disease onset. Combination of the skin form, muscular and joint involvement was notices in 8 patients (27,3%), in 6 patients (66.67%) multiple joints were affected, while in 2 patients one joint was affected (22.22%), and in one patient both ankle joints were affected (11.11%). 18,18% patients had abdominal form of illness.

Conclusion: Although HSP has a good prognosis, there are patients who suffer from long term consequences of this illness. Knowledge of the nature of the disease, its appearance and clinical characteristics can be a feature in diagnostic-therapeutic decision making.

Keywords : Henoch-Schonlein Purpura, pediatric patients, multisystem disease

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF PEDIATRIC PERTUSSIS HOSPITALIZATIONS AT UNIVERSITY CLINICAL HOSPITAL MOSTAR (2019–2025)

Svjetlana Mikulić, Iva Mandić

Department of Pediatrics, University Clinical Hospital Mostar, Bosnia and Herzegovina
Email: svjetlana.mikulic@yahoo.com

Background: Pertussis, or whooping cough, remains a significant public health challenge, particularly in infants who have not yet completed their vaccination schedule. Despite the availability of vaccines, severe cases continue to occur, often necessitating hospitalization due to respiratory distress, complications, and co-infections. Understanding the clinical course and outcomes of hospitalized cases is crucial for improving prevention strategies and patient management.

Aim: This study aims to evaluate the clinical characteristics, disease severity, vaccination status, presence of co-infections, and outcomes of hospitalized pertussis cases at the Department of Pediatrics, University Clinical Hospital Mostar, between January 1st, 2019, and January 1st, 2025.

Materials and methods: A retrospective analysis was conducted on 16 hospitalized patients diagnosed with pertussis. Key parameters assessed included age at admission, vaccination status, need for oxygen therapy, ICU admission, duration of hospitalization, antibiotic therapy beyond chemoprophylaxis, presence of co-infections, comorbidities, and treatment outcomes.

Results: The average age at hospitalization was 8.3 months, with three patients younger than three months and only one vaccinated patient. Oxygen therapy was required in 5 cases, and 2 patients necessitated ICU admission and mechanical ventilation. The average hospital stay was 9.06 days. Three patients received additional antibiotic therapy, and six had co-infections, including metapneumovirus (2), RSV & Rhinovirus (1), mononucleosis infectiva (1), COVID-19 (1), and Rhinovirus (1). Comorbidities were present in 2 cases, and one patient succumbed to the disease, while 15 recovered.

Conclusion: These findings underscore that pertussis disproportionately affects unvaccinated infants, including those younger than three months, often leading to severe respiratory complications. The presence of co-infections and comorbidities may exacerbate disease severity, highlighting the necessity for robust vaccination programs, early diagnosis, and timely medical intervention to prevent life-threatening complications.

Keywords: pertussis, hospitalization, infants, vaccination, co-infections, respiratory distress, mechanical ventilation, public health

GUILLAIN-BARRÉ SYNDROME (CASE REPORT)

Aida Avdić, Emina Bajramali-Zaimović, Emira Gasal-Gvozdenović

Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: avdicaidaaa@gmail.com

Introduction: Guillain-Barré syndrom is an acute demyelinating, autoimmune, postinfectious disease of the peripheral nerves. It is preceded by an acute bacterial or viral infection occurring within six weeks before the onset of symptoms, usually an upper respiratory tract infection or gastroenterocolitis leading to an immune mediated response of producing antibodies which react with the myelin sheath of the peripheral nerves, resulting in demyelination and/or axonal injury.

Objective: The aim is to present a pediatric patient with Guillan Barre syndrome.

Review topic/case report: A 13-year-old male child was admitted to the hospital with complaints of weakness in both lower limbs and difficulty walking. Seven days ago he coughed without fever. The child was previously healthy with no significant medical history. Upon admission, the patient was found to have decreased muscle strength of the lower limbs, reflexes were present in all extremities. All laboratory findings were within reference values, microbiological analyzes were negative, Magnetic Resonance Imaging (MRI) of the brain and lumbal spine did not verify patological changes. In the further course, there is a deterioration and loss of reflexes in the lower extremites and Electro Myogram shows signs of acute polyradiculoneuritis. Patient was transferred to the hospital for further diagnostic workup and treatment under suspicion of Gullain Barre syndrome. He was discharged as recovered and is now being followed under diagnosis of chronic demyelinating neuropathy and reciving Intravenous immune globulin (IVIG) every four weeks.

Conclusion: This case highlights the importance of early recognition of Guillain Barre syndrome in pediatric patients. Treatment with IVIG and supportive care is often effective and the majority of children recover well with appropriate management.

Keywords: Guillain Barre syndrome, neuropathy, demyeliniation

(HYPO)RESPONSIVENESS TO ERYTHROPOIESIS-STIMULATING AGENTS IN PEDIATRIC ANEMIA: A FRUSTRATION FOR PATIENTS AND HEADACHE FOR PHYSICIANS

Srdjan Nikolovski, Miljan Adamović, Ana Adamović

Loyola University Medical Center, Maywood, IL, USA University of Kragujevac Faculty of Medical Sciences, Kragujevac, Serbia
Email: srdjannikolovski@gmail.com

Objective: Description of causes and management of hyporesponsiveness to erythropoiesis-stimulating agents (ESAs) as a significant challenge in managing anemia among pediatric patients, particularly those with chronic kidney disease (CKD), cancer, or rare genetic disorders.

Review topic: ESAs are foundational therapies for anemia by enhancing erythropoietin signaling. However, up to 20% of pediatric patients exhibit suboptimal hemoglobin responses despite adequate dosing. Key contributors include iron deficiency (absolute or functional), chronic inflammation (e.g., cytokine-driven hepcidin elevation), vitamin deficiencies (B12, folate), and comorbidities such as infections or malnutrition. In CKD, uremic toxins and hyperparathyroidism further impair erythroid progenitor responsiveness. Genetic polymorphisms in erythropoietin receptor pathways or iron-regulatory genes may also predispose children to hyporesponsiveness. Clinically, ESA resistance correlates with increased morbidity, transfusion dependency, and reduced quality of life, underscoring the need for timely intervention. Diagnostically, a stepwise evaluation is recommended: iron analyses, inflammatory markers (C-reactive protein, hepcidin), and nutritional assessments guide initial management. Intravenous iron supplementation often ameliorates functional iron deficiency, while anti-inflammatory strategies (e.g., corticosteroids in CKD) may mitigate cytokine-mediated suppression. Novel therapies, such as hypoxia-inducible factor prolyl hydroxylase inhibitors (HIF-PHIs), show promise in enhancing iron utilization and bypassing traditional ESA pathways.

Conclusion: Emerging evidence highlights the importance of individualized treatment algorithms, integrating biomarkers and genetic profiling to predict ESA responsiveness. Multidisciplinary care involving nephrologists, hematologists, and nutritionists is critical. Despite advances, gaps persist in understanding age-specific mechanisms and long-term outcomes of alternative therapies in children.

Keywords: anemia, erythropoiesis-stimulating agents, hyporesponsiveness, iron deficiency, chronic kidney disease

MYASTHENIA GRAVIS AND MYASTHENIC SYNDROMES IN CHILDREN

Emina Bajramali Zaimović, Emira Gasal-Gvozdenović, Aida Avdić, Alma Lacić

Department of Pediatrics, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: eminabajrazaimovic@yahoo.com

Introduction: The neuromuscular junction consists of the presynaptic nerve ending, the synaptic cleft, and the postsynaptic membrane, with the neurotransmitter acetylcholine. A disorder in the production, storage, or release of acetylcholine (presynaptic level) in quantity and activity of acetylcholinesterase (synaptic level) or a disorder at the level of acetylcholine receptors or other proteins of the postsynaptic membrane (postsynaptic level) can lead to impaired neuromuscular transmission, which results in fatigue of various muscle groups.

Review topic: Myasthenia gravis is usually caused by acquired immune abnormalities. Weakness and hypotonia in infants can be caused by a variety of conditions, including disorders of the neuromuscular junction, with abnormal neuromuscular transmission leading to fatigue and muscle weakness. Most of these disorders are transient, but congenital forms are permanent. The diagnosis of congenital myasthenia gravis should be suspected in cases of muscle weakness that mainly affects the eye and bulbar muscles, starting from birth until late age, especially with a positive family history. Congenital myasthenia gravis can also occur later in life, but acquired autoimmune disorders of the neuromuscular junction are more common then, which, in addition to eye and bulbar symptoms, are manifested by weakness in the limbs. Diagnosis is made by history, clinical examination, ice pack test, tensilon (endophonium) test, serological tests, nerve conduction tests, EMG, SFEMG, MRI, CT. Treatment of milder forms is symptomatic (acetylcholinesterase inhibition), for more severe forms, immune therapy (corticosteroids, nonsteroidal immunosuppressants, immunomoulators), immunomodulatory treatments (IVIG plasmapheresis), surgical (thymectomy).

Conclusion: In this abstract, we will show our experiences of children suffering from myasthenia gravis, the path to diagnosis, the clinical picture, and treatment.

Keywords: myasthenia gravis, child, acetylcholine

NEONATAL LUPUS AND CONGENITAL ATRIOVENTRICULAR BLOCK: A CASE REPORT WITH A FATAL OUTCOME

Edina Spahić, Mirza Halimić

Pediatric Clinic, Clinical Center University of Sarajevo, Bosnia and Herzegovina
Email: edinaspahic9@gmail.com

Introduction: Neonatal lupus (NL) is a rare autoimmune disorder caused by transplacental transfer of maternal anti-Ro/SSA and antiLa/SSB antibodies. Its most severe manifestation, congenital atrioventricular (AV) block, can lead to significant hemodynamic instability and high mortality.

Case report: A term neonate (birth weight: 3625 g) was born to a reportedly healthy mother. The pregnancy was complicated by fetal hydrops and persistent bradycardia. The neonate was transferred to a tertiary center with non-immune hydrops, ascites, and congenital AV block (II/III degree). Upon admission, the ascites was drained, and after that echocardiography and Holter monitoring confirmed AV block with a minimum heart rate of 39/min. Immunological testing revealed high anti-SSA, anti-SSB, and ANA titers, confirming NL. Due to persistent bradycardia and high heart failure risk, a dual-chamber pacemaker (DDD) was implanted. The infant was discharged in stable condition. Two months later, the patient was readmitted with decompensated heart failure and multiorgan dysfunction. Despite intensive therapy, clinical deterioration progressed, leading to circulatory collapse and a fatal outcome.

Conclusion: This case highlights the importance of early recognition and management of NL-associated congenital AV block. While pacemaker implantation improves cardiac function, systemic NL manifestations significantly impact prognosis. Maternal serological screening and fetal cardiac monitoring are essential for early intervention.

Keywords: neonatal lupus, congenital heart block, fetal hydrops, ascites, pacemaker, maternal autoantibodies, heart failure, immunosuppression

NEONATAL MENINGITIS/ REVIEW ARTICLE

Alma Bolić-Alić, Semir Bolić, Edina Drpljanin

Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: alic_alma@hotmail.com

Introduction: Meningitis in neonates is an important cause od mortality and morbidity.

Review topic: Neonatal meningitis is an inflammation of the meninges caused by a bacterial infection. The symptomes of meningitis resembles sepsis with symptoms of central nervous system irritation such as lethargy, convulsions, vomiting, irritability, neck stiffness, bulging or tense fontanelle with cranial nerve outbursts. The gold standard for the diagnosis of meningitis is lumbar pouncture. Bacterial meningitis is treated with antibiotics. Treatment duration varies depending upon the pathogen and clinical response. Neuroimaging plays an important role in prognosis.

Conclusion: This short abstract provides an overview of neonatal meningitis and discusses the recommendations for diagnosis and treatment offered in some of the evidence-based clinical practice guidelines used in higher income countries.

Keywords: Topics: c-reactive protein, meningitis, neonatal meningitis, cerebrospinal fluid, diagnostic spinal puncture, newborn

NEURODEVELOPMENTAL OUTCOMES IN PRESCHOOL CHILDREN WITH UMBILICAL CORD ABNORMALITIES

Edina Karabeg[1], Enes Karabeg[1] , Adi Karabeg[2], Dževad Džanić[3]

[1]General Hospital Sanski Most, Sanski Most, Bosnia and Herzegovina
[2]Akershus Universitetssykehus Kongsvinger, Norway
[3]Faculty of Health Studies, University of Bihac, Bihać, Bosnia and Herzegovina
Email: edina.karbeg@gmail.com

Objective: This study determines the frequency and types of umbilical cord (UC) abnormalities in neonates born at term and its correlation with neurodevelopmental outcomes in children of preschool age.

Methods: All newborns were born from January 1, 2005, to December 31, 2012. The study included 250 newborns with umbilical cord abnormalities diagnosed at birth and 150 newborns in the control group. We tracked and recorded cardiotocographic findings (CTG trace) in both groups, mode of delivery, and the condition of the newborn at birth with the APGAR score at 1 and 5 minutes. After five to seven years of follow-up we, accessed in preschool children the assessment of neuromotor status, psychomotor development, visual-perceptive and sensory abilities, and hearing and speech development disorders.

Results: Pathological CTG trace, longer duration of delivery, APGAR score ? 7, clinical picture of the newborn at birth, and the need for NICU presented in children with umbilical cord abnormalities was significantly higher in the study group than the control group. We found a substantially higher probability of pathological neurological outcomes in this group of children (p?0.001).

Conclusion: Umbilical cord abnormalities represent an essential risk factor for neurodevelopmental deviations. Early diagnosis of umbilical cord abnormalities might be a useful tool in the prevention of neurological morbidity.

Keywords: umbilical cord abnormalities, CTG trace, mode of delivery, APGAR score, child neurodevelopmental outcome.

OVERVIEW OF COUPLE OF TOOLS USED TO DIAGNOSE ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Amina Smajlović

Nationwide Children's Hospital, The Ohio State University College of Medicine Columbus, OH, USA
Email: aminadilber@yahoo.com

Objective: Overview of 2 tools used to diagnose Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents.

Review topic: Attention Deficit Hyperactivity Disorder (ADHD) in children and adolescents has global prevalence around 5.29% and 10% in the United States of America (USA). ADHD in the USA is diagnosed based on the guidelines developed by American Psychiatric Association Diagnostic and Statistical Manual, Fifth edition (DSM-5). Six or more symptoms of inattention and/or hyperactivity-impulsivity for children up to age 16 years need to be present to make the diagnosis. Primary care providers commonly use National Institute for Children's Health Quality (NICHQ) Vanderbilt Assessment Scales for teacher and parents. Tool is validated for 6–12-year-old children. It assesses for Inattention, hyperactivity/impulsivity, oppositional defiant disorder, conduct disorder and anxiety/depression. Conners Rating Scales for parents and teachers are available to diagnose 6–18-year-olds with ADHD. It includes symptom scale, impairment scale, executive functioning scale and comorbid symptom scale.

Conclusion: ADHD is a chronic condition that affects millions of children/adolescents and often continues into adulthood. Vanderbilt Assess Scales and Conners Rating Scales are useful tools in helping us make the ADHD diagnosis.

Keywords: ADHD, diagnosis, children, adolescents, Vanderbilt Rating Scale, Conners Rating Scale

SHAKEN BABY SYNDROME: CASE REPORT

Vahdeta Prasko, Fahrudin Alić, Alma Alić-Bolić

Department of Pediatrics, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: vahdeta.dr90@gmail.com

Introduction: Shaken baby syndrome is a serious brain injury that results from forcefully shaking an infant or a toddler. It also is known as abusive head trauma, shaken impact syndrome, inflicted head injury or whiplash shaken infant syndrome. It most often occurs when a caregiver becomes frustrated because a baby won't stop crying.

Case report: In this case report we wil present a six-month-old infant who is suffered a head injury as a result of abuse by the biological mother. The patient was admitted to the Cantonal Hospital Zenica in poor general condition, unconscious. Bilateral subdural hematoma was noted on the computerized tomography and magnetic resonance imaging. An urgent neurosurgical procedure was performed. Postoperatively, she was treated in the intensive care unit of the pediatrics department. On the fourth postoperative day, her condition worsened with the onset of left-sided hemiparesis and convulsive seizures. After stabilization of ther condition an the recovery of the neurological deficit, the issue of her custody was resolved. Mother was placed of custody after admitting to abusing and shaking the infant. The infant was discharged from the hospital in good general condition and returned home, where he will be cared for by his biological father and grandmother.

Keyword: head injury, infant, shaken baby syndrome, abuse, subdural hematoma

THE ROLE OF 24HOUR-PH MONITORING WITH IMPEDANCE IN THE DIAGNOSIS OF GASTROESOPHAGEAL REFLUX DISEASE AND LARYNGOPHARYNGEAL REFLUX IN CHILDREN WITH RESPIRATORY SYMPTOMS

Daniela Kraljević, Svjetlana Mikulić, Ante Damjanović

Pediatric Clinic, Department of Pediatric Pulmonology and Allergology, University Clinical Hospital Mostar, Bosnia and Herzegovina
Email: danielakraljevic@gmail.com

Background: Gastroesophageal reflux disease (GERD) in children often presents with nonspecific respiratory symptoms like coughing, wheezing, and asthma, complicating diagnosis. 24-hour pH monitoring with impedance detects acidic, neutral, and alkaline reflux, offering a more accurate diagnostic tool for GERD.

Aim: This study aimed to assess the role of 24-hour pH monitoring with impedance in diagnosing GERD and laryngopharyngeal reflux (LPR) in children with respiratory symptoms, and to explore the correlation between reflux episodes and respiratory symptoms.

Materials and methods: Since October 2023, 17 children with respiratory symptoms underwent 24-hour pH monitoring with impedance at the clinic. pH values and impedance were analyzed to detect reflux events and their relationship to respiratory symptoms. LPR was diagnosed in 16 patients.

Results: Of the 17 children, 16 were diagnosed with LPR. Data analysis revealed a direct correlation between reflux episodes—acidic, neutral, or alkaline—and the respiratory symptoms. This method effectively linked reflux to symptoms like coughing, wheezing, and asthma.

Conclusion: 24-hour pH monitoring with impedance accurately diagnoses GERD and LPR in children with nonspecific respiratory symptoms. It provides vital information about reflux types and their connection to respiratory symptoms, aiding in precise diagnoses and better treatment outcomes. This technique is safe, non-invasive, and valuable for long-term monitoring of treatment effectiveness in pediatric pulmonology.

Keywords: 24-hour pH monitoring with impedance, respiratory symptoms, gastroesophageal reflux disease, laryngopharyngeal reflux

THE ROLE OF SENSORY INTEGRATION IN UNDERSTANDING CHILDREN`S BEHAVIOR, SENSORY INTEGRATION IN PEDIATRICS

Anisa Mustajbašić[1], Nejra Efendić-Čavčić[2]

[1]Association for Creative Learning "Mak", Vogošća, Bosnia and Herzegovina
[2]Center for Upbringing, Education, and Rehabilitation "Vladimir Nazor" Sarajevo, High School Center, Vogošća, Bosnia and Herzegovina
Email: efendicnejra@gmail.com

Objective: The aim of this abstract is to point out the importance of early detection and treatment of sensory integration dysfunction in children, and through practical examples to point out the connection between difficulties in adaptive functioning and specific behavioral patterns with sensory integration dysfunction.

Review topic: Sensory integration is a natural neurological process that lasts from birth to the end of life and refers to how people use the information they receive from their senses from their own body and environment. Two key words explain the problem of sensory processing – the sensory part related to sensations and integration, which means integrating the sensations we receive from our body and the environment, so that we can respond, learn and develop adaptively. Sensations arise from the stimulation of our nerves through sound vibrations, touch, smell, movement, taste, etc. Sensory integration dysfunction affects approximately 10 to 15% of children, from children with developmental delays, with attention problems or autism spectrum disorders, to children who have no other difficulties. Symptoms of infant children are motor developmental delays, refusal to be cuddled and touched. In some cases, there are strong sleep disturbances, difficulty swallowing, and feeding.

Conclusion: Difficulties in processing sensory stimuli could represent risk factors in children's physiological and psychological well-being. Effective treatment for Sensory Processing Disorder is available, but far too many children with sensory symptoms are misdiagnosed and/or improperly treated.

Keywords: sensory integration, babies, children, behavior

THE ROLE OF THE KETOGENIC DIET IN PEDIATRIC EPILEPSY: A CASE REPORT OF A CHILD WITH ANGELMAN SYNDROME AND LITERATURE REVIEW

Fatima Gondžo-Velić[1], Emina Vukas-Salihbegović[2]

[1]Master Fizikal, I. Sarajevo, Bosnia and Herzegovina
[2]Pediatric Clinic, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dr.fatimagondzovelic@gmail.com

Introduction: Angelman syndrome is a rare neurogenetic disorder caused by UBE3A gene deletions or mutations, characterized by developmental delay, intellectual disability, ataxia, and epilepsy. Epilepsy occurs in up to 90% of Angelman syndrome patients and is often resistant to conventional antiepileptic drugs, necessitating alternative treatment approaches. Current treatment strategies for Angelman syndrome focus on symptom management, as there is no cure. Standard approaches include antiepileptic drugs for seizure control, physical and occupational therapy to address motor deficits and behavioral interventions for neurodevelopmental support. The ketogenic diet, characterized by high-fat and low-carbohydrate intake, has emerged as an effective therapeutic alternative for children with drug-resistant epilepsy. Recent studies have demonstrated that approximately one-third of patients on ketogenic diet achieve seizure freedom, while over half experience a reduction in seizure frequency exceeding 50%.

Case report: In this report, we present the case of a 7-year-old boy diagnosed with Angelman syndrome and refractory epilepsy. Despite conventional antiepileptic drugs, the patient continued to experience frequent and severe seizures. Following the initiation of ketogenic diet, the patient exhibited a significant decrease in both the intensity and frequency of seizures, aligning with existing literature that supports the efficacy of ketogenic diet in similar clinical scenarios.

Conclusion: This case highlights the potential of ketogenic diet as a viable treatment option for pediatric patients with refractory epilepsy, including those with syndromic forms such as Angelman syndrome. Given the high prevalence of pharmacoresistant epilepsy in Angelman syndrome, ketogenic diet should be considered an early therapeutic option. However, further research is warranted to explore the long-term efficacy, safety and mechanisms of ketogenic diet in this patient population.

Keywords: ketogenic diet, Angelman syndrome, epilepsy treatment

UNUSUAL CASE OF LARGE BILIARY CYSTADENOMA IN A TWO-YEAR OLD CHILD-DIAGNOSTICS AND THERAPY

Firdus Alena[1], Karavdić Kenan[1], Begić Sadeta[1], Halilović Emsad[1], Begić Nedim[2], Mišanović Verica[2], Redžepagić Jasmina[3], Bukvić Melika[4], Džananović Amra[4], Bečić Elma[5], Rahmanović Samra[2], Strukar Nedim[2]

[1]Clinic of Pediatric Surgery, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Pediatric Clinic, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Depatment of Pathology, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[4]Clinic of Radiology, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[5]Clinic of Anesthesiology and Reanimation, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nedim_begic91@hotmail.com

Background: Biliary cystadenoma, a rare, potentially malignant hepatic cystic lesion, is characterized by multiloculations and septations. It is common in middle-aged females (about 5% of nonparasitic liver cysts); only 12 cases are described in children.

Case report: We report a rare case of hepatic biliary cystadenoma in a 3-year-old girl, with a gradually increasing in formation in the right upper abdomen. Complete excision with a healthy liver margin was done.

Conclusion: A Multidisciplinary approach is very important due to wide differential diagnosis and the quite rare incidence with up-to-date literature consultation. Pediatric surgical treatment (total excision) is necessary due to the compressive effect of the large tumor and the potential for malignant alteration. Post-resection periodic follow using ultrasound or CT-scan and tumour markers will be neccessary in most of the cases.

Keywords: biliary cystadenoma, hepatic mass, mucinous cystadenoma

COLLABORATIVE OUTPATIENT MANAGEMENT OF CHRONIC KIDNEY DISEASE. WHAT IS NEW?

Vedka Begović

Scripps Clinic Medical Group, La Jolla, California, USA
Email: Begovic.Vedka@scrippshealth.org

Background: Chronic kidney disease (CKD) affects more than 800 million individuals globally and is linked to significantly increased risks of morbidity, mortality, and considerable healthcare costs. WHO predicted that CKD is going to be the 5th most common noncommunicable disease. Over the past two decades, the prevalence of CKD has been rising, partly due to the growing incidence of diabetes mellitus and hypertension, which are two major risk factors contributing to the development of CKD. CKD is defined as the presence of functional or structural kidney abnormality with or without the presence of decreased glomerular filtration rate (GFR). After a diagnosis of CKD is made, the focus should be on staging, finding the specific cause, appropriate monitoring, prevention of progression, and detection of complications and comorbid conditions that can affect prognosis. With recent landmark findings and the availability and expansion of the use of sodium glucose cotransport 2 inhibitors (SGLT2i), the role of the primary care provider is shifting from standard treatment to handling kidney function preservation. This is an overview of the most recent developments in the treatment and prevention of CKD, focusing on collaborative care between primary care providers and specialists, with the common goal of improving outcomes and reducing complications.

Keywords: CKD, chronic kidney disease, detection, treatment, prevention, sodium glucose cotransport 2 inhibitors (SGLT2i)

IMPACT OF PHYSIOTHERAPY TREATMENT ON SLEEP BRUXISM IN TEMPOROMANDIBULAR DISORDERS

Lejla Hadžić[1], Aiša Agić[2], Amra Mačak-Hadžiomerović[3], Peter Heidemann[1]

[1]Physiotherapie Süd – West, Munich, Germany
[2]"Private Specialist Dental Practice "Dr. Agić", Sarajevo, Bosnia and Herzegovina
[3]Faculty of Health Studies, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: lejla.ogr@gmail.com

Introduction: Bruxism is usually associated with nocturnal unconsciousness and response, but can occur during the day, both consciously and subconsciously. An analysis of studies published from 2003 to 2023, including younger and adult populations of both sexes, found a global prevalence of bruxism in sleep of 21%. This study aimed to examine the impact of a physiotherapy program on sleep bruxism.

Materials and methods: 31 male and female subjects with TMP participated in this study, and the presence of sleep bruxism in the form of teeth grinding or grinding was investigated. Subjects filled out a questionnaire on the presence of sleep bruxism before and after physiotherapy treatment. The treatment included 6 treatments with fango, medical massage and kinesitherapy.

The subjects were given a program of exercises to take home, which was related to relaxation and stretching of the masticatory muscles.

Results: Teeth grinding or grinding during sleep was present in 26 (83.9%) subjects before physiotherapy treatment. After the treatment, the condition remained unchanged, which means that 26 (83.9%) subjects did not have an improvement in the form of a reduction in sleep bruxism.

Conclusion: Fango, medical massage and kinesitherapy have an important role in reducing TMP symptoms; however, for certain symptoms such as bruxism, it is necessary to extend the treatment period and include additional therapies for a more effective treatment method.

Keywords: sleep bruxism, temporomandibular disorders, physiotherapy treatment

POLYPHARMACY IN END-STAGE RENAL DISEASE: AN UNPREDICTABLE BURDEN TO OUTPATIENT CARE

Srdjan Nikolovski[1], Miljan Adamović[2], Ana Adamović[2]

[1]Loyola University Medical Center, Maywood, IL, USA
[2]University of Kragujevac, Faculty of Medical Sciences, Kragujevac, Serbia
Email: srdjannikolovski@gmail.com

Objective: Analysis of causes and management strategies of polypharmacy as a pervasive and high-risk issue in patients with end-stage renal disease (ESRD) undergoing hemodialysis, particularly in outpatient settings.

Review topic: ESRD patients typically require 10–15 medications daily to manage uremia-related complications, comorbidities, and dialysis-associated symptoms. However, polypharmacy amplifies risks of adverse drug reactions, drug-drug interactions, and non-adherence, exacerbated by altered pharmacokinetics in renal failure and dialysis clearance variability. Common culprits include phosphate binders, erythropoiesis-stimulating agents, antihypertensives, and analgesics. Studies report that over 30% of hemodialysis patients experience preventable adverse drug reactions, often linked to inappropriate dosing or redundant therapies. Contributing factors include fragmented care among specialists, lack of centralized medication reconciliation, and guideline-driven prescribing without deprescribing initiatives. Additionally, psychosocial factors-such as health literacy barriers and socioeconomic stressors-further complicate adherence and safety. Addressing polypharmacy requires a multidisciplinary, patient-centered approach. Deprescribing, guided by tools like the STOPP/START criteria or renal-specific algorithms, is critical to eliminate non-essential or harmful medications. Pharmacist-led medication therapy management in outpatient clinics improves adherence and reduces drug-drug interactions, while electronic health record alerts for renal dosing adjustments minimize errors. Emerging strategies include shared decision-making frameworks to align treatment goals with patient preferences and regular "medication holidays" for symptomatically managed conditions.

Conclusion: Despite progress, gaps persist in evidence-based guidelines for deprescribing in ESRD and standardized metrics to evaluate polypharmacy-related outcomes. Integrating routine polypharmacy assessments into outpatient hemodialysis care pathways is essential to enhance safety and quality of life in this high-risk population.

Keywords: polypharmacy, end-stage renal disease, hemodialysis, deprescribing, medication safety

THE ROLE OF BODY MASS INDEX IN IDENTIFYING INSULIN RESISTANCE IN WOMEN: A PRIMARY CARE APPROACH USING THE HOMA INDEX

Ema Smajlović, Maja Stančić, Mihaela Buljan, Emina Smajić

PZU - Poliklinika "AGRAM", Sarajevo, Bosnia and Herzegovina
Email: emasmajlovic5@gmail.com

Background: Obesity, assessed through body mass index (BMI), is a major risk factor for insulin resistance (IR), contributing to the development of Type 2 diabetes and cardiovascular diseases. High BMI impairs insulin action through mechanisms like increased free fatty acids and pro-inflammatory cytokines. The Homeostasis Model Assessment (HOMA index) is commonly used to estimate IR based on fasting glucose and insulin levels, making BMI a useful screening tool for identifying individuals at risk for IR.

Aim: To examine the correlation between elevated BMI and insulin resistance in women and assess if BMI can serve as a reliable screening tool in primary care for further testing using the HOMA index.

Materials and methods: The study included 50 women, aged 23 to 51 years, who underwent BMI measurement, fasting glucose, insulin level assessments, and HOMA index calculations.

Results: The youngest participant was 23 years old, and the oldest was 51. The majority (42%) were in the 26-35 age group, and the smallest group (10%) was in the 46-55 age group. 86% had normal glucose levels, while 12% had elevated glucose, and 20% had elevated insulin levels. Beta cell activity was normal for all participants, but peripheral insulin sensitivity was reduced in 90%. Elevated BMI was observed in 54% of participants. Among those with high BMI, 67% had an increased HOMA index, 100% had reduced peripheral insulin sensitivity, 19% had elevated insulin, and 15% had elevated glucose.

Conclusion: BMI is strongly associated with insulin resistance. Elevated BMI was linked to higher HOMA index values, reduced insulin sensitivity, and increased insulin and glucose levels. These findings suggest that BMI can serve as a screening tool to prompt further testing and early intervention in primary care.

Keywords: BMI, insulin resistance, HOMA index, Type 2 diabetes, primary care

THE ROLE OF PRIMARY HEALTH CARE IN THE CONDITIONS OF PUBLIC HEALTH THREATS

Aida Pilav[1], Zineta Mulaosmanović[2]

[1]Public Health Institute Canton Sarajevo, Faculty of Health Studies UNSA, SSST University Sarajevo, Bosnia and Herzegovina
[2]Health Center Canton Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: idanap@bih.net.ba

Background: We live in a time characterized by significant political, economic, and health transitions. A special problem is a public health threat in the world, as seen in the recent COVID-19 pandemic. This obliges countries to have a ready and resistant health system for a timely and adequate response to public health threats, especially Primary Health Care (PHC).

Aim: Assessment of the response of the PHC in Sarajevo Canton in the conditions of the COVID-19 pandemic to recognize critical points and illuminate the weaknesses that the PHC faced during establishing the functioning system in special conditions.

Materials and methods: Quality research was conducted with the focus group in 2023, still during the COVID-19 pandemic.

Results: The focus group numbered eleven members who were direct actors in the pandemic, but also direct participants in the process of organizing work and providing health care in emergencies at the PHC level in Sarajevo Canton. A controlled list was created by the World Health Organization (WHO) to assess the readiness of health institutions for the COVID-19 pandemic.

Conclusion: The survey highlighted several factors that impede PHC resistance, which implies planning of staff and equipment for the work of health institutions in emergencies and strengthening the institutional cooperation of health institutions. The crisis requires a system that enables rapid response and communication with the broader community on health hazards. It is necessary to strengthen vertical and horizontal communication in crisis health situations by forming multi-sector staff and through a common platform, which drives relevant factors with automation.

Keywords: primary health care, COVID-19, pandemic, Canton Sarajevo

EXAMINATION OF THE VALUE OF CERTAIN GROUPS OF FLAPS IN THE RECONSTRUCTION OF DEFECTS OF THE MAXILLOFACIAL REGION

Tarik Mašić[1], Ilvana Selman-Badić[1], Amer Kubat[1], Farah Mašić[2]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Dentistry, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Background: Maxillofacial defects caused by trauma or oncological surgery pose both functional and aesthetic challenges. While traditional methods have shown limited success, advances such as regional and free microvascular flaps offer improved outcomes.

Aim: To evaluate the effectiveness of different flap types in restoring function (speech, swallowing, mastication) and aesthetics following maxillofacial reconstruction.

Materials and methods: This retrospective study included 50 patients treated at the Clinical Center University of Sarajevo in the period between 1992 and 2024. Patients presented with significant functional and aesthetic deficits. Four groups of flaps were analysed: local flaps, free grafts, bonded composite flaps, and free microvascular flaps. Postoperative function and aesthetic outcomes were assessed using clinical evaluation and standardized scoring methods.

Results: Statistical analysis revealed significant differences between simple and complex reconstructive procedures. Complex techniques, particulary bonded composites and free microvascular flaps, demonstrated superior functional outcomes. Local flaps were associated with better aesthetic results in smaller defects.

Conclusion: Local flaps are effective for small defects, providing good aesthetic outcomes with less operative burden. For larger or more complex defects, advanced techniques such as free and composite flaps are essential for functional restoration, despite their increased complexity.

Keywords: maxillofacial defects, microvascular flaps, reconstruction, aesthetics, function

FUNCTIONAL AND AESTHETIC RESULTS AFTER MANDIBULAR RECONSTRUCTION WITH FIBULAR GRAFT

Srboljub Stošić

Military Medical Academy, Belgrade, Serbia

Background: Mandibular reconstruction aims to restore bone continuity, re-establish the osseous-alveolar base, correct soft tissue defects, and ensure sufficient strength for daily functions. Free fibular grafts have become the preferred option for managing full-thickness mandibular defects.

Aim: To evaluate functional and aesthetic outcomes following mandibular reconstruction using fibular microvascular grafts in patients with posttraumatic or post-tumor resection defects.

Materials and methods: This clinical study included patients who underwent mandibular reconstruction using fibular microvascular grafts at the Military Medical Academy. The assessment included postoperative mandibular symmetry, strength, and functional recovery, particularly mastication and speech. Endosseous dental implants were placed in selected cases to enhance functional outcomes.

Results: Reconstruction with fibular grafts yielded excellent results in restoring mandibular continuity and contour. Functional recovery was notable, with patients achieving improved mastication, speech, and overall mandibular strength. The use of dental implants further contributed to the restoration of stable occlusion and aesthetic appearance.

Conclusion: Microvascular fibular grafts represent a reliable and effective option for reconstructing mandibular defects, providing both functional and aesthetic benefits. Incorporating dental implants enhances long-term outcomes and quality of life.

Keywords: mandible reconstruction, fibular graft, microvascular flap, functional outcome, aesthetics

HISTORICAL AND CLINICAL OVERVIEW OF THE ENT/MFS DEPARTMENT AT THE CROATIAN HOSPITAL "DR. FRA MATO NIKOLIĆ", NOVA BILA, WITH TWO REPRESENTATIVE CASE REPORTS

Amir Jašarević, Mladen Čuturić, Krunoslav Turić, Antonio Vilić

ENT and Maxillofacial Surgery Department, Croatian Hospital "Dr. fra Mato Nikolić", Nova Bila, Bosnia and Herzegovina

Objective: This review aims to provide a brief historical and clinical overview of the Croatian Hospital "Dr. fra Mato Nikolić", Nova Bila, with a focus on the development and current practice of the ENT and Maxillofacial Surgery Department, including two rare and illustrative clinical cases.

Review topic: The hospital was founded during wartime and has grown into a modern healthcare institution in Central Bosnia. The ENT/MFS department treats a wide spectrum of conditions, from routine examinations and minor procedures to complex surgeries. Statistical data on outpatient examinations, procedures under local and general anesthesia, and hospitalizations reflect the volume and diversity of clinical activity.

To illustrate the department's scope, we present two selected cases. The first is a 20-year-old patient diagnosed with Pott's puffy tumor (PPT), successfully treated via hemicoronal approach with frontal sinus osteoplasty and obturation. The second case involves a 62-year-old patient with neurofibromatosis type 1 who developed a malignant peripheral nerve sheath tumor (MPNST), managed with neck dissection and vascular preservation.

Conclusion: The department's evolution and its ability to manage rare and complex cases underscore its clinical importance in the region. These representative cases exemplify the team's multidisciplinary expertise and readiness to address advanced pathology in head and neck surgery.

Keywords: ENT surgery, maxillofacial surgery, Pott's puffy tumor, MPNST, hospital overview.

HLA TYPING IN THE TRANSFER OF FREE COMPOSITE MICROVASCULAR GRAFTS FROM PATIENTS WITH VERIFIED BRAIN DEATH

Nadira Imamović, Dino Dizdarević

Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Objective: To highlight the role of HLA typing in contemporary transplant medicine, with emphasis on its potential application in transferring free composite microvascular grafts from donors with confirmed brain death.

Review topic: HLA (Human Leukocyte Antigen) typing is a key diagnostic method in immunology and transplantology, enabling precise donor-recipient matching and improving graft survival. Serological methods rely on antigen-antibody reactions, while modern molecular techniques—particularly PCR and sequencing—offer high-resolution analysis of HLA loci. Although primarily used in solid organ transplantation, HLA typing has expanded into fields such as autoimmune disease diagnostics and pharmacogenetics. In our experience, kidney and heart transplantations conducted at the Clinical Center University of Sarajevo have consistently demonstrated the value of HLA compatibility in clinical outcomes. Recent literature supports the use of HLA matching in complex tissue reconstructions, including the transfer of free composite grafts, where immune-mediated rejection remains a critical concern. The use of microvascular grafts from brain-dead donors, though still experimental in some regions, presents an opportunity to overcome limitations of autologous reconstruction, especially in maxillofacial surgery. Integrating HLA typing into such protocols could significantly enhance graft viability and patient outcomes.

Conclusion: HLA typing is fundamental to modern transplantation. As reconstructive surgery evolves, its application in composite tissue allotransplantation may represent a key step toward safer and more effective use of grafts from brain-dead donors.

Keywords: HLA typing, transplant immunology, brain death, composite graft, microvascular flap, donor compatibility

IMMUNOSUPPRESSIVE THERAPY IN AUTOLOGOUS AND ANALOGOUS TRANSPLANTS IN MAXILLOFACIAL SURGERY

Fatima Omerhodžić-Ikanović, Dino Dizdarević

Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Objective: To provide an overview of immunosuppressive strategies used in maxillofacial surgery, focusing on the prevention of transplant rejection and preservation of microvascular function.

Review topic: In head and neck reconstructive procedures, immunosuppression is essential for graft survival, especially in microvascular flap surgeries. Traditional agents such as cyclophosphamide, methotrexate, and corticosteroids are associated with significant adverse effects, including increased infection risk and impaired healing. Targeted therapies, such as monoclonal antibodies (e.g., anti-CD25, anti-TNF), offer more precise immune modulation with reduced vascular complications. Recent approaches emphasize personalized immunosuppression based on genetic and immunological markers to minimize long-term risks such as malignancy and chronic infection. Our clinical experience shows that personalized immunosuppressive protocols are increasingly important in planning complex facial reconstructions. For instance, in mandibular reconstruction using a free fibular flap, anti-TNF-based therapy has demonstrated a lower risk of thrombotic complications. Tolerance-induction strategies tailored to microvascular profiles may further improve long-term graft functionality and reduce the need for aggressive immunosuppression.

Conclusion: Optimal immunosuppressive therapy in maxillofacial surgery requires a careful balance between preventing rejection and maintaining microvascular integrity, with future directions pointing toward targeted and individualized treatment approaches.

Keywords: immunosuppressive therapy, head and neck surgery, microvascular flaps

LATERAL ORBITOTOMY APPROACH FOR INTRAORBITAL TUMORS

Stanislava Petrović, Srboljub Stošić, Ružica Kozomara, Saša Jović, Marko Brkić, Uroš Marjanović, Milka Gardašević, Nikola Djurdjević, Dragan Pandžić

Clinic of Maxillofacial Surgery, Military Medical Academy, Belgrade, Serbia

Background: Intraorbital tumors can represent primary orbital tumors, extraorbital tumors with local extension into the orbit, and distantly metastatic lesions to the orbit. Various approaches are described for orbital tumors surgery. The lateral orbitotomy approach (LOA) was first described by Kronlein in 1888. It allows radical removal of primary orbital tumors, function of visual system and good cosmetic effect after it. LOA is used for intraconal and extraconal lesions lateral to the optic nerve.

Aim: Using a lateral orbital approach as a safe method for intraorbital tumors. Regarding simple reconstruction and low rate of complications.

Materals and methods: We retrospectively reviewed 13 patients who had intraorbital tumors where we used lateral orbitotomy approach with high successful rate. All patients were admitted to the Clinic for Maxillofacial surgery at the Military Medical Academy in Belgrade because of intraorbital tumors. Patients were treated with lateral orbitotomy approach.

Results: This approach provides very good visualization of intraorbital tumors and insure good functional and cosmetic outcome. All patients who were admitted in our Clinic because of intraorbital tumors and who had lateral orbitotomy approach were successfully recovered from the surgery. No patient had diplopia, visual impairment, proptosis and eye movement disabilities.

Conclusion: This approach provides very good visualization of intraorbital tumors and insure good functional and cosmetic outcome. Reconstruction is fairly simple and the rate of complications, vision loss and extraocular muscle palsy, are low and infrequently permanent.

Keywords: intraorbital tumor, lateral orbitotomy, orbital tumors surgery

MAXILLARY SWING APPROACH FOR REMOVAL OF NASOPHARYNGEAL TUMORS

Nikola Djurdjević, Srboljub Stošić, Uroš Marjanović, Stanislava Petrović, Marko Brkić

Military Medical Academy, Belgrade, Serbia

Objective: To evaluate the efficacy of the maxillary swing approach in the surgical management of nasopharyngeal tumors, with a focus on its application in recurrent or persistent cases.

Review topic: Nasopharyngeal tumors present a significant surgical challenge due to their complex anatomy and deep location. Primary treatment typically involves non-surgical interventions such as radiotherapy or chemoradiotherapy, tailored to tumor and patient characteristics. Surgery is generally reserved for recurrent or persistent tumors. The maxillary swing approach, a variation of the transmaxillary technique, provides enhanced access to the nasopharyngeal area as well as to the pterygopalatine fossa and pterygomaxillary fissure. This approach is particularly advantageous in cases where other surgical methods fail to achieve adequate access. Several studies highlight the effectiveness of the maxillary swing in achieving good oncological outcomes while maintaining vital structures and minimizing complications. Careful patient selection is essential to ensure the approach's success, with high success rates in treating recurrent and persistent tumors. Despite the complexity of the procedure, the maxillary swing has shown promise in improving surgical outcomes and providing comprehensive tumor resection with satisfactory functional and cosmetic results.

Conclusion: The maxillary swing approach is a valuable technique for the surgical removal of nasopharyngeal tumors, particularly in recurrent or persistent cases. With proper patient selection, this method offers a high success rate and can significantly enhance both functional and oncological outcomes.

Keywords: nasopharyngeal tumor, maxillary swing, transmaxillary approach, surgery

MODERN PRINCIPLES IN AESTHETIC SURGERY OF THE FACE, JAW, AND NECK

Aleksandar Oroz[1], Snezana Krtinić-Rapaić[2], Svetlana Babić-Rogan[1]

[1]Clinical Hospital Center Zemun, Belgrade, Serbia
[2]MedicOne Hospital for Reconstructive and Plastic Surgery, Belgrade, Serbia

Objective: To emphasize the fundamental role of oral and dental health in achieving optimal outcomes in facial aesthetic surgery and to highlight the necessity of respecting anatomical and functional principles during intervention planning.

Review topic: The global rise in facial aesthetic procedures has led to a growing need to reinforce core surgical principles, particularly the importance of the dentofacial relationship. Minimally invasive procedures—such as lip augmentation using hyaluronic acid or autologous materials, botulinum toxin injections, and thread lifts—are increasingly popular, while conventional surgeries like blepharoplasty, rhinoplasty, and facelifting remain foundational. These interventions aim to improve psychological well-being, self-confidence, and facial harmony. However, neglecting the stomatognathic system and occlusion may compromise aesthetic goals. Dental occlusion, in particular, provides lower facial support and symmetry essential for lasting outcomes. An interdisciplinary approach involving dentists, plastic surgeons, ENT specialists, and maxillofacial surgeons ensures a comprehensive treatment strategy tailored to both aesthetics and function. Patient selection, realistic expectations, and individualized planning are critical to avoid overtreatment or unnatural results.

Conclusion: Facial aesthetic surgery must be grounded in anatomical, functional, and interdisciplinary principles. A beautiful and healthy smile, supported by stable occlusion, remains an essential pillar of true and sustainable facial beauty.

Keywords: aesthetic surgery, face and lips, blepharoplasty, rhinoplasty, facelift, augmentation, occlusion.

ODONTOGENIC INFECTIONS: SERIOUSNESS, COMPLICATIONS, AND EVOLUTION OF TREATMENT OVER THE YEARS

Amer Kubat[1], Dino Dizdarević[1], Harisa Hibić-Kaknjašević[2]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina

Background: Odontogenic infections, especially in their severe forms, have afflicted humans for millennia. These infections continue to represent a significant challenge in oral and maxillofacial surgery departments in Bosnia and Herzegovina, where cervical and deep neck space infections are increasingly observed. Delayed access to primary dental care is one of the major contributing factors.

Aim: To analyse the severity, complications, and treatment evolution of severe odontogenic infections through a systematic review of relevant literature.

Materials and methods: This systematic review was conducted following PRISMA guidelines. Literature searches were performed using PubMed, Web of Science (WS), African Journals Online (AJOL), and the BIS system of the Clinical Center University of Sarajevo. The search strategy included the terms "heavy odontogenic" and "infections." All study types except reviews were considered. The search included publications from the inception of each database to December 22, 2024, including articles from the past 50 years in any language.

Results: A total of 350 records were identified: 150 from PubMed, 125 from WS, 50 from AJOL, and 25 patient records from BIS. After removing duplicates and irrelevant content, 65 studies were included. Laboratory markers such as C-reactive protein and white blood cell count were used to assess infection severity. Despite limited available data, the clinical importance of this topic is growing.

Conclusion: Prompt diagnosis and aggressive surgical drainage are essential in managing severe odontogenic infections. Although resistance is increasing, penicillin remains a widely used empirical therapy.

Keywords: drainage, fasciitis, infections, Ludwig's angina, necrotizing

ORBITAL CELLULITIS: DETERMINING OPTIMAL TREATMENT

Dženana Imamović, Dino Dizdarević

Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Background: Orbital cellulitis is a potentially vision-threatening infection of the periorbital tissues, most commonly resulting from sinus-related bacterial spread. Prompt diagnosis and appropriate intervention are essential to prevent complications such as vision loss, intracranial extension, or systemic sepsis.

Aim: This study aims to evaluate the clinical course and outcomes of different treatment modalities in patients with orbital cellulitis, with emphasis on surgical indications.

Materials and methods: A retrospective-prospective study was conducted involving 10 patients treated at the Maxillofacial Surgery Clinic over the past 5 years. Clinical presentation, diagnostic imaging, laboratory findings, and therapeutic approaches were analysed. Cases were classified based on sinus involvement and severity of infection.

Results: Nine patients had sinus-origin cellulitis; one was of ophthalmologic origin. Lateral incision was performed in two cases, resulting in limited purulent drainage. Seven patients underwent surgical sinus exploration, primarily of the maxillary sinus. One patient required enucleation due to a delayed complication. In 80% of cases, extensive surgical intervention (e.g., medial incision, sinus opening) was necessary, while 20% responded to conservative surgery combined with pharmacological therapy.

Conclusion: The treatment of orbital cellulitis must be guided by early radiological and clinical assessment. While lateral incision may suffice in milder cases, sinus exploration is often required. Multidisciplinary evaluation remains crucial for timely and effective management.

Keywords: orbital cellulitis, sinus infections, lateral incision, surgical treatment

OUR EXPERIENCES AND NEW PRINCIPLES IN THE TREATMENT OF EDENTULOUS JAWS

Dino Dizdarević[1], Fatima Omerhodžić-Ikanović[1], Dženana Imamović[1], Tamara Dizdarević-Juričić[2], Dina Dizdarević-Špago[1]

[1]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Dentistry, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Background: Complete or partial edentulism significantly affects oral function and quality of life. Treatment traditionally relies on removable prostheses, but modern implant-supported solutions, including the use of biomaterials and platelet-rich fibrin (PRF), offer improved stability and patient satisfaction.

Aim: To present our experience with new treatment protocols for edentulous jaws, comparing conventional and implant-supported techniques, with emphasis on minimally invasive approaches and the use of regenerative materials.

Materials and methods: A total of 30 patients with complete edentulism underwent preoperative CBCT imaging and laboratory screening. Comorbidities were assessed before implant placement. All patients received dental implants, with bone augmentation where necessary, using artificial bone and PRF. Postoperative follow-up was conducted at 1, 3, 6, and 12 months. Outcomes were compared with traditional complete denture protocols.

Results: One month after surgery, all patients reported satisfactory function and aesthetic results. Only one implant was lost. Six patients who received PRF experienced transient edema, which resolved spontaneously. All patients received fixed, screw-retained prosthetic restorations. Compared to conventional dentures, implant-supported prostheses offered superior stability and patient comfort, with shorter recovery and minimal pain.

Conclusion: Implant-based rehabilitation of edentulous jaws, especially when combined with PRF and bone substitutes, provides a predictable, well-tolerated, and functionally superior alternative to conventional dentures. Preoperative imaging and patient-specific planning are essential for optimal outcomes.

Keywords: classic treatment, minimally invasive treatment, edentulism

POSSIBLE PERFORATORS IN THE HEAD AND NECK REGION

Dino Dizdarević, Amer Kubat, Nadira Imamović

Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Background: The increasing use of microvascular flaps in head and neck reconstruction has significantly improved postoperative outcomes. Proper planning for tissue replacement and vascular pedicle selection is essential to ensure the success of reconstructive procedures, especially when dealing with defects in critical regions such as the head and neck.

Aim: To evaluate the most suitable perforators for microvascular flaps in the head and neck region, particularly in cases where the nearest perforator may be damaged due to extensive surgical procedures.

Materials and methods: The head and neck region contains approximately 25 perforators over 0.5mm in diameter. This study examines the use of individual perforators for free flap reconstruction, especially when the primary perforator is unavailable due to surgical complications. We analysed several cases from our clinical experience and compared them with relevant published literature.

Results: Key perforators in the head and neck include the facial artery (diameter 2.89mm, with variations), the superficial temporal artery, and the superior thyroid artery. Despite variations in diameter and the surgical approach, factors such as poor vascular status, radiation therapy, and patient age can negatively influence the outcome. Our clinical experience supports the reliability of these perforators for successful flap reconstruction.

Conclusion: From our experience and the available literature, we conclude that the facial artery, superficial temporal artery, and superior thyroid artery are reliable vascular patterns for microvascular flap reconstruction in the head and neck region. However, patient-specific factors such as vascular health and age must be carefully considered for optimal results.

Keywords: microvascular flap, vascular pedicle, perforators, vascular patterns

SPINAL CORD STIMULATION FOR FACIAL NEURALGIA

Harisa Hibić-Kaknjašević, Amina Džidić-Krivić, Sunita Mehić-Fazlić, Nedim Baručija

Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina

Objective: This review aims to explore the role of spinal cord stimulation (SCS) in the management of trigeminal neuralgia (TN), focusing on its potential benefits, challenges, and current clinical application.

Review topic: Trigeminal neuralgia (TN) is a chronic pain disorder that significantly impacts patients' quality of life. While traditional pharmacological treatments and surgical interventions may offer partial relief, refractory cases demand alternative therapeutic options. Spinal cord stimulation (SCS), based on the gate control theory of pain, has gained attention as an effective treatment modality for TN. The mechanism of SCS involves modulating pain signals through electrical impulses delivered to the spinal cord. Clinical studies indicate that SCS offers varying degrees of pain relief, with success rates ranging from 50% to 70%. Despite its effectiveness, challenges such as complications (e.g., infection, lead migration), the need for individualized treatment approaches, and optimal electrode placement persist. Current literature emphasizes the need for further research to refine patient selection criteria, improve electrode positioning, and evaluate long-term outcomes to maximize therapeutic efficacy.

Conclusion: Spinal cord stimulation presents a promising alternative for managing refractory trigeminal neuralgia. Although challenges exist, its potential to offer significant pain relief, especially in patients unresponsive to conventional treatments, makes it a valuable therapeutic tool. Continued research is critical to optimizing the treatment process and ensuring sustained benefits for patients.

Keywords: facial neuralgia, trigeminal neuralgia, chronic pain, neuropathic pain, spinal cord stimulation

COMPLICATIONS IN MINIMALLY INVASIVE GYNECOLOGIC SURGERY: A COMPREHENSIVE REVIEW OF LAPAROSCOPIC AND HYSTEROSCOPIC RISKS

Azra Sadiković

Rush University Medical Center Chicago, IL, USA
Email: Azra_Sadikovic@rush.edu

Objective: The objective of this presentation is to provide a comprehensive overview of complications associated with minimally invasive gynecologic surgery, focusing on laparoscopic and hysteroscopic approaches. By understanding the risks, mechanisms, prevention strategies, and management options, surgeons can optimize patient safety and improve surgical outcomes.

Review topic: Laparoscopic surgery complications can be classified into three phases: entry-related, intraoperative, and postoperative. More than half of laparoscopic injuries are due to entry complications, including vascular injuries, visceral damage, subcutaneous emphysema, and carbon dioxide embolism. Intraoperative complications include bowel, urinary tract, and major vascular or nerve injuries, which can be difficult to detect and are associated with high morbidity when detected late. Postoperatively, patients may experience wound infections, hematomas, ileus, urinary retention, DVT, or port site hernias. During surgery, meticulous entry technique, intraoperative vigilance, and postoperative surveillance are of utmost importance. Hysteroscopic complications include uterine perforation, fluid overload, infection, hemorrhage and gas embolism. The importance of risk factors, intraoperative indicators, and management protocols are stressed to guide timely intervention. It is important to consider fluid management strategies depending on the type of distention medication and comorbid conditions.

Conclusions: Minimally invasive gynecologic surgery offers significant benefits but can carry inherent risks. Prevention and early recognition are essential. Tailoring the approach based on patient anatomy, surgical complexity, and intraoperative findings reduces complication rates and improves outcomes. A high level of suspicion and prompt management are vital for optimal patient care.

Keywords: minimally invasive gynecologic surgery, complications, laparoscopy, hysteroscopy

HISTORY OF LAPAROSCOPY

Enes Karabeg[1], Dževad Džanić[2,3], Edina Karabeg[1], Hana Hastor[2,3]

[1]General Hospital, Sanski Most, Bosnia and Herzegovina,
[2]Faculty of Health Studies, University of Bihać, Bihać, Bosnia and Herzegovina,
[3]Group Private Practice "Dr Džanić" Bihać, Bosnia and Herzegovina
Email: ekarabeg@bih.net.ba

Introduction: In the early 19th century, the development of endoscopy began.

Review topic: The Name of the French doctor Desfermeaux is significant in the history of endoscopy. In the middle of the 19th century, the first endoscopic examination used a gas flame to illuminate the intestines. In 1901, the German physician Kelling performed the first pneumoperitoneum and also developed the "sharp" trocar, which is still in use today. Jakobeus constructed several instruments, introduced laparoscopy, and published a monograph of procedures and indications in 1911. More internists and gynecologists use laparoscopy. In 1920, Orodorf in Chicago set gynecological indications for laparoscopic examination. The first cystoscopy was carried out in Dresden, and both electric and mignon lamps were introduced for better visibility. Te Linde publishes the first review of the genital organs. Rudoch reported the experience of 900 laparoscopies in ectopic pregnancies. Later, Palmer in France achieved better visibility with reduced complications, using a stronger Trendelenburg position and artificial pneumoperitoneum, moving the puncture point of the trocar to the umbilical cavity (celioscopy). The insufflation of air into the abdominal cavity is the most significant discovery in the development of laparoscopy, with the development of the needle and gas used. In the mid-20th century, Palmer and Frangenheim used laparoscopic electrocautery. Thanks to Semm, diagnostic laparoscopy transitioned into operative pelviscopy. He performed the first hysterectomy using the CISH technique in 1989. and developed numerous devices and instruments. Prof. Šimić with his colleagues in 1963. publishes in Zagreb the first experiences in laparoscopy and culdoscopy. 1969. published the first monography, "Celioscopy in Gynecology and Obstetrics," and "Endoscopy in Gynecology and Obstetrics" in 1981.

Conclusion: In Bosnia and Herzegovina, the unstoppable penetration of laparoscopic and hysteroscopic techniques in gynecology began in the USK Canton thanks to the commitment of Professor Džanić and his colleagues in 1996. With the support of Professor Tomašević, Dr. Roth, and Dr. Pauli, the first laparoscopic surgery was performed at the Gynecological and Obstetric Department of KB Bihać in 1998. The same year, the first laparoscopically assisted vaginal hysterectomy used, and a year later, the first myomectomy. The development

of urogynecology began 2000. at the performance of the first TVT operation, and the development of diagnostic and operative hysteroscopy in 2003. The first results were published in the first book on this subject, Fundamentals of Laparoscopy in Gynecology (2002).

Keywords: minimally invasive gynecoogic surgery, complications, laparoscopy, hysteroscopy

NUTRITION AND FERTILITY - SYSTEMATIC REVIEW

Hana Muslić[1], Larisa Mešić-Djogić[1,2], Harun Djulan[1], Belma Šljivo[1]

[1]Medical Faculty, University of Zenica, Zenica, Bosnia and Herzegovina,
[2]Department of Gynecology and Obstetrics, General Hospital Tešanj, Tešanj, Bosnia and Herzegovina
Email: muslic.hanaa@gmail.com

Background: Male and female infertility represent an increasing problem in modern society and a daily issue faced by gynecologists, urologists, and endocrinologists. In addition to all available medications, the influence of diet and certain supplements, including vitamins and minerals, has been observed.

Aim: The aim of this study is to highlight the importance of proper nutrition and the inclusion of specific foods and supplements that improve fertility.

Materials and methods: The studies used in this work were selected from the PubMed database. The archive was searched using the terms "nutrition and fertility," focusing on articles published in the last five years. Additionally, a limitation was applied to the type of studies, including clinical trials and randomized controlled trials. Researches involving both women and men were included. The results were synthesized using a descriptive approach.

Results: A PubMed search from the last five years identified 33 clinical studies, with 29 focused on women, and 30 randomized controlled trials, with 27 focused on women. After a qualitative review, 14 studies were included. Higher adherence to the Mediterranean diet showed the strongest correlation with improved pregnancy rates, while reducing trans fats, saturated fats, and sugary foods improved sperm quality.

Conclusion: Due to variability and the lack of research on most exposures to certain types of diets, no specific diet can be recommended for fertility. However, a Mediterranean diet rich in antioxidants and low in unhealthy fats may enhance fertility. No studies reported side effects from supplements, so their safety remains unclear.

Keywords: nutrition, mediterranean diet, infertility, fertility, systematic review

RATIONALE AND BENEFITS OF ANTIOXIDANT MELATONIN SUPPLEMENTATION IN POLYCYSTIC OVARY SYNDROME

Nina Tiršo[1], Emina Kiseljaković[2]

[1]Department of Gynecology and Obstetrics, General Hospital „Prim.dr. Abdulah Nakaš", Sarajevo, Bosnia and Herzegovina
[2]Department of Medical Biochemistry, Medical Faculty of Sarajevo, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nina.tirso@outlook.com

Objective: Polycystic ovary syndrome (PCOS) is great conundrum with its diverse clinical presentation resulting in disturbance of female health from adolescence to well past menopause. Mysterious patophysiology is still a stumbling block for reaching effective treatment and low grade chronic inflammation might just be the missing piece of the puzzle.

Review topic: PCOS affects 13% of women in reproductive age. Diagnostic criteria comprises two out of three maior signs: chronic anovulation, hyperandrogenism and/or polycystic ovaries, resulting in four phenotypes. On top of the above, metabolic abnormalities, such as obesity, insulin resistance and dyslipidemia are common features of PCOS. Recent research found that increased oxidative stress is the main culprit for reproductive and metabolic disorders, with reported higher levels of CRP, interleukins -1 and -6, and tumor necro¬sis factor-? in women with PCOS compared with healthy women. PCOS patients have lower levels of melatonin in follicular fluid and downregulation of melatonin receptor expression was observed. Melatonin serves as free radical scavanger and undergoes cascade reactions increasing its antioxidant capacity. Lack in this crucial anti-inflammatory agent within ovary leads to low grade chronic inflammation and immune dysregulation resulting in disruption of follicular maturation and anovulation.

Conclusion: Supplementing melatonin may benefit follicular maturation and ovulation induction as well as glucose and lipid metabolism.

Keywords: PCOS, oxidative stress, antioxidant, melatonin, chronic inflammation

THE TRANSFORMATIVE POWER OF GENETIC TESTING FOR FEMALE INFERTILITY IN GYNECOLOGY

Taib Delić[1], Anita Plećaš[2], Adna Karić[2] Emir Delić

[1]Private Healthcare Institution Polyclinic UniMed, Sarajevo School of Science and Technology, Sarajevo, Bosnia and Herzegovina
[2]MediGen, Sarajevo, Bosnia and Herzegovina
Email: taib.delic@unimed.ba

Objective: To explore how incorporating cutting-edge genetic testing into gynecological practice is important for the diagnosis and management of female infertility by offering precise, individualized reproductive healthcare solutions.

Review topic: The genetic factors are contributing to approximately 10% of infertility cases, and they are essential for developing targeted, effective treatment strategies and improving reproductive success rates. The newest advancements in genetic testing technologies, like Next-Generation Sequencing (NGS) and Chromosomal Microarray Analysis (CMA), have greatly enhanced the ability to detect genetic abnormalities linked to infertility. Currently, we have comprehensive genetic panels that can analyze over 100 genes that are associated with various reproductive conditions, such as Premature Ovarian Failure, Ovarian Dysgenesis, Primary Amenorrhea, Recurrent Pregnancy Loss, Oocyte Maturation Defects, and Embryonic Arrest. These methods can identify pathogenic variants and copy number variations (CNVs), unlike the traditional diagnostic techniques. By identifying specific genetic mutations, healthcare providers can create more personalized, evidence-based treatment plans. This includes customized hormonal therapies and optimized fertility procedures, significantly increasing the chances of successful conception and pregnancy.

Conclusion: The integration of genetic testing in gynecology is very important because it not only improves diagnostic accuracy but also offers renewed hope to women facing infertility challenges. With the power of genetic insights, gynecologists can help the patient with the decisions on how to significantly improve reproductive outcomes and overall quality of life.

Keywords: female infertility, genetic testing, reproductive health

ULTRASOUND IN FIRST TRIMESTER: DIAGNOSTIC AND SCREENING VALUE

Mirza Kozarić

Poliklinika Dr. Kozaric, Radiceva 15, Sarajevo, Bosnia and Herzegovina
Email: info@kozaric.ba

Objective: Ultrasound in the first trimester is a standard, widely used method for diagnosing and monitoring early pregnancy. It plays a crucial role in confirming embryonic viability, accurately determining gestational age, and assessing early fetal development. In multiple pregnancies, early ultrasound is essential for determining chorionicity and amnionicity, which are key predictors of pregnancy course and outcomes.

Review topic: The ultrasound examination between 11+0 and 14+0 weeks of gestation holds particular significance. It enables early detection of major structural fetal anomalies, diagnosis of multiple pregnancies, and provides effective screening for chromosomal aneuploidies and preeclampsia. Approximately 5% of live-born infants have congenital structural anomalies of varying severity. Of these, around 10% are due to chromosomal abnormalities, 25% result from monogenic disorders, 5% are caused by teratogenic exposures, and the remaining 60% have unknown etiologies. Among chromosomal abnormalities, approximately 50% are trisomy 21, 30% are trisomy 13 or 18, 10% are monosomy X, and 10% represent other chromosomal conditions. The International Society of Ultrasound in Obstetrics and Gynecology (ISUOG) has issued guidelines establishing minimum standards for ultrasound screening between 11 and 14 weeks of gestation. These guidelines outline criteria and strategies for assessing aneuploidy risk, particularly for trisomies 13, 18, and 21. Screening accuracy is enhanced by combining ultrasound markers—such as nuchal translucency (NT)—with maternal serum biochemical markers (free b-hCG and PAPP-A) or with placental cell-free DNA (cfDNA) analysis. The detection rate for trisomy 21 reaches approximately 92% when NT is combined with biochemical markers. When NT measurement exceeds 3.5 mm and is paired with cfDNA analysis, detection rates can approach 100%.

Conclusion: Given that structural anomalies are the most common type of congenital anomaly, first-trimester ultrasound remains an indispensable tool for early prenatal screening.

Keywords: nuchal translucency, first trimester pregnancy, ultrasound, anomaly scan

CHALLENGES IN MANAGING INFECTIVE ENDOCARDITIS AND SEVERE MITRAL REGURGITATION DURING PREGNANCY: A CASE REPORT

Amila Muratspahić, Ilhama Jusufi-Hurić, Irma Dizdarević, Meliha Hadžović-Čengić, Adna Mustedanagić, Refet Gojak, Rusmir Baljić

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: amila.muhic@hotmail.com

Background: Infective endocarditis (IE) during pregnancy is a rare but critical condition that poses significant risks to both maternal and fetal health. We present the case of a 25-weeks pregnant patient diagnosed with subacute mitral valve endocarditis and severe mitral regurgitation, which required prolonged antibiotic therapy and multidisciplinary management.

Case presentation: The patient was transferred to the Clinic for Infectious Diseases, Clinical Center of the University of Sarajevo, with a diagnosis of IE caused by Enterococcus faecalis, complicated by severe mitral insufficiency, anemia, and dilated cardiomyopathy. She received antibiotic therapy (ceftriaxone and ampicillin) for six weeks. Regular multidisciplinary evaluations—including cardiology, cardiac surgery, gynecology, and infectious diseases—guided treatment decisions. At 32 weeks of gestation, a cesarean delivery was performed due to worsening cardiac status, resulting in the delivery of a live female infant. Postpartum, the patient developed transient fever and a urinary tract infection, which was treated with colistin. Control transesophageal echocardiography revealed persistent mitral valve vegetation (11×8 mm) and severe mitral regurgitation. Surgical intervention was planned but postponed due to inadequate femoral vein access for a minimally invasive approach. The patient remains under close monitoring while awaiting definitive mitral valve surgery.

Conclusion: This case underscores the complexity of managing IE during pregnancy and highlights the importance of early diagnosis, prolonged antibiotic therapy, and individualized surgical planning. A tailored approach to cardiac intervention post-pregnancy is essential for optimizing long-term outcomes.

Keywords: infective endocarditis, pregnancy, mitral regurgitation, multidisciplinary management, Enterococcus faecalis

RECURRENT PSEUDOMONAS AERUGINOSA BACTEREMIA - CLINICAL MANIFESTATION SPECIFICITIES

Adna Mustedanagić, Meliha Hadžović-Čengić, Irma Dizdarević, Amila Muratspahić, Rusmir Baljić

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: adnamustedanagic1@gmail.com

Aim: To describe a diagnostically and therapeutically challenging case of recurrent Pseudomonas aeruginosa bacteremia in a patient where the source of infection couldn't be clearly identified.

Case study: We're talking about a 76-year-old man who was admitted to the hospital more than six times over a 10-month period due to fever and sepsis. Each time, blood cultures confirmed Pseudomonas aeruginosa, and we tailored his antimicrobial treatment based on susceptibility results. Despite appropriate therapy, the bacteremia kept coming back. A thorough set of tests was run, including CT scans of the brain, abdomen, and pelvis, as well as a PET scan, but we couldn't pinpoint the source of the infection. Multiple transthoracic and transesophageal echocardiograms initially showed no signs of endocarditis. Later on, though, a suspicious lesion was spotted on the mitral valve, which led us to opt for surgery. The patient underwent mitral valve replacement with a mechanical prosthesis and aortic valve replacement with a biological prosthesis. Not long after being discharged, he developed a fever again, and P. aeruginosa was once more isolated from his blood cultures.

Conclusion: This case highlights just how tricky it can be to manage recurrent Pseudomonas aeruginosa bacteremia when standard diagnostic tools don't reveal the cause. It underscores the importance of staying vigilant, regularly reassessing the patient, and considering less typical presentations of endocarditis. These steps are key to guiding treatment decisions, including when surgery might be necessary.

Keywords: pseudomonas aeruginosa, recurrent bacteremia, endocarditis, diagnostic imaging, valve replacement

CASE REPORT: SPAM IN A 23-YEAR-OLD PATIENT TREATED AT THE INFECTIOUS DISEASES DEPARTMENT OF CANTONAL HOSPITAL ZENICA

Enisa Ibrahimagić-Suljić, Nadira Zahirović, Eldira Hadžić, Minela Zekiri-Sivro

Department of Infectious Diseases, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: enisa_ibrahimagic@hotmail.com

Background: Non-rheumatic streptococcal pharyngitis most commonly occurs as a mild, often self-limiting infection. However, in rare cases, it can lead to serious complications, including acute myocarditis and respiratory failure, independently of rheumatic fever development.

Case presentation: We present a case of a 23-year-old patient with no prior chronic illnesses, who presented with symptoms of sore throat, fever, pain on the right side of the neck, dizziness, and general weakness. In blood cultures isolated a Streptococcus species. During hospitalization, the patient developed signs of acute myocarditis and progressive respiratory insufficiency. Following intensive treatment with antibiotics, immunoglobulins, corticosteroids, diuretics, beta-blockers, and high-flow oxygen support, the patient recovered without permanent consequences. This case represents one of the rare, previously reported cases of acute myocarditis occurring shortly after streptococcal pharyngitis (SPAM), most commonly identified in patients around 20 years old, and most frequently reported by cardiologists.

Conclusion: Although rare, myocarditis can be a serious and potentially life-threatening complication of non-rheumatic streptococcal pharyngitis. Early recognition and a multidisciplinary approach to treatment are key for a favorable outcome. In current medical practice, cardiac magnetic resonance imaging is recommended to objectively confirm the diagnosis.

Keywords: non-rheumatic streptococcal pharyngitis, myocarditis, respiratory insufficiency

ICU – HEALTHCARE-ACQUIRED INFECTIONS (HAI): FIGHT OR FLIGHT?!

Belma Kadić, Enida Halvadžić, Azra Alihodžić, Edna Ćurevac, Amela Muftić

Clinic of Anesthesia, Resuscitation and Intensive Medicine, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: Belma.zoljic@gmail.com

Background: In Intensive care units (ICUs) patients who are admitted are at high risk for the development of healthcare-acquired infections (HAI) or nosocomial infections (NI) from 48 to 72 hours after hospitalization due to the high prevalence of invasive procedures and devices, induced immunosuppression, comorbidity, frailty and increased age. The most common complication in intensive care units is ventilator- associated pneumonia (VAP) in patients who are on mechanical ventilation for more than 48.

Materials and methods: In this retrospective study, the archive documents of the patients diagnosed with a HAP/VAP and staying in the ICU. between 2023 and 2025 were evaluated.

Results: From 1400 patient's documents that stayed in the ICU, almost half of patients were diagnosed with hospital-acquired infections. It was determined that most of the patients had a bacteremia infection, following fungemia, and organspace surgical site infection. Major of the causative microorganisms of the hospital-acquired infections were Acinetobacter Baumannii, Klebsiaella Pneumoniae, Pseudomanas Aeriginosa, Candida Albicans and VRE. Most of the infections were associated with blood and tracheal aspiration.

Conclusion: The determination of the agents of the HAP in intensive care units becomes important in the planning and using algorithms in the treatment process. Even successful reduction in the incidence of HAI related to invasive procedures and devices, the rate of ICU-acquired infections remains high. The high use of strong antibiotics, development and strengthening of new strains of bacteria and the ongoing emergence of new pathogens, further complicates treatment.

Keywords: ICU, Hospital-Acquired Infection, ventilator-associated pneumonia, prevention

CASE REPORT: SEVERE SPONDYLODISCITIS OF LUMBAR SPINE WITH BILATERAL ABSCESSES OF PSOAS MAJOR MUSCLES - CONSERVATIVE TREATMENT OUTCOME

Nadir Babahmetović, Dževad Šačić, Rusmir Baljić, Ilhama Jusufi-Hurić, Refet Gojak

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: nadir.babahmetovic@gmail.com

Background: Spondylodiscitis, a rare but serious infection involving the intervertebral discs and adjacent vertebrae, can lead to significant neurological disorders and even morbidity if not promptly diagnosed and treated.

Case report: This case report presents a 29-year-old male with a history of earlier motorcycle accident and chronic pilonidal cyst with initial fever, progressive lower back pain, and limited mobility. Magnetic resonance imaging (MRI) revealed evidence of spondylodiscitis at the L4-L5 level, with associated paravertebral soft tissue involvement.

Blood cultures identified Methicillin susceptible Staphylococcus aureus as the causative organism. The patient was treated with targeted intravenous antibiotics and immobilization, showing gradual clinical improvement over several weeks. This case highlights the importance of maintaining a high index of suspicion for spinal infections in patients with risk factors such as chronic skin condition, especially when presenting with non-specific symptoms like back pain and fever.

Conclusion: Early diagnosis through imaging and microbiological confirmation is critical to initiating appropriate therapy and preventing complications such as spinal instability or neurological deficit. This report emphasizes the need for a multidisciplinary approach in managing spondylodiscitis and abscesses of psoas major muscles.

Keywords: spondylodiscitis, staphylococcus aureus, psoas major abscesses, conservative treatment

NON-SUPPURATIVE OSTEOMYELITIS OF THE FEMUR: SUCCESSFUL TREATMENT WITH ANTIBIOTIC-LOADED INTRAMEDULLARY NAIL

Naida Muratović[1], Nina Kapetanović[2], Meliha Hadžović-Čengić[3], Semin Bećirbegović[4], Yasser Elbatrawy[5]

[1]Health Centre of Sarajevo Canton, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[4]Orthopedic Outpatients Surgical Center Orthos
[5]Al-Azhar University Hospital Cairo, Egypt
Email: naida.muratovic9@gmail.com

Aim: The aim of this study was to report on a case of chronic non-suppurative osteomyelitis.

Case presentation: A 23-year-old woman presented with pain in her left femur and presented with uncontrolled pain and edema. The patient was initially treated with femoral lengthening surgery in 2017 due to a diagnosis of Multiple epiphyseal dysplasia, but 1 year later re-presented with symptoms of bone infection. This required further treatment and intraosseous administration of pearl antibiotics, achieving good clinical outcomes. During the surgical intervention, a tissue sample was harvested for microbiological and histological examination. Methicillin-resistant S. aureus was identified. Radiographs and MRI imaging of the leg showed a subcortical cyst of the head of the left femur and an undulating contoured joint surface of the lateral condyle of the femur with subchondral edema. Osteomyelitis involved the femoral medullary canal, leading to its obliteration.

Conclusion: As a definitive treatment, a surgical procedure was performed in which the medullary canal was reopened and an intramedullary nail coated with gentamicin was implanted and with prolonged antibiotic treatment.

Keywords: Non-Suppurative Osteomyelitis, femur, antibiotic treatment, intramedullary nail

LEVERAGING ARTIFICIAL INTELLIGENCE FOR PREDICTING AND MANAGING INFECTIOUS DISEASE OUTBREAKS

Abdurahim Kalajdžić[1], Tarik Čorbo[1], Naris Pojskić[1], Samim Konjičija[2]

[1]Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Faculty of Electrical Engineering, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: abdurahim.kalajdzic@ingeb.unsa.ba

Objective: Artificial Intelligence (AI) has emerged as a powerful tool in predicting infectious disease outbreaks, providing valuable insights for public health management and intervention strategies. By leveraging machine learning algorithms, AI can analyze vast amounts of data from diverse sources such as epidemiological records and genomic sequences to forecast disease transmission patterns. These predictive models are particularly beneficial in anticipating outbreaks, identifying high-risk areas, and optimizing resource allocation. AI-driven approaches, such as deep learning, can also improve diagnostic accuracy, enabling faster identification of pathogens.

Review topic: One of the key advantages of AI in infectious disease prediction is its ability to integrate heterogeneous data sources and detect subtle patterns that might be overlooked by traditional methods. For example, AI models can track the dynamics of vector-borne diseases by analyzing environmental factors, while neural networks can predict the spread of respiratory infections by evaluating human mobility data. Furthermore, AI can aid in vaccine development by predicting the mutational behavior of pathogens and helping design targeted immunization strategies.

Conclusion: Despite its promising potential, challenges remain in implementing AI for infectious disease prediction, such as data quality, ethical concerns, and the need for robust validation in real-world scenarios. Nonetheless, AI holds immense promise for enhancing our preparedness and response to infectious diseases, making it an invaluable asset in global health security. Future research should focus on improving model accuracy, addressing data limitations, and fostering cross-disciplinary collaboration to fully harness the capabilities of AI in infectious disease prediction.

Keywords: artificial intelligence, infectious disease, outbreaks

PHARMACOKINETIC AND PHARMACOLOGICAL PROPERTIES OF HESPERIDIN AND LUTEOLIN AGAINST MARBURG VP40: INSIGHTS FROM MOLECULAR DOCKING ANALYSIS

Abdurahim Kalajdžić, Tarik Čorbo, Naris Pojskić

Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: abdurahim.kalajdzic@ingeb.unsa.ba

Background: Marburg virus is a highly contagious and deadly pathogen that causes Marburg virus disease (MVD), a form of hemorrhagic fever in humans. Studies have shown that compounds like hesperidin and luteolin may inhibit viral activity, presenting promising candidates for further research.

Aim: We employed molecular docking analysis to assess the potential of hesperidin and luteolin as treatments for Marburg virus infections, focusing on their pharmacological and pharmacokinetic properties to identify those with the most promising therapeutic potential.

Materials and methods: Molecular docking was conducted with AutoDock Vina, while pharmacological and pharmacokinetic properties were evaluated using SwissADME software.

Results: Molecular docking revealed that hesperidin formed seven hydrogen bonds with the VP40 protein and had a binding affinity of -10.6 kcal/mol, while luteolin formed six hydrogen bonds with a binding affinity of -8.8 kcal/mol. Hesperidin has low gastrointestinal absorption, poor bioavailability (0.17), with no BBB permeability. While it raises no PAINS or Brenk alerts, it fails to meet several drug-likeness criteria and has moderate synthetic accessibility (6.34), indicating potential for development but with challenges. On the other hand, luteolin exhibits high gastrointestinal absorption, moderate solubility, and a bioavailability score of 0.55, with no violations of major drug-likeness criteria. However, it raises PAINS and Brenk alerts related to its catechol group, suggesting potential concerns for further development.

Conclusion: These findings indicate that hesperidin and luteolin could interact with the VP40 protein, exhibiting promising pharmacological properties. However, additional in vitro studies are necessary to validate their therapeutic potential.

Keywords: pharmacokinetic, pharmacological, VP40 protein, drug-likeness

REPURPOSING EMA CENTRALLY AUTHORIZED MEDICINES FOR THE TREATMENT OF AVIAN INFLUENZA INFECTION: AN IN SILICO APPROACH TO POLYMERASE INHIBITION

Tarik Čorbo, Abdurahim Kalajdžić, Naris Pojskić

Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: tarik.corbo@ingeb.unsa.ba

Background: Avian influenza, caused by the strains of the influenza A virus, poses a significant threat to both the poultry industry and human health. Despite the availability of antiviral medications, the emergence of drug-resistant strains and the potential for pandemic outbreaks necessitate the exploration of alternative therapeutic options.

Aim: The aim of this study was to screen EMA-approved drugs for their potential to inhibit the H5N1 polymerase, identifying promising candidates for repurposing as antiviral treatments against avian influenza.

Materials and methods: The 3D structure of H5N1 polymerase was retrieved from RCSB PDB, while EMA-approved drug structures were obtained from PubChem. Active site prediction was performed using PrankWeb, followed by protein and ligand preparation with AutoDockTools and OpenBabel. Molecular docking was performed with AutoDock Vina, and structural interactions were analyzed using Discovery Studio.

Results: Atogepant, lomitapide, and nilotinib exhibited the highest binding affinities for H5N1 polymerase, with binding energies of -12.3 kcal/mol, -12.3 kcal/mol, and -11.7 kcal/mol, respectively. All three compounds formed significant hydrogen bonds, contributing to their strong interactions with the target.

Conclusion: This study highlights the potential of atogepant, lomitapide, and nilotinib as inhibitors of H5N1 polymerase, suggesting their possible repurposing as antiviral agents against avian influenza. Given their strong binding affinities and significant interactions with the target, further validation through in vitro and in vivo studies is essential to confirm their therapeutic efficacy in infected patients.

Keywords: in silico, drug repurposing, H5N1 polymerase, EMA, atogepant, lomitapide, nilotinib

CLINICAL AND EPIDEMIOLOGICAL EVALUATION OF PATIENTS WITH ACUTE NEUROINFECTIONS DURING THE COVID-19 PANDEMIC AND IN THE POST- COVID PERIOD

Ajnur Hadžiahmetović, Adna Mustedanagić, Aldin Karić, Rusmir Baljić, Refet Gojak, Belma Gazibera

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: ajnur995@gmail.com

Introduction: Central nervous system infections are potentially life-threatening conditions, most often caused by viruses or bacteria. They represent a global health system problem that has not escaped the impact of the Covid-19 pandemic.

Objective: Clinical and epidemiological evaluation of patients with acute neuroinfectious diseases during and after the Covid-19 pandemic.

Methods: A retrospective study was conducted at the Clinic for Infectious Diseases of the Clinical Center of the University of Sarajevo in the period from 2019. to 2024. using the medical histories of 119 patients with acute neuroinfectious diseases. Demographic data, clinical parameters and patient outcomes were used. The data was statistically analyzed using the SPSS for Windows software package.

Results: During the pandemic period, the number of acute central nervous system infections decreased significantly. With the end of the pandemic and all its epidemiological measures, there was a significant increase in the number of new neuroinfections.

Conclusion: The introduction of epidemiological measures to combat the Covid-19 infection (enhanced hygiene, wearing masks, social distancing) probably reduced the transmission of neuroinfectious agents, which led to a significant decrease in the number of cases and hospitalized patients during that period.

Keywords: COVID-19, meningitis, encephalitis, meningoencephalitis

COMPUTATIONAL REPURPOSING OF FDA-APPROVED DRUGS AGAINST MPOX POLYMERASE

Tarik Čorbo, Abdurahim Kalajdžić, Naris Pojskić

Institute for Genetic Engineering and Biotechnology, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: tarik.corbo@ingeb.unsa.ba

Introduction: Mpox, caused by the mpox virus (MPXV), has emerged as a global health concern, highlighting the need for effective treatment options. Drug repurposing offers a rapid and cost-effective strategy to identify effective antivirals against mpox, leveraging existing pharmaceuticals to combat the disease.

Aim: This study aimed to identify potential inhibitors of the mpox polymerase by screening FDA-approved drugs through in silico approaches, highlighting candidates for repurposing as antiviral therapies against mpox.

Materials and methods: The Mpox polymerase 3D structure was downloaded from RCSB PDB, and FDA-approved drug structures were retrieved from PubChem. Potential active sites were identified with PrankWeb, while the protein and ligands were prepared using AutoDockTools and OpenBabel. Molecular docking was carried out using AutoDock Vina, with structural interactions examined through Discovery Studio.

Results: FDA-approved drugs demonstrated strong binding to the mpox polymerase active site, with top candidates forming stable interactions crucial for inhibition. Midostaurin exhibited the strongest binding affinity, with a binding energy of -11.1 kcal/mol, followed by repotrectinib at -10.9 kcal/mol and entrectinib at -10.6 kcal/mol. These three compounds displayed the most significant interactions, with all forming notable hydrogen bonds that enhanced their binding to the target.

Conclusion: This study identifies midostaurin, repotrectinib and entrectinib as promising candidates for repurposing as antiviral treatments against mpox. Given their potential, further in vitro and in vivo investigations are essential to confirm their therapeutic efficacy against mpox virus.

Keywords: in silico, drug repurposing, mpox polymerase, FDA, midostaurin, repotrectinib, entrectinib

GENOTYPING OF HEPATITIS C VIRUS IN INFECTED PATIENTS FROM REPUBLIKA SRPSKA

Antonija Verhaz

Clinic of Infectious Diseases, University Clinical Center of the Republika Srpska, Banja Luka, Bosnia and Herzegovina
Email: antonija.verhaz@med.unibl.org

Introduction: HCV is still one of the major clinical problems in the world. Genotype used to be a significant prognostic factor of treatment outcome.

Aim: To determine the prevalence of HCV genotypes in the group of patients infected with HCV who were treated at the Clinic for Infectious Diseases, Republika Srpska Banja Luka.

Methods: The serum samples of 959 individuals sent to our laboratory for genotyping between January 2008 and April 2024 were analyzed retrospectively. During the sixteen-year research period, two different HCV genotyping tests (RTA and Abbott) were used. Genotyping analysis was performed using the genotype test in 959 patients with positive anti-HCV antibodies and detectable levels of HCV-RNA.

Results: The most common HCV genotype was 1 (73.6%). We found the following distribution: genotype 1 (58.5%), 1a (19.0%), 1b (22.3%), 1a/1b (0.1%), 1b/4 (0.1%), 2 (0.5%), 3 (22.6%), 4 (3.3%). Patients with genotype 1 were significantly older (? 41 years), while patients infected with genotypes 2 and 3 were more often younger (? 40 years).

Conclusion: More precise knowledge of HCV genotype distribution will help to best inform national health care models to improve access to new treatments

Keywords: hepatitis C, genotype

IMPORTED SEVERE MALARIA IN A NON-ENDEMIC COUNTRY AND THE ABSENCE OF EMERGENCY ANTIMALARIAL DRUG AVAILABILITY: A CASE REPORT FROM BOSNIA AND HERZEGOVINA

Adem Nuhović[1], Mirela Babić[2], Alma Sejtarija-Memišević[1], Ilhama Jusufi-Hurić[1], Rusmir Baljić[1], Refet Gojak[1]

[1]Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Department of Microbiology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: adem.nuhovic@kcus.ba

Introduction: Malaria remains a preventable and treatable disease, yet poses diagnostic and therapeutic challenges in non-endemic regions due to increasing global travel. This report presents a severe case of Plasmodium falciparum malaria imported from Angola and treated in Bosnia and Herzegovina, where emergency access to antimalarial drugs was unavailable. The case highlights critical gaps in health system preparedness for imported infectious diseases.

Review topic: A 24-year-old Chinese tourist presented to the emergency service at the University Clinical Center Sarajevo with confusion, fever (40°C), fatigue, and hypotension shortly after returning from Angola. He had reportedly taken prophylactic antimalarial medication, though the type was unknown. Clinical and laboratory findings included tachycardia, thrombocytopenia (platelets dropped from 66 to 25 × 10^9/L), hyponatremia, and elevated CRP (256.1 mg/L). Malaria was confirmed by rapid diagnostic testing and microscopy, showing 31% parasitemia. However, no antimalarials were immediately available through hospital channels.

The patient obtained a non-standard antimalarial (Pinax) through personal contacts and self-administered it. Two days later, Artemether-Lumefantrine was secured privately, and treatment commenced. Parasitemia declined to 9% within three days. The patient showed clinical improvement and requested discharge on day five, despite persistent thrombocytopenia and inflammation.

Conclusion: This case reveals a systemic shortfall in tropical disease preparedness in Bosnia and Herzegovina. It underscores the need for health policies that ensure timely access to essential treatments for imported diseases like malaria to prevent serious complications and fatalities.

Keywords: malaria, plasmodium falciparum, imported malaria, antimalarial drug shortage, bosnia and herzegovina, global travel, health policy, artemether-lumefantrine

LATE DISSEMINATED CUTANEOUS SYPHILIS - A CASE REPORT

Semir Hrvo, Irma Dizdarević, Amila Muratspahić, Ajnur Hadžiahmetović

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: hrvosemir@gmail.com

Introduction: Syphilis is a chronic systemic infection caused by Treponema pallidum, characterized by a wide spectrum of clinical manifestations depending on the stage of the disease. Despite the availability of effective therapy, the global incidence of syphilis is increasing, particularly among young, sexually active individuals.

Review topic: We present the case of a 24-year-old male who presented on the 15th day after the appearance of a rash, accompanied by a five-day history of fever. Clinical examination revealed a macular, partially indurated rash Sexual history revealed multiple unprotected encounters with non-monogamous female partners. A rapid serological test for syphilis returned positive. Due to the temporary unavailability of benzathine benzylpenicillin (Extencillin), treatment was initiated with doxycycline (100 mg twice daily). After three days of treatment, the patient became afebrile and the rash began to regress. Additional serological testing confirmed highly reactive VDRL and TPH antibody titers. Once Extencillin became available, treatment was continued with intramuscular administration of 2.4 million units once weekly for three weeks.

Conclusion: This case highlights the importance of prompt recognition of syphilis and the adaptability of therapeutic strategies in the context of limited drug availability. Effective use of doxycycline as interim therapy allowed for symptom control and transition to standard penicillin treatment, resulting in complete clinical recovery.

Keywords: syphilis, doxycycline, benzathine benzylpenicillin, sexually transmitted infections,

THE LIGHT AT THE END OF THE TUNNEL HOLDS NO VALUE IF WE KEEP MOVING BACKWARD

Ahmed Velić

Clinic of Infectious Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: avelic113@gmail.com

Objective: The aim of this paper is to highlight the problem of late HIV diagnosis in Bosnia and Herzegovina, with a particular focus on the need for early detection and identification of individuals living with HIV who remain undiagnosed, in order to improve access to treatment and prevent further deterioration of the immune system.

Review topic: The number of patients living with HIV in Bosnia and Herzegovina has been continuously increasing since 1994. At the time of diagnosis, more than half of these patients have a severely compromised immune system, and they are in the terminal phase of the disease. Considering that it takes years for the CD4 cell count to drop from a normal level to 200 cells per milliliter of blood or lower due to HIV, there are significant concerns about the real number of undiagnosed patients. These individuals might be experiencing a gradual weakening of their immune system due to HIV while remaining unaware of their diagnosis and not receiving any treatment. In recent years, especially following the COVID-19 pandemic, investment in the prevention and treatment of HIV in Bosnia and Herzegovina has significantly decreased. The reduction in the number of centers where clients can get tested and receive STI counseling is discouraging. The absence of legal regulations for free PrEP and PEP, even for healthcare workers in cases of occupational exposure, is particularly concerning. Furthermore, delays in receiving STI test results and starting antiretroviral therapy worsen the situation. The stigma associated with HIV complicates the situation further and contributes to the spread of STIs. It is concerning and even dangerous that healthcare workers often contribute to the stigmatization of patients living with HIV.

Conclusion: Healthcare and government structures usually overlook that HIV prevention is more than ten times cheaper than HIV treatment. As healthcare professionals, especially those specializing in infectious diseases, we must reflect on our obligations and responsibilities in the context of ending the HIV pandemic. Should we continue to test simply because it is part of our job? Should we prescribe and approve treatments solely to earn a living? Or should we actively engage with patients and advocate for meaningful changes within governing structures to combat the spread of HIV? If we continue to fail in preventing and treating HIV infection in Bosnia and Herzegovina, achieving the 95-95-95 targets by 2030 will be impossible, which may have lasting repercussions for future generations.

Keywords: HIV prevention, PEP, PrEP

A BATTLE FOR THE EYE SURFACE: CAN NECROTIZING FASCIITIS CONQUER IT?

Ines Matoč-Kasumović, Idoia Goni Guarro, Armin Kasumović, Renata Iveković, Ognjen Zrinščak, Zoran Vatavuk

Ophthalmology Clinic, Sestre milosrdnice UHC, Zagreb, Croatia
E-mail: inesmatoc@gmail.com

Purpose: To report a rare case of necrotizing fasciitis involving both eyelids of the right eye accompanied by a corneal ulcer, which was successfully treated and ultimately resulted in corneal protection.

Methods: A 41-year-old homeless, diabetic, psychiatric patient was admitted to the hospital and treated with systemic and local therapy, and multiple surgeries to finally achieve successful corneal protection.

Results: The patient was released from the hospital after two weeks with normal systemic inflammatory markers and intact eyelid skin and a smooth, shiny and transparent cornea with 20/25 visual acuity. Subsequent eyelid retraction and tarsal cicatrization resulted in lagophthalmos and fine, small-dot fluorescein-positive epithelial defects in the middle third of the cornea. The patient underwent multiple oculoplastic surgeries to reconstruct the eyelids, after which the patient maintained satisfactory eyelid closure and corneal protection. Eye lubricants 6-8 times daily, were continued for a prolonged period.

Conclusions: Timely diagnosis and immediate aggressive medical and surgical treatment are of huge importance to have a happy ending of such a preventable disaster as a necrotizing fasciitis. The involvement of the cornea as a result of a bacterial infection on the eyelids should be kept in mind. Usually, more than one extensive surgical debridement and oculoplastic surgeries are necessary to maintain satisfactory eyelid closure and corneal protection. Regardless of the severity and danger of necrotizing fascitis, the importance of proper eyelid function and corneal protection must not be forgotten.

Keywords: cornea, ocular surface disease, infections, keratoconjunctivitis, bacterial conjunctivitis

ACCELERATED VERSUS CONVENTIONAL CORNEAL COLLAGEN CROSSLINKING: WHICH IS BETTER TWO YEARS LATER?

Aida Kasumović-Bečirević, Armin Kasumović, Ines Matoc-Kasumović, Sanja Sefić-Kasumović, Mirko Jankov

Eye Polyclinic "Dr. Sefic", Sarajevo, Bosnia and Herzegovina
Email: aidakasumovic1@hotmail.com

Purpose: The aim of the study was to compare the long-term results of accelerated and conventional corneal cross-linking (CXL) for progressive keratoconus.

Methods: A retrospective comparative clinical study that included a total of 55 eyes, 33 eyes with progressive keratoconus that underwent conventional CXL (3 mW/cm2, UVA 30 minutes) and 23 eyes that underwent accelerated CXL (9 mW/cm2, UVA 10 min). Patients with a history of previous eye trauma or surgery, and other corneal pathologies were excluded from the study. Corneal parameters on Scheimpflug tomography, and uncorrected and best corrected distant visual acuity were monitored before the procedure, one year, and two years after the procedure. Parameters that were followed-up included flat, steep and maximal keratometry (K1, K2 and Kmax), pachymetry (PA), the thinnest location (TL), anterior and posterior elevation (ELF and ELB), corneal progression indices, Belin-Ambrosio D value (BAD D), uncorrected and best-corrected distance visual acuity (UDVA and BCDVA).

Results: Patients who had conventional CXL showed a statistically significant decrease in K1, K2, Kmax, PA and TL postoperatively ($p<0.01$ for all parameters), while accelerated CXL led to a decrease in keratometry but without statistical significance. Significant difference in the trend of change of parameters postoperatively between the two types of protocols were shown for: K1 ($p<0.01$), K2 ($p=0.02$), PA and TL ($p<0.01$ for both parameters), center of keratoconus index (CKI, $p<0.01$), BAD D value ($p<0.01$) and UDVA ($p=0.03$). Improvements in BCDVA were observed in both groups, but without significant difference in the trend of BCDVA change between them ($p=0.08$).

Conclusion: Accelerated and conventional CXL protocols are effective methods for stabilizing the progression of keratoconus. Although the conventional protocol was superior to the accelerated protocol in this study, both protocols provided good stabilization after two years of follow-up. In clinical practice, the accelerated protocol has the additional advantage of shorter treatment time, less discomfort for the patient, and faster visual recovery.

Keywords: keratoconus, corneal cross-linking, CXL, corneal ectasia

BOURNEVILLE'S DISEASE: A PATIENT WITH SEVERE CLINICAL MANIFESTATIONS - OPHTHALMOLOGY PERSPECTIVE

Adel Smajlović, Faris Čustović

Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
Email: adel_smajlovic@yahoo.com

Purpose: To report a rare case of Morbus Bourneville better known as tuberous sclerosis complex diagnosed after a recent brain surgery.

Case report: We present the case of a patient with tuberous sclerosis, who came for a consultative ophthalmological examination after a decrease in vision in both eyes, after the most recent brain surgery. The patient has no perception of light, and on fundoscopic examination, parapapillary retinal hamartomas are found. On MRI of the cranium, supratentorial ventriculomegaly is noted, with cystic lesions in the midsagittal line. Frequent epileptic seizures are under prescribed therapy. Examination of every patient with suspicion of TSC is indicated to aid diagnosis, and following asymptomatic and symptomatic ocular complaints.

Conclusion: Morbus Bourneville is a rare autosomal dominant multisystemic disease, with a different phenotype of the disease. Retinal hamartomas are the most common ocular manifestation, while other ocular symptoms are rare.

Keywords: Morbus Bourneville tuberous sclerosis complex

CASE OF A YOUNG WOMAN WITH SEVERE SYMPTOMS OF THYROID EYE DISEASE

Vedrana Alikadić, Faruk Nišić, Emina Kujundžić-Begović

Clinic of Eye Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: hrusticvedrana@gmail.com

Introduction: Thyroid eye disease (TED) is an autoimmune disease caused by the activation of orbital fibroblasts by autoantibodies directed against thyroid receptors. The disorder is characterized by inflammation and swelling of the extraocular muscles, fatty tissue, and connective tissue within the orbit. TED is most frequently associated with hyperthyroidism, constituting of approximately 90% of the cases. Among the environmental factors, smoking is the most consistently linked risk factor to the development or worsening of the disease. Stress is another environmental factor that may contribute to the worsening of TED. Although the underlying mechanisms of action of these processes are not completely understood, the presumed mechanism is activation of orbital fibroblasts by Graves disease-related autoantibodies, which lead to the release of T-cell chemoattractants, initiating an interaction that ultimately results in fibroblasts expressing extracellular matrix molecules, biologic materials proliferating and differentiating into myofibroblasts or lipofibroblasts, and deposition of glycosaminoglycans, which bind water that leads to swelling and congestion in addition to connective tissue remodelling. This results in extraocular muscle enlargement and orbital fat expansion.

Case report: We presents a case of a young women with severe symptoms of TED such as lid edema on both eyes, bilateral axial proptosis, double vision, blurry vision, headache. Patient was admitted to the Eye clinic of Clinical University Center of Sarajevo for further treatment. Initially MRI and Ultra Sound were performed and both showed enlargement of ocular muscles. In addition Hertel egzophtalmometry showed bilateral proptosis. During hospitalisation patient received pulse doses of Methylprednisolone intravenous for five consecutive days, following oral use of corticosteroid therapy. Improvement was inevitable and patient was dismissed from hospital with strict scheme of tapering the doses of corticosteroids. Day after finishing the corticosteroid therapy symptoms came back, and once again she was prescribed with another circle of oral corticosteroids in dose of 1mg per kg.

Conclusion: Although strict control of thyroid function is crucial in patients with TED, the course and severity of ocular manifestation does not always correlate with thyroid hormone levels. Treatment of the presented patient is still ongoing and already signs of improvement are shown.

Keywords: thyroid ophtalmopathy, corticosteroids, Graves disease, ocular muscle enlargement, Hertel egzophalmomerty

CASE REPORT: DIAGNOSTIC CHALLENGES IN MASQUERADE SYNDROME

Hajrija Pleh, Faruk Nišić

Clinic of Eye Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: plehhajrija96@gmail.com

Introduction: Masquerade syndromes encompass a diverse spectrum of systemic and ocular disorders of a non-inflammatory background that emulate uveitic manifestations. The main objective is to address the challenges encountered in diagnosing a neoplastic process in a patient exhibiting ocular and neurological symptoms mimicking complex uveitic conditions.

Case report: This report details the case of a 75-year-old female patient who was admitted to the Clinic for Eye Diseases at the Clinical Center University of Sarajevo with complaints of rapid visual decline in the left eye, accompanied by severe headaches localized to the left temple, radiating to the left eye. Fundus examination of the left eye revealed circumferential blurring of the optic disc margins alongside exudative retinal detachment in the macular region. A brain magnetic resonance revealed several small-diameter lacunar infarctions. Laboratory analysis indicated higher levels of C-reactive protein and sedimentation rate, raising suspicions of an inflammatory etiology, thus prompting initial considerations for corticosteroid therapy. Nevertheless, microbiological and immunological tests for various infectious and autoimmune disorders returned negative results. Computed tomography of the chest revealed a tumorous formation in the right upper lobe, likely indicative of primary malignancy. Orbital magnetic resonance imaging exhibited zones of post-contrast signal enhancement, suggesting a potential diagnosis of uveal melanoma.

Conclusion: The patient expressed reluctance to undergo further diagnostic investigations that would be critical in identifying the specific type of neoplastic process affecting the eye. The severity of the left ocular pain intensified, remaining unresponsive to analgesic treatment, leading to enucleation of the left eye as a potential treatment option.

Keywords: neoplastic process, masquerade syndromes, blurred disc margins, exudative retinal detachment, enucleation

COMPARISON OF EDOF VS TRIFOCAL IOLS FOR PERMANENT VISION CORRECTION

Emir Čabrić[1,2], Melita Adilović-Čabrić[1,2], Arnes Čabrić[1,2]

[1]Polyclinic and Daily Hospital Doboj Jug, Doboj, Bosnia and Herzegovina
[2]Eye Hospital "Royal oftalmologija", Doboj, Bosnia and Herzegovina
Email: emircabric1962@gmail.com

Introduction: In modern refractive cataract surgery, the choice of intraocular lens (IOL) plays a crucial role in achieving a high level of patient satisfaction. Extended Depth of Focus (EDOF) lenses and trifocal lenses represent two advanced options aimed at reducing spectacle dependence after surgery.

Methods and results: This paper compares the effectiveness, visual outcomes, and patient satisfaction following implantation of EDOF and trifocal IOLs. Special attention is given to the appropriate preoperative selection of patients, which includes comprehensive diagnostics: accurate biometry, corneal topography, aberrometry, and an evaluation of individual visual needs such as lifestyle, occupational requirements, and expectations regarding postoperative visual performance. EDOF lenses typically offer better contrast sensitivity and fewer visual disturbances such as halos, while trifocal lenses provide high-quality vision across all distances, including near vision for reading. The choice between these lenses must be highly individualized based on the patient's lifestyle and visual priorities. As part of this study, a surgical video demonstration is included, showcasing the proper implantation techniques for both EDOF and trifocal IOLs. The video highlights the importance of correct alignment, centration, and intraoperative techniques that contribute to optimal postoperative outcomes.

Conclusion: Proper patient selection and thorough preoperative diagnostics are key factors in achieving successful outcomes with EDOF and trifocal IOL implantation. An individualized approach allows for personalized vision correction and maximizes patient satisfaction.

Keywords: EDOF IOL, trifocal IOL, phacoemulsification, clear lens extraction

CORNEOSCLEROMALACIA

Mirza Pračić, Faruk Nišić

Eye Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: mirza.pracic@gmail.com

Introduction: Anterior necrotizing scleritis, so-called scleromalacia perforans, is a rare, severe eye disorder resulting an autoimmune damage of episcleral and scleral performing vessels. It is a type III hypersensitivity reaction which occurs due to the accumulation of immune complexes (Antigen-Antibody complexes). Scleromalacia perforans was first reported by van der Hoeve in a talk given before the Royal Dutch Ophthalmological Society in 1930. He noted that it was bilateral, began with yellow or greyish subconjunctival nodules and gradually developed into scleral necrosis with perforation and exposure of the uvea. Scleromalcia perforans (SP) is a rare (only 4% of scleritis). Scleromalacia perforans typically occurs in elderly women with long-standing rheumatoid arthritis. Other associated conditions are systemic lupus erythematosus, periarteritis nodosa, granulomatosis with polyangitis (formerly Wegener granulomatosis), Behçet disease, limited scleroderma, Crohn's disease, graft versus host disease. SP was also observed in porphyria and herpes-zoster infection. Chronic granulomatous changes with epithelioid cells surround central, necrotic masses (collagen and non-collagen fibers, cell debris) .

Case report: This article presents case report of a male patient with symptoms of red eye, visual loss, eye pain and symptoms of a systemic disease like muscle pain, arthralgia, chronic sinusitis and weight loss. He was admitted at the Eye clinic University of Sarajevo, where he was treated conservatively, in addition surgery conjunctivoplastica was performed. Because of lack of donor materials and amniotic membrane, which were necessary for further treatment, patient was transferred to Eye Clinic, Clinical center Rebro Zagreb. After positive immunology tests arrived he was diagnosed with Wegener granulomatosis, a specific immunology medical treatment was conducted. Furthermore, amniotic membrane was successfully transplanted on sclera. At first posthospital exam patient is stable with scleral staphyloma without signs of inflammation. he is under immunology treatment, for further treatment, transplantation of the sclera is considered.

Conclusion: This case highlights the importance of a multidisciplinary approach in managing rare ocular conditions and emphasizes the need for timely access to both medical and surgical treatment options. Despite the complexity of such cases, with appropriate care, patients can achieve stabilization and prevent further progression of the disease, though long-term management, such as scleral transplantation, may still be necessary.

Keywords: corneoscleromalacia perforans, Wegener granulomatosis, immunology, conjunctivoplastica, amniotic membrane

DO SOFT CONTACT LENSES AFFECT CORNEAL AND LIMBAL EPITHELIAL THICKNESS?

Berkay Kadıoğlu, Beyhan Göl, Damla Nur Dinç, Aysun Şanal Doğan, Said Numan Eraslan

Department of Ophthalmology, Saglik Bilimleri University, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey
Email: kadiogluberkay@hotmail.com

Introduction and aim: The limbus is a crucial transition zone as it is the stem cell reservoir of the corneal epithelium. The use of contact lenses (CL) has been demonstrated to result in a range of complications, which may be attributed to the mechanical compression of the limbus. The present study investigates the effect of monthly silicone hydrogel CL wear on limbal epithelial thickness (LET) using anterior segment optical coherence tomography (AS-OCT).

Methods: LET measurements were obtained from the superior, inferior, temporal, and nasal corneo-limbal quadrants, along with central corneal thickness (CCT) measurements, using AS-OCT before prescribing CLs (Group 1) and after one month of CL wear (Group 2) in 20 patients. These values were then compared.

Results: This study was conducted as a single-centre, retrospective comparative study. The analysis encompassed data from 38 eyes of 19 patients who had not previously used CLs. The sample population comprised 19 patients, 10 of whom were female and 9 males, with a mean age of 19.8 years (±4.9 years). A statistically significant reduction in LET was observed in the nasal and temporal quadrants of the right eyes and in the nasal, temporal, and superior quadrants of the left eyes when comparing Group 1 and Group 2. The above values in Group 2 were lower than those in Group 1 (Right and Left eyes: p=0.001). No statistically significant difference was found in CCT values between the groups (Right eye: p=0.315, Left eye: p=0.165).

Conclusion: The present study demonstrated that a period of one month of CL wear resulted in a decrease in LET. The underlying cause may be mechanical trauma and damage to the surface epithelial cells due to lens pressure on the limbus. Further studies with longer follow-up are needed to investigate the long-term effects of CLs on limbal epithelial thickness.

Keywords: limbus, Contact Lens (CL), Anterior Segment Optical Coherence Tomography (AS-OCT)

EFFECT OF DISEASE-MODIFYING THERAPY ON RETINAL THINNING IN RELAPSING-REMITTING MULTIPLE SCLEROSIS

Sanela Sanja-Burgić[1], Mirko Resan[2], Saša Smoljanović-Skočić[3]

[1]Faculty of Medicine, University of Banja Luka, University Clinical Center of the Republic of Srpska, Bosnia and Herzegovina
[2]University of Defense in Belgrade, Medical Faculty of the Military Medical Academy, Military Medical Academy Belgrade, Serbia Medical Faculty, University of Novi Sad, Serbia
[3]Medical Faculty, University of Novi Sad, Serbia, King Khalid Hail Hospital, Saudi Arabia
Email: sburgic@yahoo.com

Introduction: Multiple sclerosis (MS) is a chronic neurodegenerative disease of the central nervous system, marked by demyelination and axonal loss. Retinal thinning, particularly in the retinal nerve fiber layer (RNFL) and ganglion cell-inner plexiform layer (GIPL), is a biomarker of neurodegeneration in MS. Optical coherence tomography (OCT) offers a non-invasive way to monitor these changes, which correlate with disability progression. While disease-modifying therapies (DMTs) aim to reduce inflammation and slow neurodegeneration, their effect on retinal thinning is unclear.

Aim: To evaluate the impact of DMT on RNFL and GIPL thinning over one year in relapsing- remitting MS (RRMS).

Methods: A prospective, single-center study of 80 eyes from 40 RRMS patients. Participants were grouped into No DMT (N=18) and DMT (N=22) cohorts. DMTs included glatiramer acetate, ofatumumab, interferon beta-1b/1a, dimethyl fumarate, fingolimod, and ocrelizumab. OCT measured RNFL and GIPL thickness at baseline, 6, and 12 months. Disability was assessed using the Expanded Disability Status Scale (EDSS). Analyses included T-tests, ANOVA, Spearman correlation, and regression modeling.

Results: RNFL and GIPL thinning was significantly greater in the No DMT group ($p < 0.05$). RNFL loss: 4.03 ± 4.87 µm (No DMT) vs. 0.69 ± 3.91 µm (DMT); GIPL loss: 3.43 ± 3.46 µm vs. 2.25 ± 2.44 µm. RNFL/GIPL thickness was negatively correlated with EDSS ($p < 0.05$).

Conclusion: DMT slows retinal thinning in RRMS, supporting its neuroprotective role. RNFL and GIPL measurements via OCT may guide MS treatment decisions.

Keywords: multiple sclerosis, retinal thinning, RNFL, GIPL, disease-modifying therapy, OCT

FUTURE OF CORNEAL REPAIR - TOPIC REVIEW

Belma Jaganjac[1,2], Nejra Osmančević-Omerspahić[1]

[1]Department of Ophthalmology, Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina
[2]Department of Histology and Embryology, School of Medicine, University of Zenica, Zenica, Bosnia and Herzegovina
Email: belma.jaganjac@gmail.com

Review objective: This review aims to provide a concise overview of emerging therapies for corneal repair and the potential for their widespread clinical application.

Review topic: Corneal epithelium has a remarkable regeneration potential mediated by limbal stem cells (LSC). Every injury triggers these cells causing their proliferation and migration. LSC are now being used as a form of regenerative treatment. They can be obtained from a patient's healthy eye, from a healthy donor or cultivated. Current clinical techniques like CLET – (cultured limbal epithelial transplantation) and COMET (cultured oral mucosal epithelial transplantation) have been used clinically for LSC deficiency treatment. Recent research suggests mesenchymal stem cells transplantation to be as effective as CLET. There has also been progress in the field of corneal epithelial tissue engineering with a focus on using cell-based cultures with biomaterials or biocompatible substrates for ocular surface reconstruction. New hyaluronic acid - based bioinks hold great potential for future use in 3D bioprinting of cornea. Another promising alternative is the use of nanotechnology which could solve the problem of corneal allograft rejection. Cell-free biomaterials show promise in promoting corneal regeneration while minimizing rejection risks. Merging cell-derived exosomes with biomaterials may improve corneal regeneration.

Conclusion: Novel therapeutic modalities offer significant promise for future management of corneal damage and may eventually replace keratoplasty, current gold standard in treatment. Further research is needed, especially clinical trials, to fully realize the potential of these new methods.

Keywords: cornea, limbal stem cells, 3D bioprinting, gene therapy, nanotechnology

GLAUCOMA CASES AFTER REFRACTIVE SURGERY

Enesa Begović

Private Ophthalmological Practice "Lacrima" dr Enesa Begovic, Sarajevo, Bosnia and Herzegovina
Email: enesa.doktorica2@gmail.com

Introduction: Refractive surgical (RS) procedures have experienced rapid advancements over recent decades. As elective surgeries, they aim not only to treat refractive errors but also to enhance lifestyle. Surgical techniques, success rates, and visual outcomes continue to improve, while the incidence of vision-threatening complications has decreased. However, a growing number of glaucoma diagnoses have been reported among patients who underwent RS in the past.

Methods: A literature review was conducted, and two recently diagnosed glaucoma cases in patients who underwent RS years ago are presented. Considerations regarding the potential risks of glaucoma in RS patients are discussed, focusing on the impact of preoperative refractive errors and the alterations to corneal thickness and biomechanics resulting from RS.

Results: RS procedures can make it difficult to accurately measure intraocular pressure (IOP) postoperatively, as it may be falsely low, potentially delaying the diagnosis of glaucoma. Interface fluid syndrome (IFS) is a rare complication observed after RS, characterized by fluid accumulation within the flap interface, which can cause IOP elevation. Additionally, some RS patients may exhibit steroid responsiveness, increasing their risk for glaucoma post-surgery. Despite achieving emmetropia post-RS, patients remain at risk for glaucoma due to preoperative refractive error.

Conclusion: Although no strong correlation has been established between RS and late-onset glaucoma, intraoperative IOP fluctuations have been reported. Long-term follow-up visits are necessary to monitor for glaucoma in RS patients, and adapted formulas for measuring IOP should be considered. The role of lifestyle factors in glaucoma risk should also be taken into account.

Keywords: glaucoma, refractive surgery, biomechanics

INNOVATIVE QUANTIFICATION OF TEAR FILM THICKNESS USING SCHEIMPFLUG-BASED PACHYMETRY MAPPING

Leon Marković, Ana Maria-Varošanec

University Hospital "Sveti Duh", Zagreb, Croatia
Email: lemarkovic@gmail.com

Background: Precise measurement of tear film thickness is critical for diagnosing and monitoring dry eye disease (DED), yet many conventional methods lack accuracy, are invasive, or rely on subjective interpretation. Advanced imaging technologies now allow for noninvasive, reproducible assessment of tear film properties.

Objective: To describe and validate a novel method for measuring central precorneal tear film thickness (CPTFT) and evaluating the spatial distribution of tear film using fluorescein-enhanced pachymetry maps generated by a rotating Scheimpflug camera system.

Methods: This approach utilized the Pentacam rotating Scheimpflug camera (version 1.21r43, Pentacam Oculus Systems, Wetzlar, Germany) to perform anterior segment imaging shortly after instillation of fluorescein. The system captured high-resolution pachymetric data, enabling the calculation of CPTFT and the generation of detailed spatial distribution maps of the tear film across the corneal surface. Measurements were taken immediately post-blink to ensure uniform tear film spread. Results: This technique provided reproducible measurements of CPTFT, averaging approximately 20-25 µm in individuals with DED, and revealed regional variability in tear film thickness across the ocular surface. The method was noninvasive, dye-assisted, and offered high repeatability without requiring direct contact or complex setup, making it suitable for clinical application.

Conclusion: Scheimpflug-based pachymetry mapping with fluorescein provides a novel, practical, and reliable method for evaluating both central and spatial characteristics of the tear film. This imaging technique offers an effective tool for advancing the diagnosis and management of DED by enabling objective and quantitative assessment of tear film dynamics.

Keywords: tear film thickness, central precorneal tear film, pachymetry, Scheimpflug imaging, dry eye disease, fluorescein mapping, Pentacam

INTRAOCULAR REFRACTIVE SURGERY: REVERSIBILITY OPTIONS THROUGH MINIMALLY INVASIVE PROCEDURES

Emir Gorčević

Tagesklinik - Zentrum Gesundheit Gruppe, Leer, Germany
Email: emirgorcevic@icloud.com

Background: Intraocular refractive surgery has significantly advanced with the introduction of multifocal and extended depth-of-focus intraocular lenses (IOLs), offering spectacle independence for many patients undergoing cataract or refractive lens exchange procedures. However, some patients experience disturbing photic phenomena such as glare and halos, or are dissatisfied with the quality of vision after multifocal IOL implantation. In these cases, a reversible solution is essential.

Methods: AddOn lenses, implanted into the ciliary sulcus in addition to the primary IOL in the capsular bag, provide a unique opportunity for reversible enhancement or correction. These lenses allow for easy explantation if visual disturbances occur, with minimal surgical risk and without affecting the primary IOL. Clinical scenarios include enhancement of refractive outcomes, multifocality in pseudophakic patients, or reversal of multifocality in patients intolerant to optical side effects.

Results: The use of sulcus-fixated AddOn IOLs ensures higher patient satisfaction and enables a tailored approach to vision correction. Their reversibility allows for flexible management of visual outcomes in patients experiencing dissatisfaction with multifocal lens-related phenomena.

Conclusion: Sulcus-fixated AddOn IOLs represent a safe, effective, and truly reversible method in intraocular refractive surgery. They offer a second chance for patients dissatisfied with their visual outcomes, especially those affected by multifocal lens-related visual phenomena. This approach exemplifies the evolving trend towards personalized and adaptive ophthalmic care.

Keywords: AddOn IOL, reversible refractive surgery, sulcus-fixated lens, multifocal/EDoF/Toric IOL, visual disturbances, IOL explantation

IS A TORIC IOL RIGHT FOR YOU? SELECTING THE PERFECT CANDIDATE FOR ASTIGMATISM CORRECTION

Arnes Čabrić[1,2], Melita Adilović – Čabrić[1,2], Emir Čabrić[1,2]

[1]Polyclinic and Daily Hospital Doboj Jug, Bosnia and Herzegovina
[2]Eye Hospital "Royal oftalmologija" Doboj, Bosnia and Herzegovina
Email: cabric1878@gmail.com

Introduction: Implantation of a toric intraocular lens (IOL) during phacoemulsification surgery represents a modern approach to correcting pre-existing corneal astigmatism. However, in order to achieve optimal functional outcomes, a careful and individualized approach to patient selection is essential.

Methods: This paper focuses on the diagnostic criteria for identifying the ideal candidate for toric IOL implantation. Emphasis is placed on precise biometry, corneal topography, and evaluation of posterior corneal astigmatism, as well as the stability of the astigmatism. In addition, the patient's lifestyle habits such as frequent driving, occupational demands, expectations regarding spectacle independence, and general daily visual needs play a crucial role in the decision-making process.

Results: Beyond the diagnostic aspect, the paper includes a surgical video demonstration of phacoemulsification with toric IOL implantation, highlighting proper lens alignment, intraoperative challenges, and useful "tips and tricks" that contribute to lens stability and accurate astigmatism correction.

Conclusion: Successful astigmatism correction with a toric IOL does not rely solely on surgical technique, but primarily on adequate diagnostics, proper patient selection, and a personalized approach to surgical planning. With appropriate candidate selection, it is possible to significantly enhance visual quality and patient satisfaction, ultimately achieving superior refractive outcomes in everyday ophthalmic practice.

Keywords: toric IOL, biometry, topography, phacoemulsification, clear lens extraction

PREDICTION OF CORRECTED DISTANCE VISUAL ACUITY AFTER THE CORNEAL CROSS-LINKING PROCEDURE

Fanka Gilevska

Promedika Ophthalmology, Skopje, North Macedonia
Email: fanka.gilevska@gmail.com

Introduction: Predicting corneal shape changes and visual acuity after the CXL procedure in KC corneas is of great interest in clinical practice. Predictive models based on preoperative parameters will influence the surgical plan, especially in an era where laser refractive procedures can alter these parameters and interact synergistically with the CXL procedure.

Methods: Including the early postoperative COD in the prediction protocols will allow us to influence it by carefully tittering the postoperative medications, thus controlling the expected shape and visual acuity outcome.

Results: Mathematical models developed can predict CDVA at 12 months using only objective preoperative parameters, such as COD 0-2 mm anterior, ARC, PRC, and TCT. Adding the subjective parameter CDVA at preoperative assessment increased predictability, exceeding 70%.

Conclusion: The development of predictive models based on preoperative and early postoperative parameters provides valuable insight into shaping surgical planning for better outcomes in corneal reshaping procedures. By incorporating subjective and objective parameters, the predictability of visual acuity and corneal shape after CXL is significantly improved.

Keywords: CXL, corneal density, keratoconus

REAL WORLD CASE STUDIES: TRANSFORMING CRVO TREATMENT WITH FARICIMAB IN OUR CLINICAL PRACTICE

Melita Adilović-Čabrić[1,2], Arnes Čabrić[1,2]

[1]Polyclinic and Daily Hospital Doboj Jug, Bosnia and Herzegovina
[2]Eye Clinic "Royal oftalmologija", Doboj, Bosnia and Herzegovina
Email: amelita0601@gmail.com

Introduction: Retinal vein occlusion, particularly central retinal vein occlusion (CRVO), represents a significant challenge in ophthalmologic practice due to the high risk of permanent vision loss caused by the development of macular edema. Until recently, the standard of care primarily involved the use of anti-VEGF agents such as ranibizumab and aflibercept, as well as off-label use of bevacizumab. However, a subset of patients has shown a suboptimal therapeutic response, highlighting the need for new treatment options.

Methods: Faricimab (Vabysmo), a bispecific antibody targeting both VEGF-A and angiopoietin-2, was approved by the Agency for Medicinal Products and Medical Devices of Bosnia and Herzegovina in February 2025 for the treatment of CRVO. This presentation presents a visual and clinical insight from our clinical practice through several cases of patients with CRVO treated with a full loading dose regimen of faricimab, combined with additional laser photocoagulation.

Results: This approach resulted in a significant reduction of macular edema and stabilization of vision. The presentation also includes cases of non-responders to other anti-VEGF therapies, where switching to faricimab led to clinical improvement.

Conclusion: Faricimab has proven to be an effective therapeutic option for the treatment of CRVO, both in patients who were unresponsive to previous anti-VEGF treatments and in treatment-naive patients. Our clinical experience confirms its efficacy and its potential to transform the approach to managing retinal vein occlusion.

Keywords: CRVO, faricimab, anti-VEGF, loading dose

REDUCING EARLY POSTOPERATIVE HYPOTONY IN PPV: A NOVEL NOTCHED TROCAR APPROACH

Armin Kasumović[1,2], Ante Vukojević[1], Zoran Marenić [2], Marin Radmilović[1], Goran Marić[1], Zoran Vatavuk[1]

[1]Department of Ophthalmology, University Hospital Center Sestre milosrdnice, Zagreb, Croatia
[2]Tehnoprogres, Zagreb, Croatia
[3]Private Eye Polyclinic "Dr Sefić", Sarajevo, Bosnia and Herzegovina
Email: kasumovic.armin@gmail.com

Introduction: Pars plana vitrectomy (PPV) has undergone significant advancements, evolving from 20 gauge (20G) diameter systems to smaller diameter instruments such as 23G, 25G, and 27G diameter systems. 25G and 27G PPV are effective and elegant, and generally do not require suturing the sclerotomies at the very end of the operation, but they do have some limitations such as lower flow, increased instrument flexibility, and somewhat longer operating time. As a result, they are usually used for less complex diseases in vitreoretinal surgery, while for the most complex ones, 23G PPV is still widely used.

Methods: In addition, in less developed countries where the introduction of the latest equipment and technology is often delayed, 23G PPV is generally more commonly used than 25G and 27G. Placing sutures at the end of 23G vitrectomy prevents early postoperative hypotony, bleeding, and leakage and reduces the risk of endophthalmitis. Suturing the last sclerotomy, on a trocar with an infusion cannula, is of particular importance. It can be challenging because by moving the infusion, the intraocular pressure is not under control. To prevent early postoperative hypotony, suturing needs to be done skillfully and quickly, which sometimes presents a challenge, especially for young and inexperienced vitreoretinal surgeons.

Results: We describe a novel design notched trocar device and a surgical method of facilitated sclerotomy sewing procedure. This device and method enable better intraoperative pressure control at the end of 23G PPV and prevent early postoperative hypotony and consequently vitreal cavity hemorrhage (POVCH).

Conclusion: The introduction of the notched trocar device and the facilitated sclerotomy sewing method provides an effective solution to the challenges associated with suturing the last sclerotomy during 23G vitrectomy. It enhances intraoperative pressure control, reducing the risk of early postoperative hypotony and vitreal cavity hemorrhage, thus improving surgical outcomes, particularly in less experienced surgeons.

Keywords: pars plana vitrectomy, notched trocar

RE-ESTABLISHMENT OF KERATOPLASTY SURGERY

Faruk Nišić

Clinic of Eye Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: faruk.nisic@gmail.com

Background: Penetrating keratoplasty, a full-thickness corneal transplant procedure, was once routinely performed at the Clinic for Eye Diseases, UKCS. However, surgical activity was interrupted during the war in 1992-1995, leading to a decades-long cessation of this essential ophthalmic service.

Objective: The objective of the study was to re-establish the penetrating keratoplasty program at the Clinic for Eye Diseases and evaluate its impact on ophthalmic care in Bosnia and Herzegovina.

Methods: The Clinic successfully re-established the program, focusing on rebuilding surgical infrastructure, intensive personnel training, and renewing cooperation with the well-known centers for corneal surgery in Hungary and the UK. Also, achieving the ability to tissue procurement for transplantation. A strong and effective referral and collaboration network has been established with the Federal Ministry of Health and cantonal hospitals across the country, ensuring a steady flow of both donor tissue and patients in need of keratoplasty.

Results: After the reintroduction of the procedure, more than 35 penetrating keratoplasties have been successfully performed, along with numerous amniotic membrane transplantations.

Conclusion: This experience highlights the critical role of institutional commitment, regional collaboration, and multidisciplinary effort in restoring complex surgical programs. The renewed availability of penetrating keratoplasty represents a significant advancement in ophthalmic care for patients with advanced corneal disease in Bosnia and Herzegovina.

Keywords: penetrating keratoplasty, corneal transplantation, surgical program restoration

SQUAMOUS CELL CARCINOMA OF THE CONJUNCTIVA AND CORNEA - SURGICAL METHODS AND THERAPEUTIC TREATMENT MODALITIES

Biljana Trivunčević-Simetić, Miljana Tepić-Popović, Markić Bojana, Velibor Simetić, Milka Mavija

Clinic for Eye Diseases, University Clinical Center of the Republika Srpska, Banja Luka, Bosnia and Herzegovina
Email: bikisimetic@gmail.com

Introduction: Squamous cell carcinoma (SCC) of the eye is a rare malignancy that is part of the spectrum of ocular surface squamous neoplasia (OSSN). Numerous fixed and modifiable risk factors have been identified, such as male gender, age, cigarette smoking, UV radiation, and immunosuppression. Every conjunctival lesion requires a differential diagnosis between benign and malignant diseases, and all suspicious lesions should be biopsied.

Objective: The aim of the study is to present patients with OSSN of the conjunctiva and/or cornea who were treated at the Eye Diseases Clinic in Banja Luka. All patients with pathohistologically confirmed SCC of the conjunctiva underwent wide non-contact surgical resection, with conjunctival cryotherapy and application of absolute alcohol to the cornea. Postoperatively, all patients with SCC were prescribed local therapy with Mitomycin C 0.04% according to the treatment protocol with the approval of the oncology council and regular monitoring by an ophthalmologist.

Material and methods: The paper presents 5 patients with conjunctival and/or corneal tumors who were treated at the Clinic for Eye Diseases in the period from 2023-2025. Patients with SCC of the conjunctiva and/or cornea after surgical excision and cryotherapy of the conjunctiva received local mitomycin C 0.04% according to the treatment protocol with the approval of the oncology council. The main outcome measures of therapy were tumor response and side effects of the drug.

Results: Patients with confirmed conjunctival SCC demonstrated efficient and successful clinical treatment of conjunctival squamous cell carcinoma by excision and postoperative treatment with local MMC 0.04% without disease recurrence in the follow-up to date.

Conclusion: Timely diagnosis and combination of surgical excision and local therapy with Mitomycin C in squamous cell carcinoma of the conjunctiva proved to be effective in terms of patient follow-up and disease recurrence.

Keywords: squamous cell carcinoma, conjunctiva, mitomycin C, cryotherapy

SQUAMOUS CELL PAPILLOMA OF THE CONJUNCTIVA

Amra Zubača-Sarić, Faruk Nišić

Clinic of Eye Diseases, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: saric.amra94@gmail.com

Background: Conjunctival papilloma is an acquired benign squamous cell tumor that can present at any age. Papilloma has been associated with human papilloma virus (HPV) infection, usually types 6 and 11. Papilloma is a histopathological term describing specific morphology of tumors. Conjunctival papilloma is a benign growth that arises from the stratified squamous epithelium of the conjunctiva.

Objective: The aim of this report is to present a case of squamous conjunctival papilloma in an eight-year-old boy.

Methods: One case of squamous conjunctival papilloma is presented here. The case of an eight-year-old boy who was seen at the University Clinic Center of Sarajevo with severe, long-standing squamous cell papilloma is presented. He had an eleven-month history of multiple growths in the upper and lower eyelid and eyeball conjunctiva of the left eye. The definite histological diagnosis was benign conjunctival squamous papilloma, HPV negative. The proliferative growth index Ki67 was different, and the papilloma was immunohistochemically p16 negative.

Results: The patient management involved excisional biopsy in the left eye under general anaesthesia, surgical excision, and cryotherapy.

Conclusion: This case emphasizes the importance of proper diagnosis and management of conjunctival papilloma in pediatric patients.

Keywords: conjunctival, squamous, child, papilloma

SUBCONJUNCTIVAL INJECTABLE PLATELET-RICH FIBRIN FOR MODERATE TO SEVERE DRY EYE DISEASE

Huri Sabur, Alperen Bahar, Neşe Arslan

Department of Ophthalmology, Diskapi Yıldırım Beyazıt Training and Research Hospital, Ankara, Turkey
Email: drhurisabur@gmail.com

Background: Dry eye disease (DED) is a multifactorial disorder characterized by tear film instability, ocular surface damage, and inflammation. Treatment varies depending on severity and includes artificial tears, anti-inflammatory agents, and blood-derived products.

Platelet-rich fibrin (PRF), an alternative to platelet-rich plasma (PRP), promotes tissue healing but forms a solid fibrin matrix. Injectable PRF (i-PRF), developed by modifying centrifugation parameters, remains liquid for 15–20 minutes, allowing for direct tissue injection. At the application site, fibrin polymerization occurs, and activated platelets gradually release growth factors over time, enhancing tissue regeneration. The application of subconjunctival i-PRF is novel and has not been previously explored.

Aim: To evaluate the effect of subconjunctival i-PRF on moderate to severe DED.

Materials and methods: The study included two groups: the i-PRF group (24 eyes), consisting of patients who underwent subconjunctival i-PRF injection, and the control group (20 eyes). Pre- and post-treatment assessments of the ocular surface disease index (OSDI), tear break-up time (TBUT), corneal fluorescein staining (CFS), tear meniscus height (TMH), and tear meniscus area (TMA) were recorded and compared between the groups.

Results: The groups were similar in terms of age, sex, and baseline dry eye parameters (OSDI, TBUT, CFS). In the i-PRF group, post-treatment OSDI and CFS decreased, while

TBUT significantly increased compared to the control group. TMH increased from 0.003±0.00 to 0.015±0.00 in the i-PRF group, while TMA increased from 0.010±0.01 to 0.043±0.03.

Conclusion: Subconjunctival i-PRF shows promise as an effective treatment for moderate to severe DED, improving ocular surface parameters and symptoms. Further studies are needed to confirm its long-term efficacy and safety.

Keywords: dry eye disease, injectable platelet-rich fibrin, OSDI, TBUT, TMH, TMA

THE EFFECT OF KERATOCONUS ON BINOCULAR VISUAL FUNCTIONS

Erbil Seven[1], Fatih Kebapci[2]

[1]Department of Ophthalmology, Faculty of Medicine, Van Yuzuncu Yil University,Van, Turkey
[2]Ophthalmology Clinic, Burdur Public Hospital, Burdur, Turkey.
Email: erbilseven@gmail.com

Purpose: To evaluate binocular visual function in eyes with keratoconus

Methods: One hundred eyes of 50 patients with keratoconus and 92 eyes of 46 healthy subjects were included in the study. Visual acuity was measured with logMAR. Strabismus was measured with the cover tests, simultaneous perception with the striate Maddox test and the 6 base-down prism test, fusion and fusional convergence break point with a prism bar, and stereopsis with the Random Dot Fly test.

Results: The mean age was 21.46±4.19 years in the keratoconus group (KG) and 24.85±4.24 years in the control group (CG). There was no significant difference between the groups in terms of gender ($p > 0.05$). Corrected visual acuity was 0.29±0.28 in KG and 0.009±0.03 in CG ($p<0.001$). Phoria or tropia was present in 8 patients (16%) in the KG and one patient (2.2%) in the CG ($p = 0.032$). The absence of simultaneous perception in the Maddox and 6? base-down prism test was higher in the KG group ($p<0.001$). The fusional convergence breakpoint was 13±7.19 ?D in KG and 12.8±6.42 ?D in CG ($p>0.05$). Stereopsis was 1060.6±1289.93 arcsec in KG and 61.52±41.63 arcsec in CG ($p<0.001$).

Conclusion: It was observed that binocular visual function was lower in patients with keratoconus compared to healthy subjects. These results suggest that keratoconus

may affect the corneal structure and the entire visual system. Evaluating binocular visual function in the follow-up of keratoconus patients may be essential to monitor disease progression and treatment efficacy.

Keywords: keratoconus, binocular functions, visual acuity, strabismus, simultaneous perception, fusional convergence, stereopsis

THE EFFECT OF SEROTONIN RE-UPTAKE INHIBITOR USE ON ACCOMMODATION AMPLITUDE

Büşra Güner Sönmezoğlu[1], Yavuz Selim Oğur[1], Halil İbrahim Sönmezoğlu[2], Burçin Çakır[3]

[1]Serdivan State Hospital, Turkey
[2]Hendek State Hospital, Turkey
[3]Sakarya Training and Research Hospital, Turkey
Email: busra-gnr1@hotmail.com

Aim: To objectively determine the effect of SSRI use on accommodation amplitude using autorefractometry

Methods: Twenty-four patients aged 35-50 years and 25 healthy subjects of similar age were included in the study. Objective accommodation amplitude (AA) and pupil size were measured with an autorefractometer (Tonoref-3, NIDEK). An independent sample t-test was used to compare normally distributed variables. The effects of the duration of drug use, age, and pupil size on AA were evaluated by multiple linear regression analysis.

Results: The mean age was 43.04±5.17 years (14 females, 10 males) in the SSRI group and 44.56±2.45 years (18 females, 7 males) in the control group (p=0.201). The mean duration of drug use in patients using SSRIs was 3.9±3.9 years. AA was 0.88±0.63 in the SSRI group and 0.99±0.49 in the control group, and there was no statistically significant difference between the groups (p=0.464). There was a significant negative correlation between age and AA in both groups (r1=-0.550, p1=0.007, r2=-0.748, p2<0.001, respectively). Multivariate regression analysis showed that age affected AA with an R^2 value of 0.303 (p=0.007).

Conclusion: Compared with the healthy control group, AA was lower in the SSRI group, but this difference was not statistically significant. SSRIs may affect AA due to their anticholinergic and mydriatic effects. Further studies with a larger patient group are needed to reveal this relationship.

Keywords: accommodation amplitude, pupil size, serotonin

THE ROLE OF ANTI-VEGF THERAPY IN THE TREATMENT OF PTERYGIUM

Patricia Reisz-Majić, Dubravka Biuk, Zoa Majić

Eye Clinic, Osijek University Hospital, Faculty of Medicine, University of Osijek, Croatia
Email: patriciafreiszm@gmail.com

Introduction: Pterygium is a chronic proliferative disorder of the conjunctiva and cornea, characterized by inflammation, fibrovascular growth, and a high recurrence rate post-excision. While the pathogenesis is strongly linked to prolonged UV exposure, recent findings indicate a pivotal role of cyclooxygenase-2 (COX-2) in mediating inflammation and stimulating angiogenesis via vascular endothelial growth factor (VEGF).

Aim: To present immunohistochemical data on COX-2 expression and explore current literature supporting anti-VEGF strategies in clinical ophthalmic practice.

Methodology: The study included 111 conjunctival samples: 68 from patients with primary pterygium and 43 from control subjects without pterygium. COX-2 expression was assessed through immunohistochemistry using monoclonal antibodies. Staining intensity was graded semi-quantitatively (0 – +++), and results were correlated with UV exposure history collected via patient interviews.

Results: 42.6% of the pterygium group samples showed positive COX-2 expression, compared to 62.8% in the control group, which had greater cumulative UV exposure. A statistically significant correlation was observed between COX-2 expression and UV exposure duration.

COX-2 activation may upregulate VEGF, promoting angiogenesis—a potential target for anti-VEGF therapies to prevent recurrence post-excision.

Conclusion: VEGF-driven neovascularization is increasingly recognized as a critical factor in aggressive and recurrent pterygia. Our findings provide a strong rationale for incorporating anti-VEGF therapy (e.g., bevacizumab) as an adjuvant to surgical excision to reduce vascular proliferation and recurrence.

Keywords: pterygium, anti-VEGF therapy, COX-2, predictors

WHAT DOES CORNEAL EDEMA THAT DOES NOT GO AWAY 6 WEEKS AFTER CATARACT SURGERY MEAN?

Dilara Yeni, Fatma Sumer

Department of Ophthalmology, Faculty of Medicine, Recep Tayyip Erdoğan University, Turkey
Email: dilarayeni9362@gmail.com

Background: Postoperative anterior segment inflammation following cataract surgery presents a complex challenge in both diagnosis and management. Late-onset postoperative inflammation can result from several factors, including retained lens fragments, reactivated uveitis, and infections such as endophthalmitis and wound abscess. Additionally, the late development of corneal edema after cataract surgery has been associated with retained lens fragments, intraocular lens fragments, and endothelitis.

Case report: A 70-year-old male patient presented to our ophthalmology clinic with a history of recurrent redness and significant pain in his left eye. The patient reported undergoing cataract surgery in the left eye six weeks prior, with persistent tenderness since the day of the procedure. One week prior to his visit, the patient had been diagnosed with anterior uveitis at a private eye clinic, where he was prescribed topical 1% prednisolone acetate. Although the pain in his eye had subsided, he continued to experience blurred vision, prompting his admission to our clinic due to the lack of visual improvement. Upon initial examination, visual acuity was measured at 0.9 in the right eye and 0.2 in the left eye using a Snellen visual acuity chart. Intraocular pressure were 15 mmHg OD and 17 mmHg OS. A slit lamp examination of the left eye revealed grade 1 and 2 anterior chamber reactions. Notably, a small whitish fragment, previously identified as hypopyon at the private clinic, was observed in the inferior aspect of the AC. Following dilation with mydriatics, a retained lens fragment was identified within the superior capsule. B-ultrasonography did not reveal any significant abnormalities. Specular pachymetry was not feasible. It was ultimately concluded that the whitish material in the inferior angle of the AC was indeed a retained lens fragment, corroborated by the discovery of another retained lens fragment in the superior capsule. A clear corneal incision was made at the superior cornea, and hyaluronate sodium was injected into the anterior chamber. The lens fragment was successfully removed using lens forceps, and any residual hyaluronate sodium was cleared. On the first postoperative day, corneal edema in the left eye showed slight aggravation, with visual acuity limited to a finger count at 10 cm. IOP measured at 15 mmHg. After two weeks, there was significant improvement in corneal edema, with visual acuity increasing to 0.4 on the Snellen visual acuity chart. A follow-up examination

one month postoperatively revealed further reduction in corneal edema and an improvement in visual acuity to 0.7 on the Snellen visual acuity chart. Although the cornea in the left eye appeared clear, endothelial cell count revealed 678 cells/mm^2, and specular pachymetry indicated a significant loss of hexagonality.

Conclusion: There is a possibility that the lens fragment migrated into the anterior chamber, potentially due to capsular deformation resulting from minor trauma or fibrosis, which could have triggered an acute AC reaction accompanied by severe corneal edema. The lens fragment might have migrated to the surface of the iris and made contact with the corneal endothelium, leading to corneal edema and diminished vision. It is important to consider that retained lens fragments may be present during the postoperative period in cases of persistent corneal edema.

Keywords: cornea, cataract surgery, edema

WHAT TO DO WHEN ANTI-VEGF IS SIMPLY NOT WORKING?

Arnes Čabrić[1], Melita Adilović-Čabrić[2]

[1]Polyclinic and Daily Hospital Doboj Jug, Bosnia and Herzegovina
[2]Eye Hopital "Royal oftalmologija", Doboj, Bosnia and Herzegovina
Email: cabric1878@gmail.com

Background: Diabetic macular edema (DME) and persistent epiretinal membrane (ERM) are common challenges in the management of diabetes-related eye diseases. The standard treatment protocol for DME includes anti-VEGF, corticosteroid therapy and micropulse treatment but in a certain number of patients, the results may be unsatisfactory, leading to the need for surgical intervention.

Objective: This paper presents a case study of a patient with persistent diabetic macular edema and ERM, in whom standard therapy proved ineffective – the patient was a non-responder to all provided therapy.

Methods: In response to the therapeutic failure, the patient underwent pars plana vitrectomy (PPV), during which was ERM and ILM peeling performed and SF6 tamponade. A video clip of the surgery demonstrates the intervention technique, surgical flow, and useful tips and tricks during the procedure.

Results: Postoperatively, a reduction in macular edema was observed, along with changes in the macular contour architecture and an improvement in visual acuity.

Conclusion: Although anti-VEGF and other intravitreal therapies remain the first-line treatment for DME, in cases where persistent ERM is present, PPV with membrane peeling represents an effective therapeutic approach that can lead to improved visual acuity and regression of pathological changes in the macula.

Keywords: vitrectomy, DME, anti VEGF, ERM

LONG-TERM MANAGEMENT OF LUNG ADENOCARCINOMA: A CASE OF ALK INHIBITOR SUCCESSFUL TREATMENT

Belma Paralija[1], Aida Zajković[1], Lejla Metiljević[1], Elma Kurtović[2], Mirza Čakarić[2]

[1]Clinic of Lung Diseases and Tuberculosis „Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Health Center, Sarajevo, Bosnia and Herzegovina
Email: paralijabelma@gmail.com

ABSTRACT

Background: Lung adenocarcinoma is a prevalent form of non-small cell lung cancer, often requiring multimodal treatment strategies.

Case report: This case report presents a female patient, 68 years old, diagnosed in 2020. with lung adenocarcinoma located in the right hilum obstructing the middle lobar bronchus, leading to complete atelectasis in the middle lobe with presence of significantly enlarged lymph nodes in the supraclavicular, retroclavicular, and infraclavicular regions, as well as in the mediastinum. Molecular analysis of a endobronchial biopsy sample confirmed ALK (anaplastic lymphoma kinase) gene rearrangement, classifying the tumor as ALK-positive lung adenocarcinoma. Initial treatment included chemotherapy with Cisplatin and Pemetrexed. The patient received five cycles of chemotherapy; however, the treatment was discontinued due to severe anemia which had to be treated with blood transfusions, and acute renal insufficiency.Subsequently, the patient underwent radiation therapy in the mediastinum and primary tumor area as well as the right supraclavicular area, followed by targeted therapy with an ALK inhibitor starting in 2021. The patient tolerated the therapy very well throughout the entire treatment. Recent chest imaging findings from February 2025. indicated regression of the primary tumor and secondary lesions, with significant improvement in mediastinal lymphadenopathy.

Conclusion: This case highlights the effectivness of ALK inhibitor therapy in disease control.

Keywords: lung adenocarcinoma, ALK inhibitor targeted therapy

ALPHA-1 ANTITRYPSIN DEFICIENCY - AN UNDER-RECOGNIZED GENETIC DISORDER

Belma Paralija

Clinic of Lung Diseases and Tuberculosis, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina, Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: paralijabelma@gmail.com

ABSTRACT

Objective: to highlight the fact that Alpha-1 antitrypsin (AAT) deficiency is a clinically under-recognized inherited disorder affecting the lungs, liver, and rarely skin.

Review topic: AAT is a protease inhibitor (Pi) of the proteolytic enzyme elastase and also of the proteases trypsin, chymotrypsin, and thrombin. Emphysema in AAT deficiency (AATD) results from an imbalance between neutrophil elastase in the lung, which destroys elastin, and the elastase inhibitor AAT, which is synthesized in hepatocytes and protects against proteolytic degradation of elastin. AATD might be interpreted as a common mechanism with different clinical manifestations and frequent overlap among chronic respiratory disorders, such as asthma, COPD and bronchiectasis, in which the underlying AAT deficiency has not been recognized. The diagnosis of severe deficiency of AAT is confirmed by demonstrating a serum level below 11 micromol/L in combination with a severe deficient phenotype, or genotype. Smoking cessation and augmentation therapy consisting of intravenous therapy with exogenous AAT protein harvested from pooled blood products are used in patients with emphysema due to AAT deficiency. Lung transplantation is reserved for patients with advanced emphysema due to severe AAT deficiency.

Conclusion: All adults with persistent airflow obstruction on spirometry should be tested for AATD.

Keywords: persistent airflow obstruction, lung emphysema, alpha-1 antitrypsin deficiency

TRANSIENT PSYCHOTIC EPISODE LIKELY INDUCED BY PARENTERAL ADMINISTRATION OF SULFAMETHOXAZOLE-TRIMETHOPRIM

Emir Cokić[1], Elida Turkušić[2], Belma Paralija[2]

[1]General Hospital "Prim.dr. Abdulah Nakaš" Sarajevo, Bosnia and Herzegovina
[2]Clinic of Pulmonary Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: emir_alfac@hotmail.com

ABSTRACT

Background: Transient psychotic episodes induced by medications, including antibiotics, are rare in immunocompetent patients but have been documented.

Case report: This case describes a 75-year-old female patient hospitalized at the Clinic for Pulmonary Diseases and Tuberculosis "Podhrastovi", Clinical Centre University Sarajevo, due to an exacerbation of chronic obstructive pulmonary disease (COPD). She also had elevated serum renal parameters and chest CT changes suggesting inflammation, though other causes were not excluded. The patient had a prior history of colon adenocarcinoma, treated with systemic chemotherapy completed five years earlier, with no relapse during regular follow-ups. Upon admission, she was in critical condition with respiratory distress, fever, and productive cough. Following oxygen therapy, antibiotic treatment, and other supportive measures, her clinical condition improved and laboratory findings normalized, apart from mild electrolyte imbalances. However, shortly after starting antibiotic therapy, the patient developed psychotic symptoms, including delusions and hallucinations. After excluding other potential causes through thorough evaluation, a transient psychotic episode was diagnosed, most likely induced by parenteral sulfamethoxazole-trimethoprim. Importantly, the patient had no previous psychiatric history, and symptoms resolved following discontinuation of the antibiotic, indicating a likely causal relationship.

Conclusion: This case underlines the importance of close monitoring for potential neuropsychiatric side effects of antibiotics like sulfamethoxazole-trimethoprim, especially in patients with severe pre-existing conditions and complex therapeutic regimens.

Keywords: sulfamethoxazole-trimethoprim, neuropsychiatric side effects, transient psychotic episode, chronic obstructive pulmonary disease

BILATERAL SPONTANEOUS PNEUMOTHORAX, PNEUMOMEDIASTINUM, PNEUMOPERITONEUM, AND SUBCUTANEOUS EMPHYSEMA AS RARE COMPLICATIONS IN ASTHMA ATTACK.

Jasmina Mustafić-Pandžić[1,2], Belma Paralija[1,2]

[1]Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina

[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: jasminamustafic@hotmail.com

ABSTRACT

Background: Spontaneous pneumothorax has already been reported in asthma patients in the literature, its concurrence with subcutaneous emphysema and pneumomediastinum, pneumoperitoneum is extremely rare.

Case report: We report a case as rare complications in asthma attack in a 35-year-old patient admitted to the Clinic of Lung Diseases-Clinical Centre University of Sarajevo. The patient reported to have progressive dyspnea and chest pain several days before hospitalization at our clinic. He used Salbutamol uncontrollably over 15 inhalations per day. In medical history his allergic asthma had already been identified, and Beclomethasone dipropionat/formoterol fumarate had kept it under control. Upon admission, the chest x-ray was normal. The computed tomography revealed subcutaneous emphysema of the soft tissues of abdomen, chest, neck, head with massive pneumomediastinum, bilateral pneumothorax and pneumoperitoneum. Arterial blood gas analysis was compatible with respiratory acidosis and hypoxemia. Flexible bronchoscopy revealed the airways to be in their typical state. The patient received steroid therapy intravenously and oxygen supplementation through a nasal cannula. Infraclavicular incisions were used in order to decrease the severity of emphysema and improve the clinical state. Ten days later, subcutaneous emphysema, pneumomediastinum, pneumoperitoneum, pneumothorax resolved spontaneously on the follow up chest X-ray.

Conclusion: Pneumothorax, pneumomediastinum, pneumoperitoneum, subcutaneous emphysema are unusual complications of acute asthma attack. Therefore, regarding the symptoms of chest pain and dyspnea, pneumomediastinum and pneumothorax must always be considered in diagnosis. The faster the diagnosis and earlier the treatment are, the greater the chances for survival.

Keywords: asthma attack, pneumothorax, pneumomediastinum, pneumoperitoneum, subcutaneous emphysema

BORDETELLA PERTUSSIS IN AN ADULT PATIENT WITH PNEUMONIA: A CASE REPORT

Irma Sladić[1], Belma Paralija[1], Emir Čokić[2]

[1]Clinic of Pulmonary Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]General Hospital "prim dr Abdulah Nakaš", Sarajevo, Bosnia and Herzegovina
Email: irmasladic@gmail.com

ABSTRACT

Background: Bordetella pertussis, the causative agent of whooping cough, is typically associated with pediatric populations but can also cause respiratory infections in adults, particularly in immunocompromised individuals.

Case report: This case describes a young male, fully vaccinated, who presented with symptoms of acute respiratory failure, dyspnea, fever and malaise, along with findings of bilateral organized consolidation and ground-glass opacification on chest CT. The clinical presentation was suggestive of atypical pneumonia. The patient's symptoms had persisted for approximately 10 days, and the history included a cough that led to vomiting and gagging, which were key features of his presentation. Additionally, a household member exhibited similar symptoms, suggesting possible household transmission. Given the history of coughing with vomiting, the current epidemiological situation, and the patient's clinical signs, he was tested for Bordetella pertussis. Although his initial condition was severe, gradual improvement occurred with a reduction in nonspecific inflammatory markers and favorable radiological findings, supported by oxygen therapy and close monitoring of gas analyses. The patient was treated ex iuvantibus with macrolides, an appropriate therapy for Bordetella pertussis, which contributed to his clinical recovery. Subsequent microbiological results confirmed Mycoplasma pneumoniae serology and a positive PCR swab for Bordetella pertussis, confirming the diagnosis of pertussis.

Conclusion: This case emphasizes the importance of considering Bordetella pertussis in the differential diagnosis of atypical pneumonia, even in adults who are fully vaccinated, and highlights the need for timely testing in the context of respiratory symptoms and specific epidemiological factors.

Keywords*:* bordetella pertussis, atypical pneumonia, adults

HEMOCHROMATOSIS-INDUCED DILATED CARDIOMYOPATHY MIMICKING POST-COVID INFLAMMATORY CARDIOMYOPATHY- A CASE REPORT

Muamer Dervišević, Belma Paralija, Elna Biber, Majda Kačamaković

Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dervisevicmuamer@gmail.com

ABSTRACT

Background: COVID-19 has been associated with various cardiovascular complications, including myocarditis and inflammatory cardiomyopathy. In cases of persistent or worsening cardiac dysfunction, alternative etiologies must be considered. Hemochromatosis, a disorder of iron metabolism, can lead to excessive iron deposition and subsequent organ dysfunction, including dilated cardiomyopathy.

Case report: We present a 49-year-old male smoker with type 2 diabetes who developed fever (38.5°C) and shortness of breath in December 2024 and was treated with antibiotics for presumed bacterial superinfection. PCR swab for COVID-19 was positive. Despite initial symptom resolution, he presented two months later with dyspnea, fever, and pretibial edema. Chest imaging revealed bilateral pleural effusions. Laboratory tests showed elevated CK, LDH, Troponin, and CK-MB. ECG findings were suggestive of left ventricular hypertrophy with ST-segment elevation. Echocardiography revealed severe left ventricular dysfunction with four-chamber dilation, raising suspicion of post-COVID-19 inflammatory cardiomyopathy. Coronary angiography ruled out ischemic heart disease, and cardiac MRI found no evidence of acute myocarditis. Further investigations revealed hepatic hyperechogenicity and persistent hyperferritinemia with low TIBC and UIBC. Physical examination findings, including palmar erythema and skin hyperpigmentation, raised suspicion of hemochromatosis-related cardiomyopathy. The patient demonstrated partial improvement with heart failure therapy and remains under hematologic supervision.

Conclusion: This case highlights the importance of considering metabolic disorders, such as hemochromatosis, in patients with unexplained cardiomyopathy post-COVID-19. It underscores the need for comprehensive metabolic and genetic evaluations in persistent heart failure cases and emphasizes the importance of long-term follow-up in post-COVID-19 patients.

Keywords: COVID-19, heart failure, hemochromatosis, dilated cardiomyopathy

LOA – LATE ONSET ASTHMA

Armin Homoraš[1], Belma Paralija[1], Majda Kačamaković[1], Ahmed Crnica[1], Benjamin Hodžić[2], Sara Ganić[1]

[1]Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Hospital for Pulmonary Diseases and Tuberculosis, Travnik, Bosnia and Herzegovina
Email: armma.h13@gmail.com

ABSTRACT

Background: Asthma is a common chronic respiratory condition characterized by airway inflammation, causing intermittent airflow obstruction and bronchial hyperresponsiveness. In adults, it is often overlooked, more difficult to control, and linked to faster lung function decline.

Case report: A 70-year-old female, a retired hairdresser with no prior lung disease, was admitted with a 5-day history of fever, dry cough, and worsening shortness of breath. Her medical history includes myocarditis and stroke. She is a former smoker, quitted 8 years ago. Her family history reveals that her father died of natural causes, her mother passed away from uterine cancer, and her brother died from lung cancer. On admission, she appeared weak, pale and afebrile. Lung auscultation revealed low-pitched wheezing, and oxygen saturation was 83-88% on room air, improving to 96% after oxygen support with a flow rate of 3 liters per minute. Serum allergy tests showed sensitivity to a mix of grasses and trees, and laboratory findings revealed elevated total IgE. Spirometry indicated severe ventilatory insufficiency with a positive bronchodilator response. Chest radiograph was normal. Based on these findings, a clinical diagnosis of bronchial asthma was made, and the patient was discharged with a recommendation for inhalation therapy.

Conclusion: The clinical presentation of adult-onset asthma is similar to that seen in other age groups. It is important to differentiate it from chronic obstructive pulmonary disease and other conditions with overlapping symptoms.

Keywords: late onset asthma, wheezing, ventilatory insufficiency

MULTIMODAL TREATMENT OF LUNG ADENOCARCINOMA

Aida Zajković[1], Belma Paralija[1,2]

[1]Clinic of Lung Diseases and Tuberculosis, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina

[2]Faculty of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dr.zajkovic@gmail.com

ABSTRACT

Background: Non-small cell lung cancer (NSCLC), including lung adenocarcinoma, occurs in about 85% of all lung tumors and is treated by surgery in stages 1 and 2. In stage 3A, multimodal cancer treatment may transform the disease from an inoperable to an operable stage.

Case report: A 52-year-old woman, non-smoker, with no history of malignant diseases was admitted to the University Clinic of Lung Diseases and TB Sarajevo in 2018. due to persistent cough with expectoration, mild dyspnea and malaise. Chest CT and bronchoscopy with biopsies were performed and the diagnosis of inoperable right lung adenocarcinoma was established. A chemotherapy protocol (pemetrexed plus platinum) of 6 cycles was initiated, then followed by maintenance therapy with Pemetrexed for 16 cycles. After a good tumor reduction, the patient underwent surgery. The pathohistological finding after surgery proved scar tissue as a complete response of the tumor to chemotherapy treatment. Adjuvant chemotherapy (pemetrexed) was continued after surgery and the last one was in July 2022. The patient had not received chemotherapy for the last three years and had led quite normal life. The last PET CT scan performed in January 2025 was without disease recurrence.

Conclusion: Multimodal treatment of lung adenocarcinoma can transform the disease from an inoperable to an operable stage.

Keywords: lung adenocarcinoma, chemotherapy, surgery

OUR EXPERIENCES IN SECOND LINE TREATMENT OF ELDERLY PATIENTS WITH ADVANCED NON-SMALL CELL LUNG CANCER (NSCLC)

Dina Dizdarević-Špago[1], Ira Lovrić[1], Diela Kulo[1], Lejla Metiljević[1], M Čakarić[2], E Kurtović[2]

[1]Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Public Institution Health Center, Canton Sarajevo, Sarajevo, Bosnia and Herzegovina
Email: dina_ds@live.com

ABSTRACT

Background: Elderly patients (>70 years) account for 45% of advanced NSCLC cases in the EU. Despite a life expectancy of 5–9 years in this age group, NSCLC substantially reduces survival and quality of life. While chemotherapy has shown benefits, data on its use in patients over 70 remain limited.

Aim: To evaluate the efficacy and tolerability of second-line docetaxel therapy in patients aged over 70 years with advanced non-small cell lung cancer (NSCLC), compared to younger patients receiving the same treatment.

Materials and methods: We performed a retrospective analysis of 30 patients >70 years (median age 75) treated with docetaxel 75 mg/m^2 every 3 weeks. Twenty-seven were evaluable for efficacy and toxicity and compared with 27 younger patients (median age 58) who received the same regimen.

Results: The median overall survival for patients >70 years (median age 75) was 8.8 months, versus 8.3 months for those <70. Median progression-free survival was 4.3 months in the elderly and 3.3 months in younger patients, though not statistically significant. Toxicity was comparable in both groups; however, neutropenia and febrile episodes were more frequent in patients >70 (neutropenia 16% vs. 3.5%; P = 0.028).

Conclusion: Patients >70 years can benefit from second-line docetaxel therapy, with survival outcomes similar to younger patients. Despite a higher incidence of neutropenia and febrile events, the treatment is feasible in selected elderly patients. Performance status remains a critical determinant of treatment success in this population.

Keywords: elderly population, second-line chemotherapy, advanced non-small cell lung cancer, Docetaxel

PAP - AN UNUSUAL DIFFUSE LUNG DISEASE

Elida Turkušić[1], Belma Paralija[1], Majda Kačamaković[1], Elna Biber[1], Armin Homoraš[1], Ahmed Crnica[1], Benjamin Hodžić[2], Sara Ganić[1]

[1]Clinic of Lung Diseases and Tuberculosis "Podhrastovi", Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[2]Hospital for Pulmonary Diseases and Tuberculosis, Travnik, Bosnia and Herzegovina
Email: daeli_dr@hotmail.com

ABSTRACT

Background: Pulmonary alveolar proteinosis (PAP) is a rare condition where surfactant accumulates in the lung's alveoli, causing breathing difficulties and respiratory failure. Due to its nonspecific symptoms, diagnosing PAP requires comprehensive serological, radiological, and bronchoscopic assessments.

Case report: A 53-year-old woman was admitted to the hospital due to a prolonged dry cough, muscle and chest pain, and urinary incontinence, all linked to coughing. She was a long-term smoker with no prior respiratory issues but had thyroid dysfunction and vascular headaches. On admission, the patient was alert but dyspneic, with a cough interrupting speech. Lung auscultation revealed regular breath sounds; oxygen saturation was 94%. Other clinical findings were unremarkable. Laboratory tests showed elevated D-dimer. Chest CT ruled out pulmonary thromboembolism but showed infiltrative changes in the upper lung fields, suggesting inflammatory interstitial changes. Bronchoscopy and spiroplethysmography were normal. The diffusion capacity for CO (single-breath method) showed a moderate reduction (TLCO 54%). Serological tests for atypical pathogens were normal. She was treated with antibiotics (macrolides, quinolones), which led to clinical improvement but no radiological regression. A multidisciplinary team then recommended lung biopsy for definitive diagnosis. A thoracic surgeon performed atypical resections of the upper, middle, and lower lobes. Pathohistological analysis confirmed alveolar proteinosis.

Conclusion: PAP is a rare and challenging condition to diagnose and treat. Its differential diagnosis includes other diseases with interstitial changes verified on chest CT scan such as cardiogenic pulmonary edema, ARDS, pneumonia, sarcoidosis and acute silicosis.

Keywords: pulmonary alveolar proteinosis, chest CT scan, interstitial lung disease, lung biopsy

STEREOTACTIC ABLATIVE RADIOTHERAPY DELIVERED IN A SINGLE DOSE FOR EARLY-STAGE NON-SMALL CELL LUNG CANCER COMPARED TO SURGERY AS A STANDARD OF CARE

Asmir Avdičević [1], Igor Nikolić[2], Dragan Schwarz[3], Ivica Mažuranić[4], Hrvoje Kaučić[5], Hrvoje Feljan[6], Ivana Alerića[7], Domagoj Kosmina[8], Vanda Leipolda[9], Mihaela Mlinarića[10], Giovanni Ursia[11], Karla Schwarza[12], Davor Plavec[13]

[1] Special Hospital Radiochirurgia Zagreb, Sveta Nedjelja, Croatia
[2]Faculty of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina
[3]Faculty of Medicine, Josip Juraj Strossmayer University, Osijek, Croatia
Email: asmir.avdicevic@radiochirurgia.hr

ABSTRACT

Background: Stereotactic body radiotherapy (SBRT) is an established treatment method with favorable toxicity for inoperable patients with early-stage non-small cell lung cancer (NSCLC), but also for patients who are surgically operable but do not incline to surgery as a treatment modality.

Aim: We aimed to evaluate the importance, progression free survival (PFS), overall survival (OS) and adverse events (AE) of SBRT in the treatment of patients with early-stage lung cancer provided with high ablative doses delivered in one fraction compared to surgery and SBRT from relevant literature data.

Materials and methods: Lung cancer cases were considered if they had TNM stage (clinical or pathological) T1-T2a and N0/x and M0, corresponding to UICC stages I and II. Cases diagnosed and treated between 2017 and 2020 were included in our analyses.

Results: Results in this analysis we have included 57 subjects. The median OS time for our group was 59.6 (95% CI, 54.4 to 64.7) months, for Berlin SBRT group 33.4 (95% CI 28.7 to 38.0) months, and for Berlin Surgery group 28.5 (95% CI 24.3 to 32.6) months (P<0.0001).

Conclusion: Our study showed that the treatment of patients with first stage non-small cell lung cancer using the radiosurgical method in one fraction at our center ensures a significantly better survival (P<0.0001) and more sparing treatment compared to the methods used so far, for example in comparison with data from the Brandenburg-Berlin cancer registry.

Keywords: radiochirurgy, stereotactic body radiotherapy (SBRT), non-small cell lung cancer (NSCLC).

TUMOR SPREAD THROUGH AIR SPACES (STAS) AS A PROGNOSTIC FACTOR AND ITS IMPACT AN THE CHOICE OF SURGICAL RESECTION EXTENT IN EARLY-STAGE LUNG CANCER: A TWO-YEAR OUTCOME ANALYSIS FROM THE CLINIC FOR THORACIC SURGERY, UNIVERSITY CLINICAL CENTER OF REPUBLIKA SRPSKA

Velibor Simetić[1,2], Marko Kantar[1,2], Radovan Jurić[1], Branko Štrbac[1], Miroslav Stranatić[1], Biljana Trivunčević -Simetić[2]

[1]Clinic of Thoracic Surgery, University Clinical Center of Republika Srpska, Banja Luka, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Banja Luka, Bosnia and Herzegovina
Email: veliborsimetic85@gmail.com

ABSTRACT

Background: Lung cancer remains the leading cause of cancer-related mortality worldwide, with non-small cell lung cancer (NSCLC), particularly adenocarcinoma, being the most common histological type in early-stage disease. Surgical resection, especially lobectomy, remains the gold standard. Since 2015, tumor spread through air spaces (STAS) has been recognized as an independent prognostic factor,gaining increasing clinical relevance.

Aim: To analyze the presence of STAS in resected NSCLC patients, its association with clinicopatholgical features and treatment outcomes, and its impact on the choice of surgical resection extent.

Materials and methods: This retrospective study included 173 patients who underwent surgical resection for lung cancer at the Clinic for Thoracic Surgery, University Clinical Center of Republika Srpska, during the period 2023–2024. Demographic data, histopathological features, TNM staging, STAS status, recurrence, and survival outcomes were analyzed.

Results: STAS was identified in 45.1% of patients, most commonly in T2 and T3 stages. Its presence was significantly associated with a higher recurrence rate and poorer prognosis. Adenocarcinoma was the predominant histological type (46.2%). Segmentectomy in STAS-positive patients was associated with inferior outcomes compared to lobectomy.

Conclusion: STAS is an important prognostic factor that influences therapeutic decision-making, particularly regarding the extent of resection in early-stage NSCLC. Routine assessment and reporting of STAS status is essential to guide clinicians in choosing appropriate surgical strategies and improving long-term treatment outcomes.

Keywords: lung cancer, STAS, non-small cell lung cancer (NSCLC), prognostic factor, surgical resection

ALDOSTERONOMA RESOLUTION SCORE AS A PREDICTIVE METRIC FOR RADIOFREQUENCY ABLATION OUTCOMES

Marwan Moussa, Omar Hamam, Ahmad Maaly, Mohammed Elkholy, Mohamed Farghaly, Godwin Abiola, Salomao Faintuch, Barry Sacks, Muneeb Ahmed, Ammar Sarwar

Radiology Department, Beth Israel Deaconess Medical Center (BIDMC)/ Harvard Medical School, Boston, Massachusetts, USA

B**ackground:** Radiofrequency ablation (RFA) is an emerging treatment for treatment primary aldosteronism (PA). The Aldosteronoma Resolution Score (ARS) is a validated metric for prognostication of complete clinical response after adrenalectomy.

Aim: The purpose of this study is to validate ARS as a prognosticator for outcomes post-RFA.

Material and methods: After IRB approval, patients treated with RFA for unilateral aldosteronoma in the period between 2007-2023 were retrospectively reviewed. Clinical and biochemical data were collected, including pre- and post-procedural potassium, aldosterone, plasma renin activity levels, blood pressure, number and doses of antihypertensives and potassium supplements. Analysis included descriptive analysis and AUC- ROC tests assessing the relation between ARS and outcomes post-RFA. ARS were defined as "high likelihood of clinical response" (4-5), "medium likelihood of clinical response" (2-3) and "low likelihood of clinical response" (0-1). Outcome definitions were complete clinical response (BP< 140/90 mmHg, without antihypertensives), partial clinical response (BP<140/90, requiring less antihypertensives pre-RFA) and absent clinical response (BP<140/90 mmHg, requiring unchanged antihypertensives pre-RFA). ARS correlation with post-RFA biochemical data was performed.

Results: In 59 patients (M 71%) with a mean age 54.4±10.3 years, 15% achieved complete clinical response while 8% had high ARS Score. 46% had a partial response while 46% had a medium ARS score. 39% had absent clinical response corresponding to 46% who had low ARS score. AUC was 0.891; 95% CI: (0.795) to (0.987) P<0.001, for predicting complete clinical response. ARS correlated poorly with biochemical outcomes post-RFA.

Conclusion: Preliminary evidence demonstrates that ARS can be used for predicting clinical outcomes in PA post-RFA.

Keywords: radiofrequency ablation, primary aldosteronism, aldosteronoma resolution score, hypertension, adrenal tumor

ANATOMICAL BRAIN CHANGES IN IDIOPATHIC INTRACRANIAL HYPERTENSION

Mahsa Alborzi Avanaki, Donnella S. Comeau, Yuming Chang

Radiology Department, Beth Israel Deaconess Medical Center (BIDMC) / Harvard Medical School, Boston, Massachusetts, USA

Background: Idiopathic Intracranial Hypertension (IIH) is characterized by elevated intracranial pressure without an identifiable cause, often associated with altered cerebrospinal fluid (CSF) dynamics.

Aim: This study investigates the interplay between arachnoid granulations (AGs), venous sinus stenosis, and glymphatic dysfunction—measured by the DTI-ALPS index—in both active and treated/cured IIH patients compared to healthy controls.

Materials and methods: We retrospectively analyzed imaging from female IIH patients and matched controls. We quantified AGs, calculated transverse/sigmoid sinus stenosis ratios bilaterally, and compared findings with DTI-ALPS metrics. Group comparisons assessed correlations between AG count, stenosis severity, and disease duration.

Results: Data from15 female IIH patients and 16 female controls were analyzed. Mean AG numbers in the superior sagittal sinus (SSS) were; Controls: 6.88, Active IIH: 4.13, and T/C:8. The T/C group had the highest stenosis ratios followed by active IIH patients and controls. Controls had significantly lower stenosis ratios compared to both active (P-values: R = 0.01, L = 0.06) and T/C groups (P-values: R = 0.02, L = 0.01). In the T/C group, a strong negative correlation was found between AG count in the SSS and right stenosis (P = 0.02). No significant correlation was observed between the ALPS Index and AG count in the SSS or sinus stenosis in any patient group (P = 0.4).

Conclusion: These findings reinforce the idea that IIH is primarily a disorder of impaired CSF outflow, with venous sinus stenosis and AG compression occurring as secondary effects of elevated ICP, sustained by a self-perpetuating feedback loop.

Keywords: IIH, glymphatic, arachnoid granulation

COMPARISON OF CORONARY CT ANGIOGRAPHY, CT-DERIVED FRACTIONAL FLOW RESERVE, AND CATHETERIZATION AND THEIR CLINICAL APPLICATION

Lejla Prnjavorac, Fuad Zukić

Radiology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia Herzegovina

Objective: The objective of this review is to compare and evaluate the diagnostic accuracy, clinical applications, and advantages of Coronary CT Angiography (CTA), CT-derived Fractional Flow Reserve (FFR_CT), and traditional coronary catheterization, with a focus on how these modalities contribute to the diagnosis and management of coronary artery disease (CAD).

Review topic: Coronary artery disease (CAD) is a leading cause of morbidity and mortality, and accurate diagnosis is crucial for appropriate treatment. Coronary computed tomography angiography (CTA), CT-derived fractional flow reserve (FFR_CT), and traditional coronary catheterization (CATH) are key diagnostic tools used to assess CAD. Coronary CTA provides high-resolution imaging of coronary anatomy, helping detect stenosis and atherosclerotic plaques. However, it is limited in assessing the functional significance of coronary lesions. CT-derived FFR (FFR_CT) combines coronary CTA with computational fluid dynamics to estimate the physiological impact of coronary stenosis, offering functional insights into ischemia risk, which is valuable for treatment decisions regarding revascularization. FFR_CT has shown potential as a noninvasive alternative to invasive FFR (iFFR), which remains the gold standard for assessing lesion severity during catheterization. Invasive catheterization provides precise anatomic and functional data but carries risks such as bleeding and contrast-induced nephropathy.

Conclusion: This review compares these modalities, emphasizing their strengths and limitations. While CTA offers non-invasive, comprehensive anatomical data, FFR_CT provides functional assessment that complements anatomical findings. Invasive catheterization is crucial when non-invasive results are inconclusive. The combination of these diagnostic tools allows for personalized, efficient management of CAD, reducing unnecessary invasive procedures and improving patient outcomes.

Keywords: coronary CT angiography, CT-derived fractional flow reserve, coronary imaging, coronary artery disease

EFFECT OF COLLECTION TIMING ON SELECTIVITY INDEX IN UNSTIMULATED ADRENAL VENOUS SAMPLING: DISCOVERY AND VALIDATION

Mohammed Elkholy[1], Ahmad Maaly[1], Mohamed Farghaly[1], Sanan Mahrokhain[2], Laura Tsai[2], Isabelle Hanna[2], Anand Vaidya[2], Barry Sacks[1], Marwan Moussa[1]

[1]The Laboratory for Minimally Invasive Tumor Therapies, Department of Radiology, Beth Israel Deaconess Medical Center/Harvard Medical School, Boston, Massachusetts, USA
[2]Department of Medicine, Center for Adrenal Disorders, Brigham and Women's Hospital/ Harvard Medical School, Boston, Massachusetts, USA.

Background: Primary aldosteronism (PA) is the most common cause of secondary hypertension. Nearly half of U.S. adult population have hypertension. Reported incidence of primary aldosteronism ranges between 7% to 30%.

Aim: To determine peripheral sample collection timing impact on selectivity index (SI) and success of unstimulated adrenal venous sampling (AVS) for primary aldosteronism (PA) subtyping.

Materials and methods: Retrospective discovery and prospective validation arms were conducted. 74 patients undergoing AVS before and after-ACTH stimulation were reviewed. Discovery dataset was divided into 1) "pre" group, peripherals collected 30-minutes before AVS and 2) "post" group, peripherals collected 1-minute after AVS. SIs were calculated using 30-min-pre and 1-min-post values. Patients with samples having SIs < 2 and SIs ≥ 5 on before and after-ACTH were classified as false negative and those with SI ≥ 2 and SI ≥ 5 on before and after-ACTH as true positive. Data was analyzed using Chi-squared test. For validation, 27 patients were enrolled prospectively as a paired group. In each, two peripherals were collected approximately 30 minutes before and 1 minute after AVS. Cortisol was compared using Wilcoxon matched-pair signed rank test.

Results: Retrospectively, 38% of "30 min-pre" patients had SI < 2 in right adrenals, compared to 14% in "1 min-post" patients (P = 0.007). For the left, 45.9% of "30 min-pre" patients had SIs < 2 compared to 13.5% in "1 min-post" patients, (P = 0.002). Prospectively, peripheral cortisols 1 min post decreased by 28% compared to 30-minute pre (median, 6.4 to 4.6 µmol/L; P < 0.001). SIs increased 40% bilaterally (P < 0.001).

Conclusions: collecting peripheral samples to determine the SI is more likely to demonstrate selectivity when collected after completion of AVS

ENDOMETRIAL INVASION OF SQUAMOUS CELL CARCINOMA OF THE CERVIX: A RARE CASE

Muhidin Handžo[1], Samira Sijahović[2], Adi Behmen[1], Nermana Čemić[3], Sabina Prevljak[2]

[1]Cantonal Hospital "Dr. Safet Mujić", Department of Radiology Mostar, Bosnia and Herzegovina
[2]Radiology Clinic, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]Cantonal Hospital "Dr. Irfan Ljubijanki?", Department of Radiology, Bihać, Bosnia and Herzegovina

Background: Squamous cell carcinoma of the cervix (SCC) is the most common type of cervical cancer, typically presenting as a localized disease. It spreads via lymphatic or hematogenous routes. While endometrial invasion is possible, involvement of the entire corpus uteri without extension into the cervical canal is extremely rare.

Case presentation: We report the case of a 71-year-old woman who presented with vaginal bleeding. Diagnostic imaging was performed, including CT and MRI of the pelvis. The imaging revealed an enlarged uterus with a heterogeneous structure, soft tissue proliferation, and lymphadenopathy, suggestive of tumorous endometrial growth and metastatic spread. A biopsy was conducted, and histopathological analysis confirmed the diagnosis of invasive SCC of cervical origin. The patient was diagnosed with SCC of the cervix, associated with aggressive endometrial invasion without extension into the cervical canal or vagina, representing an atypical radiological presentation of cervical cancer. Surgical treatment following radiotherapy and systemic oncology therapy was recommended.

Conclusion: This case underscores the importance of careful diagnostic evaluation and highlights the need for early detection and aggressive treatment in advanced cases. It also emphasizes the importance of collaboration among radiologists, gynecologists, and pathologists. Further clinical research is needed to optimize treatment strategies for patients with this rare condition.

Keywords: carcinoma of the cervix, endometrial invasion, pelvis imaging

ENDOVASCULAR MANAGEMENT OF INTERNAL ILIAC ARTERY ANEURYSM

Kristian Karlović, Gojko Bogdan, Josip Mašković

University Clinical Hospital Mostar, Department of Radiology, Mostar, Bosnia and Herzegovina
University of Mostar, School of Medicine, Mostar, Bosnia and Herzegovina

Background: Hypogastric artery aneurysm treatment represents a big challenge for vascular surgeons because of its localization and possible perioperative complications, most serious being aneurysm rupture, followed by bleeding, which can be very hard to contain. Endovascular treatment can be performed with different techniques and materials. Most commonly used materials today are covered grafts, vascular plugs and coils.

Case presentation: A Male patient in his sixties was referred to a vascular surgeon because of bilateral fusiform aneurysms of internal iliac arteries (IIAs) seen on the ultrasound. CT angiography showed fusiform aneurysms on both IIAs, the bigger one on the left side measuring up to 7 cm in diameter. MDT meeting was held and the decision to perform endovascular treatment first was made, followed by an open surgical procedure. Left IIA was catheterized and four pushable coils were placed. Stiff guidewire was used for further embolization. The distal end was placed in the catheter, the steel core was pulled out on the proximal end and the wire coating was advanced through the catheter simultaneously. The same procedure with the guidewire was repeated three more times. Control DSA showed a satisfying result. CT angiography one week after the intervention and it showed complete occlusion of left IIA. Various pathologies, which were reserved only for surgical treatment in the past, can be treated endovascularly.

Conclusion: Main purpose of this case was to show that some life-threatening pathologies can be solved not only by minimally invasive procedures but at low cost also.

Keywords: aneurysm, embolization, coil, interventional radiology

GASTRIC ULCER PENETRATING THE PANCREAS - COMPLICATION NOT TO MISS

Margarita Kuprešaković-Šapina[1], Tina Knežević[1,2]

[1]University Clinical Hospital Mostar, Department of Radiology, Mostar, Bosnia and Herzegovina
[2]University of Mostar, School of Medicine, Mostar, Bosnia and Herzegovina

Background: To review the importance of recognition about less common, but one of the most serious complications of peptic ulcer disease (PUD). To understand the role of computed tomography (CT) in the detection of PUD complications. PUD usually occurs in the stomach and proximal duodenum. The most serious complications of PUD include haemorrhage, perforation, penetration, and gastric outlet obstruction. Penetrating ulcers can also erode into near by organs such as pancreas, liver, bile duct, or colon. Penetration is pathologically similar to perforation, except that the ulcer does not erode into the peritoneal cavity, but into another organ such as the liver or pancreas.

Case presentation: A 44-year old woman was admitted to our hospital with melena. Symptoms appeared after taking antibiotics for an ear infection, along with aspirin. Gastroscopy revealed a giant ulcer at the antral greater curvature of the stomach. CT did not indicate the presence of free air, and the fat density between the antral greater curvature of the stomach and the pancreas had disappeared. We therefore determined that the gastric ulcer had penetrated the pancreas. She was successfully treated by conservative therapy. A histological examination revealed no evidence of malignancy.

Conclusion: We must be aware of the importance of recognizing penetration because it can be associated with a wide array of uncommon complications including perivisceral abscess, erosion into vascular structures, erosion into the cystic artery, haemobilia and fistulation into the pancreatic duct.

Keywords: peptic ulcer disease, complication, pancreas

HEPATIC PSEUDOLESION SECONDARY TO SUPERIOR VENA CAVA OBSTRUCTION

Tina Knežević[1,2], Margarita Kuprešaković-Šapina[1], Vedran Markotić[1,2]

[1]University Clinical Hospital Mostar, Department of Radiology, Mostar, Bosnia and Herzegovina
[2]University of Mostar, School of Medicine, Mostar, Bosnia and Herzegovina

Background: The hepatic lesion is a pseudolesion caused by abnormal contrast accumulation via the portosystemic venous shunt between the superior vena cava and the portal vein due to superior vena cava obstruction by a malignant and infiltrative mass. The superior and inferior veins of Sappey are the chief paraumbilical veins and carry the blood (and the contrast) to the left liver lobe, with direct hepatic parenchymal contrast opacification in the arterial and venous phases - "focal hepatic hot spot sign".

Case presentation: A 65-year-old woman with a history of primary neuroendocrine thymic tumor (NETT) underwent follow-up CT scan. Previous CT scan of the abdomen revealed a small focal zone of enhancement in segment II of the liver, which was considered as a differential diagnosis of hemangioma. The current CT scan after 3 months showed a large hypervascular geographical area in the liver segments II, III and IV, in terms of progression of the lesion, which indicated a pseudolesion of the liver caused by the progression of the intrathoracic finding and obstruction of the superior vena cava.

Conclusion: Recognizing a pseudolesion in the liver is important because it can avoid the misdiagnosis of focal liver lesions and can guide us towards possible obstruction of the superior vena cava. The characteristic location in the left lobe of the liver and wedge-shaped enhancement in arterial and venous phase are useful in differentiating focal hepatic hot spot sign from focal hypervascular liver lesion.

Keywords: liver, pseudolesion, obstruction, shunt, abdominal radiology

IMAGING IN RADIOTHERAPY - CT, MRI AND PET-CT IN TREATMENT PREPARATION AND TREATMENT GUIDANCE

Danijela Trokić

International Medical Centers Banja Luka, Center for Radiotherapy, Affidea Group, Medical Faculty, University of Banja Luka, Bosnia and Herzegovina

Objective of the review: Radiotherapy has evolved significantly over past few decades due to improvements in imaging techniques and technological advances in treatment delivery machines, as advanced high-energy radiation tools.

Review topic: CT imaging plays a major role in treatment preparation, planning and treatment delivery. High- resolution CT imaging in treatment preparation has become essential, enhancing accuracy in target volume and surrounding healthy tissues delineation, which is crucial in radiotherapy planning. Accurate 3-dimesional tumor visualization and precise target volume definition is increased by registration of CT images with contrast enhanced MRI or PET-CT. Precise volume delineation enabled CT based treatment planning and integration of complex techniques to deliver high radiation doses to the target, with maximum sparing of surrounding healthy tissue (IMRT). This treatment delivery model introduced more advanced radiotherapy techniques, resulting in application of even higher doses to the target, with a steep dose reduction resulting in ablative treatment effect (SRS/SABR/SBRT). CBCT is used "on board" on treatment machines to ensure accurate and precise dose delivery. This integration of CT into delivery machines enabled adaptation to target volume changes during the treatment, such as tumor shrinkage or target movement due to physiological processes (peristalses or bladder or rectal filling), adaptive radiotherapy, ART. Application of modern techniques in thoracic cancers uses 4DCT imaging for precise calculation of respiratory movements. Newer radiotherapy machines have MRI integrated instead of CBCT which provides greater precision.

Conclusion: Modern radiotherapy is based on high resolution imaging from preparation, through planning to treatment delivery. Today's treatment delivery machines have integrated imaging devices that provide accurate and precise treatment and without which radiotherapy techniques would be impossible to perform.

IMAGING OF THE POSTOPERATIVE SPINE

Svjetlana Jefić

Polyclinic „Dr Al-Tawil", Sarajevo, Bosnia and Herzegovina

Objective of the review: To highlight the role of postoperative spine imaging in FBSS, focusing on the identification of complications and the use of appropriate imaging modalities based on the clinical context.

FBSS-related complications are generally categorized into two groups: 1. **early complications** (**bleeding,** i**nfection**, m**eningoceles/dural lacerations) and 2. late complications** (**recurrent disc herniation,** s**pinal stenosis**, i**nstability**, t**extiloma** (foreign material left in the body), a**rachnoiditis)**.

Review topic: Postoperative spine imaging is crucial for patients with **Failed Back Surgery Syndrome (FBSS)**, a condition that encompasses a range of post-surgical clinical symptoms, including pain (with or without neurological deficits), psychological impairments, and dependence on pain medication. FBSS is a multifactorial clinical entity that often requires radiologic evaluation, irrespective of whether it is a result of neurosurgical, orthopedic, or other causes. Imaging plays a vital role in identifying or ruling out postoperative complications and guiding further therapeutic interventions. Postoperative spine imaging can be performed using **X-ray**, **CT**, or **MRI**, with the choice of modality dependent on the clinical scenario and the specific nature of the symptoms.

X-ray is typically used for detecting gross bony abnormalities, alignment, and spinal instability.

CT is useful for evaluating bony structures and postoperative instrumentation.

MRI is preferred for soft tissue evaluation, such as recurrent disc herniation, nerve root compression, and infection.

Strong interdisciplinary collaboration is required to provide information of the patient´s surgical history and clarify the clinical question that should guide the management of postoperative spine.

Conclusion: A radiologist's approach to postoperative spine imaging must be comprehensive, taking into account both early and late complications, patient history, and clinical presentation. The selection of the most accurate imaging modality and the design of the appropriate protocol should be guided by the specific clinical scenario, ensuring that the resulting imaging report provides valuable information to guide management decisions.

Keywords: postoperative spine, failed back surgery sandrome, imaging modalities

IMPROVING RADIOLOGY WORKFLOW BY REDUCING INTERRUPTIONS AND TURNAROUND TIMES USING AN AUTOMATIC ASSIGNMENT SYSTEM

Wyanne Law[1], Admir Terzić[2], Joshua Chaim[1], Hedvig Hricak[1], Hebert Alberto Vargas[3], Anton S. Becker[3]

[1]Memorial Sloan Kettering Cancer Center, New York City, NY, USA
[2]Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina
[3]New York University (NYU) Langone, New York City, NY, USA

Background: Radiology departments face challenges in delivering timely and accurate imaging reports, especially in high-volume, subspecialized settings. Workflow interruptions from various sources, including phone calls and emails for wet-read requests, remain a major factor of workplace-related stress and radiologist burnout.

Aim: In this retrospective cohort study at a tertiary cancer center, we assessed the efficacy of an Automatic Assignment System (AAS) in improving radiology workflow efficiency by analyzing 232,022 CT examinations over a 12-month period post-implementation and compared it to a historical control period.

Materials and methods: The AAS was integrated with the hospital-wide scheduling system and set up to automatically prioritize and distribute unreported CT examinations to available radiologists based on upcoming patient appointments, coupled with an email notification system.

Results: Following this AAS implementation, despite a 9% rise in CT volume, coupled with a concurrent 8% increase in the number of available radiologists, the mean daily urgent radiology report requests (URR) significantly decreased by 60% (25 ± 12 to 10 ± 5, $t = -17.6$, $p < 0.001$), and URR during peak days (95th quantile) was reduced by 52.2% from 46 to 22 requests. Additionally, the mean turnaround time (TAT) for reporting was significantly reduced by 440 min for patients without immediate appointments and by 86 min for those with same-day appointments. Lastly, patient waiting time sampled in one of the outpatient clinics was not negatively affected.

Conclusion: These results demonstrate that AAS can substantially decrease workflow interruptions and improve reporting efficiency.

Keywords: radiology workflow optimization, automatic assignment system, turnaround time (TAT), health informatics, systems integration, workflow efficiency

INFECTIONS OF THE SPINE

Zulejha Merhemić

General Hospital "Prim. Dr. Abdulah Nakaš", Sarajevo, Bosnia and Herzegovina

Objective of the review: To highlight the role of spine imaging, to use appropriate imaging modalities and protocols based on the clinical findings, and to follow up the patients as well as the efficiency of the therapy

Review topic: Infections of the spine may involve different anatomic compartments, 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 pathological examination.

Conclusion: Spine imaging could be performed using X-ray, CT and MRI, but MRI is modality of choice for establishing diagnose of infection of the spine in early stadium and to follow the patient. However, infectious causes are treatable, so it is important for the radiologist to make the diagnosis, because early diagnosis leads to improved outcomes.

Keywords: spine, infections, computer tomography, magnetic resonance imaging

MECHANICAL THROMBECTOMY IN THE MANAGEMENT OF ISCHEMIC STROKE

Nermana Čemić, Odej Ali Abud, Deniz Bulja, Mevlida Avdagić-Kapur

Clinic of Radiology, Clinical Centar University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Background: Mechanical thrombectomy represents the most advanced method for treating ischemic stroke caused by large cerebral artery occlusion. The aim of this study is to present a case series of 17 patients treated with this method, with an analysis of their clinical presentation, therapeutic approach, and final treatment outcomes.

Aim: This paper aims to present a series of cases of patients treated with MT, to analyze their clinical presentation, treatment procedure, and therapy outcomes.

Introduction: Ischemic stroke is a leading cause of mortality and long-term disability worldwide. Mechanical thrombectomy (MT) is a minimally invasive endovascular procedure that enables direct removal of a thrombus from an occluded large artery using specialized devices. Indications for MT include a time window of up to 6 hours from symptom onset, or up to 24 hours in selected cases based on imaging diagnostics (CT perfusion or diffusion MRI).

Materials and methods: Mechanical thrombectomy is performed in an angiographic suite via arterial access (femoral or radial) using digital subtraction angiography, which enables precise navigation through intracranial vascular structures. Two main techniques are applied: stent retrievers and aspiration catheters, as well as a combined approach (stent retriever + aspiration). Additional techniques include the Solumbra approach and the Y-technique.

Following thrombus extraction, a control angiographic assessment is performed, and patients are admitted to the intensive care unit for continuous monitoring of neurological status and postprocedural complications. Procedure-related risks include intracranial hemorrhage, arterial dissection, vasospasm, and distal embolization, although the overall safety of MT is high.

Results: The analyzed case series showed successful reperfusion in patients (TICI 2b or 3) following the procedure. No major complications or intracranial hemorrhages were recorded during or after the intervention.

Conclusion: Mechanical thrombectomy is a modern therapeutic method for managing acute ischemic stroke, contributing to improved long-term quality of life in survivors. Further research is needed to refine patient selection criteria and enhance procedural techniques.

Keywords: ischemic stroke, mechanical thrombectomy, endovascular therapy

MENISCUS IN CRISIS: ADVANCES IN MRI FOR MENISCAL PATHOLOGY

Vinko Bubić[1], Paolo Spinnato[2], Elena Siopis[3], Maja Crncević-Grubelić[1], Vinko Vidjak[1]

[1]University Hospital Merkur, Zagreb, Croatia
[2]Istituto Ortopedico Rizzoli, Bologna, Italy
[3]Radiodiagnostica AUSL, Bologna, Italy

Objective of the review: Meniscus in Crisis: Advances in MRI for Meniscal Pathology Abstract The meniscus is a crucial component of knee biomechanics, providing stability, shock absorption, and distribution load. Accurate diagnosis of meniscal pathology is essential for effective treatment and long-term joint preservation.

Review topic: Magnetic Resonance Imaging (MRI) has become the gold standard for non-invasive assessment of meniscal injuries, with sensitivity and specificity rates reaching 90-95% for tear detection. Traditional sequences such as proton density-weighted and T1-weighted spin-echo imaging have provided reliable visualization of meniscal structure and pathology. However, fast spin-echo sequences, though efficient, have been associated with reduced sensitivity due to motion artifacts. Radial, longitudinal, and bucket-handle tears present distinct MRI characteristics that guide surgical and conservative management. Advanced MRI techniques, including T2 mapping and diffusion-weighted imaging (DWI), allow for early detection of meniscal degeneration before macroscopic structural damage occurs. The introduction of 3.0T MRI has improved image resolution, allowing for better differentiation of meniscal pathology. Studies have demonstrated superior diagnostic performance with higher field strength, particularly in detecting root tears and complex tear patterns. However, challenges remain in postoperative meniscus assessment, where distinguishing between residual scar tissue and recurrent tears requires careful evaluation. Additionally, anatomical variants such as discoid meniscus may mimic pathology, leading to potential diagnostic pitfalls. Artificial intelligence (AI)-assisted interpretation and deep learning algorithms are emerging tools that enhance diagnostic efficiency, reducing interobserver variability.

Conclusion: In conclusion, MRI is indispensable for meniscal pathology assessment. With continued technological improvements and optimized imaging protocols, clinicians can achieve earlier and more precise diagnosis, ultimately improving patient outcomes. Future research should focus on refining imaging biomarkers and incorporating AI-driven tools to enhance diagnostic accuracy in routine clinical practice.

Keywords: meniscal pathology, MRI diagnostics, meniscal tears, knee biomechanics, advanced imaging techniques

METABOLIC FACTORS AND CORTICAL ATROPHY: THE ROLE OF MRI VISUAL GRADING IN EARLY NEURODEGENERATION ASSESSMENT

Marko Galić, Sanja Delić-Ajvaz

University Clinical Hospital (UCH) Mostar, Mostar, Bosnia and Herzegovina

Objective of the review: Metabolic factors like insulin resistance, dyslipidemia, hypertension, and obesity are increasingly recognized as contributors to cortical cerebral atrophy. Understanding their impact on brain structure is crucial for early diagnosis and timely intervention. This review explores the role of MRI in visual grading of cortical atrophy using standardized scales and examines the connection between metabolic disturbances and neurodegenerative changes.

Review topic: Volumetric MRI gives precise measurements of cortical atrophy but this review focuses on standardized visual scales used by radiologists to grade atrophy such as the Global Cortical Atrophy (GCA) scale, Medial Temporal Atrophy (MTA) scale and Koedam Parietal Atrophy Score. These scales allow to grade atrophy in different brain regions like frontal, parietal, temporal and occipital lobes and areas like hippocampus and posterior cingulate which are early indicators of neurodegenerative diseases like Alzheimer's disease. Metabolic syndrome and related metabolic disturbances are linked to cortical atrophy especially in frontal and temporal lobes which is early stages of neurodegeneration. These visual scales are a reliable way to assess these changes and combining MRI biomarkers with metabolic factors will help to assess risk better.

Conclusion: MRI plays role in detecting cortical atrophy related to metabolic disorders, showing its potential for early risk assessment. Future research should focus on longitudinal studies and AI driven analysis of visual scales to improve predictive models for neurodegeneration in patients with metabolic syndrome.

Keywords: cortical atrophy, MRI, metabolic factors, neurodegeneration, dyslipidemia, hypertension, Global Cortical Atrophy (GCA), Medial Temporal Atrophy (MTA), Koedam Parietal Atrophy Scale, metabolic syndrome, AI

MORPHOMETRIC STUDY OF LUMBAR SPINAL CANAL DIMENSIONS IN BOSNIA AND HERZEGOVINA POPULATION

Midhat Čizmić, Emir Hadžiosmanović, Rusmir Baljić, Adi Ahmetspahić, Zulejha Merhemić

General Hospital "Prim. dr. Abdulah Nakaš", Sarajevo Department of Radiology Sarajevo, Bosnia and Herzegovina

Background: The lumbar spinal canal consists of 5 interconnected lumbar vertebrae through which the final part of the spinal cord passes and the lumbar and sacral spinal nerves that form the cauda equina. The lumbar canal stenosis can directly affect neurological symptoms and pain in the lumbar region and lower extremities. Due to the frequency of such symptoms, lumbar stenosis has been the subject of research around the world.

Aim: The objective of this study was to measure, analyze and compare the mediosagital and interpeduncular diameters of the lumbar spinal canal in the population of Bosnia and Herzegovina to other populations around the world.

Materials and methods: We conducted a retrospective descriptive study on patients (n=200) who underwent Multi-slice computer tomography (MSCT) performed on a 40-slice CT scanner (Siemens Somatom Definition AS) for lumbar pain between January 1, 2013 and December 31, 2014. Age, gender, midsagittal (MSG) and interpeduncular (IP) diameters of the lumbar spine were recorded for each patient. Results: Results of our study show that the largest MSG diameter is at L1 level for both sexes, with an average length of 19,06mm, and the smallest at L3 level, with an average length of 16,66mm. Our study shows that the MSG diameter is significantly larger in females than males on all levels from L1 to L5. In both sexes, MSG diameter shows the form of an hourglass with narrowing at L3 level. IPD is largest at L5 level for both sexes, with an average length of 31,94mm, and the smallest average length at L1 level, at 24,78mm. IPD diameter is significantly larger in males than females on all levels from L1 to L5. IPD shows a tendency of growth from L1 to L5 in both sexes.

Conclusion: There were significant differences in the dimensions of the lumbar spine canal between female and male patients. We found significant difference in MSG and IP diameters measurements between Bosnian and Herzegovinian population compared to other populations. The dimensions of the lumbar canal provide a baseline of normative data for the evaluation of patients presenting with lower back pain and lumbar canal stenosis in study population

Keywords: lumbar spine, spinal canal, computed tomography, morphometry

MRI IN THE DIAGNOSTICS OF PROSTATE CANCER

Sanela Vesnić

Clinic of Radiology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Review objective: In everyday radiological practice, MRI of the prostate is mainly performed to detect, monitor and determine the stage of prostate cancer. Despite the simple anatomy of the prostate, a systematic MRI examination is necessary since prostate cancer can easily be confused with other benign findings, artifacts or anatomical structures.

Review topic: Standardized MRI imaging protocols are very important (multiparametric - T1, T2, DWI, CE-MRI) for a reliable diagnosis. When interpreting the findings, the PI-RADS (Prostate Imaging – Reporting and Data System) scoring system is used, which includes prostate volumetry and suspicious lesions. In addition to volume, zonal anatomy is analyzed (peripheral zone, transition zone, anterior fibromuscular stroma, central zone, prostate margins, seminal vesicles). During MRI analysis of the prostate, it is necessary to pay attention to all morphological structures, relying on technically wellperformed and correctly selected scanning sequences in order to establish a more reliable diagnosis.

Conclusion: Nowadays multiparamtric MRI is indispensable in the diagnosis of prostate cancer but there are limitations with possible false positive and false negative findings. Clinical data, laboratory findings (especially PSA) are necessary in differential diagnosis as well as pathohistological confirmation in suspected cancers.

Keywords: MRI, prostate cancer

PNEUMATOSIS CYSTOIDES INTESTINALIS WITH PSEUDOPERITONEUM MASQUERADING AS PERFORATION

Samira Sijahović, Mevlida Avdagić-Karup, Sabina Prevljak

Clinic of Radiology, Clinical Center University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Review objective; Pneumatosis cystoides intestinalis (PCI) is a rare condition characterized by gas-filled cysts within the gastrointestinal wall. It can occur idiopathically or as a secondary manifestation of various gastrointestinal and systemic diseases, including ulcerative colitis, ischemic bowel, and systemic sclerosis.

Review topic: The precise mechanisms of PCI remain poorly understood, with several theories proposing mechanical, bacterial, and inflammatory causes. A significant complication of PCI is the development of pneumoperitoneum, which occurs when ruptured cysts release gas into the peritoneal cavity. While pneumoperitoneum is often considered a sign of perforation, in the case of PCI, it is typically benign.

Conclusion: This diagnostic challenge can lead to unnecessary surgical intervention if not properly recognized. Timely recognition of PCI is crucial in avoiding overtreatment.

Keywords: pneumatosis cystoides intestinalis, benign pneumoperitoneum, ulcerative colitis, gastrointestinal radiology, diagnostic dilemma

RADIOLOGICAL PROCEDURES FOR COMPLEX BILIARY PATHOLOGY: DRAINAGE AND STENTING

Amer Tukić, Mevlida Avdagić, Muris Bečirčić

Clinical Center University of Sarajevo and Healthcare of Sarajevo, Bosnia and Herzegovina

Background: Biliary obstructions present significant diagnostic and therapeutic challenges in radiological practice. Percutaneous transhepatic cholangiography (PTC) with drainage and stenting plays a crucial role in the management of malignant biliary obstructions, particularly when endoscopic retrograde cholangiopancreatography (ERCP) is not feasible.

Case presentation: A 74-year-old male with a history of gastric cancer and subtotal gastrectomy developed progressive jaundice, abdominal pain, and digestive difficulties. CT imaging revealed a mass compressing the right hepatic duct, causing intrahepatic bile duct dilation. Initial PTC attempts were complicated by migration of the introducer set and vascular injury, necessitating procedural modifications. Subsequent interventions, including successful wire navigation, biliary drainage, and metal stent placement, restored bile flow and improved biochemical parameters. Despite technical success, the patient ultimately succumbed to his underlying disease. Review of Literature Malignant biliary obstructions are frequently associated with primary liver malignancies, pancreatic cancer, or metastatic disease. ERCP is the preferred initial approach for biliary decompression, but when it is not feasible due to anatomical or tumor-related factors, PTC with stenting provides a reliable alternative. Studies have demonstrated that metal stents have a longer patency period compared to plastic stents, making them preferable for palliative care in malignant biliary strictures. However, complications such as vascular injury, cholangitis, and stent occlusion remain challenges that require careful procedural planning and post-procedural monitoring.

Conclusion: This case illustrates the complexity of biliary interventions, emphasizing the need for technical expertise, careful procedural planning, and interdisciplinary collaboration in managing malignant biliary obstructions. While PTC with stenting remains a viable option for palliation, patient outcomes are influenced by the underlying oncological prognosis.

Keywords: biliary obstructions, biliary drainage, biliary stenting, jaundice, hepatic duct, biliary ducts, intrahepatic duct dilatation, cholangiography, PTC, PTCD, oncology patients

RADIOTHERAPY/RADIOSURGERY FOR PITUITARY TUMORS: LONG-TERM OUTCOME AND CONSEQUENCES

Mirsala Solak

Department of Endocrinology, University Hospital Centre Zagreb, Zagreb, Croatia

Review objective: Radiotherapy/radiosurgery for pituitary adenomas offers promising results in tumor and biochemical control, however, specific gaps in understanding of long-term consequences persist, prompting ongoing research efforts.

Review topic: Radiotherapy/radiosurgery demonstrates excellent efficacy in controlling the size of pituitary adenoma remnants, with reported rates ranging from 80% to 97%. It shows promise for curing patients with secreting adenomas in a significant proportion of cases, potentially allowing for the withdrawal of lifelong medications in 40% to 70% of patients. However, given that non-functioning pituitary adenomas (NFPAs) are mostly benign conditions, radiotherapy should only be used for clinically significant enlargement of adenoma remnants. In addition, delayed and limited biochemical control of secreting adenomas remains a challenge. Approximately 30% to 60% of patients develop hypopituitarism within 5 to 10 years post-treatment, and this represents major disadvantage of this treatment option. Also, despite the favorable outcomes, there is a notable lack of randomized controlled trials in this field, which requires cautious interpretation of available evidence.

Conclusion: Radiotherapy/radiosurgery should be reserved for patients with invasive pituitary adenoma remnants (with high proliferative markers), and patients with secreting adenomas demonstrating inadequate biochemical control on medications, preferably but not exclusively in patients with pre-existing hypopituitarism. Modern radiotherapy techniques have significantly improved safety profiles, yet the need for prolonged follow-up remains crucial to assess both efficacy and potential long-term complications accurately.

Keywords: pituitary tumors, neuroendocrinology, radiotherapy, radiosurgery, long-term outcomes, side effects

REEVALUATING CORONARY ARTERY CALCIUM SCORING IN YOUNGER POPULATIONS: A CROSS-SECTIONAL ANALYSIS WITH PLAQUE CHARACTERIZATION

Ivan Queiros, Charissa Kim, Yuval Liberman, Alex Brook, Diana Litmanovich

Beth Israel Deaconess Medical Center (BIDMC) / Harvard Medical School, Boston, Massachusetts, USA

Background: Cardiovascular diseases (CVD) remain a predominant health concern globally, necessitating precise risk evaluations for effective management. Although Coronary Artery Calcium Scores (CACS) are widely utilized for assessing older adults, their effectiveness for younger adults under age 45 is less certain due to the frequent occurrence of non-calcified plaques, which are often not detected by CACS. Aim: To evaluate the diagnostic performance of CACS in younger patients and analyze plaque composition among those with significant stenosis.

Materials and methods: This cross-sectional study analyzed 374 patients aged 45 or younger who underwent computed tomographic angiography (CTA) to assess CACS and characterize plaque types: calcified, mixed, or soft. We identified the optimal CACS threshold to predict significant coronary artery disease and further examined plaque composition in 42 patients with CADRADS category 3 or higher (indicating 50% or more stenosis).

Results: ROC analysis identified a CACS threshold of 5 with an AUC of 0.92, sensitivity of 93.48%, and specificity of 85.59%. Among the 42 patients, 50.6% had mixed plaques, 27.2% had soft plaques, and 22.2% had calcified plaques. Gender analysis showed soft plaques were more common in females (41.2%) while males more often had mixed plaques (54.7%).

Conclusion: A low CACS threshold still identified patients with significant stenosis, but the prevalence of non-calcified plaques, especially among women, highlights the limitations of CACS in younger populations. Comprehensive diagnostics and gender-specific considerations are essential for effective CVD assessment and management.

Keywords: coronary artery calcium score, CTA, plaque characterization, young adults, cardiovascular risk, gender differences

THE ROLE OF MR SPECTROSCOPY IN DIAGNOSTIC MONITORING OF POST-RADIATION ALTERED MARGIN AFTER BRAIN TUMOR SURGERY

Bilal Imširović

Polyclinic „Dr. Al Tawil", Sarajevo, Bosnia and Herzegovina, Džemal Bijedić University, Mostar, Bosnia and Herzegovina

Review objective: Primary brain tumors are characterized by infiltrative growth, so surgical treatment is often combined with postoperative radiotherapy and targeted chemotherapy. Conventional postoperative radiotherapy destroys and slows the growth of tumor cells, but at the same time, it can damage brain tissue, ultimately leading to radiation injury.

Review topic: Because of this, conventional imaging makes it difficult to determine whether a new lesion in the resected or irradiated area is a tumor recurrence or radiation damage, which presents a significant diagnostic and clinical challenge. Conventional magnetic resonance imaging, including contrast-enhanced MRI (CE-MRI) and diffusion-weighted imaging (DWI), is a good initial method for evaluating patients diagnosed with brain tumors who have undergone surgery and postoperative radiation treatment. MR spectroscopy is an important diagnostic tool in monitoring and evaluating postoperative margins following surgical and oncological treatment of brain tumor patients.

Conclusion: The significance of MR spectroscopy lies in its diagnostic potential and the non-invasive nature of the procedure, its long-term clinical relevance, its ability to avoid repeated margin biopsies, its capacity to reduce uncertainty in temporal patient monitoring, reliance on the clinical course of the disease, and the diagnostic limitations characteristic of standard MRI procedures.

Keywords: brain tumor, MRI, MR spectroscopy

VISUALIZATION OF THE POSTERIOR COMMUNICATING ARTERY ON MAGNETIC RESONANCE ANGIOGRAPHY

Svjetlana Mujagić[1], Duško Kozić[2,3], Davor Ivanić[1], Renata Hodžić[4], Nihad Mešanović[5], Zlatan Mehmedović[6]

[1]Clinic of Radiology and Nuclear Medicine, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[2]Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia
[3]Oncology Institute of Vojvodina, Sremska Kamenica, Serbia
[4]Clinic of Neurology, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[5]Department for Information Technology, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina
[6]Clinic of General Surgery, University Clinical Center Tuzla, Tuzla, Bosnia and Herzegovina

Background: The posterior communicating artery (PComA) is crucial in the formation of the circle of Willis, displaying variations such as hypoplasia and aplasia. These impact collateral blood flow, with false diagnoses, posing risks in pre-surgical planning. Discrepancies between cadaveric and radiological studies highlight the imaging modality precision concerns.

Aim: To explore the sensitivity of 3D TOF (time-of-flight) angiograms in visualizing the PComA compared to maximum intensity projection (MIP) tomograms, and to assess whether CE-MRA (contrast-enhanced MRA) improves PComA visualization compared to native MRA.

Materials and methods: In this retrospective study there were 137 subjects who underwent MRA between July 2008 and May 2013. Subjects with cerebrovascular disease, vascular malformations and brain tumors were excluded. The study focused on 274 PComA in 137 subjects, evaluating visualization on native and CE-MRA, as well analyzing axial 3D TOF angiograms and MIP images. The analysis categories were: not visualized, poorly visualized or well visualized.

Results: Among 211 arteries visualized on CE-MRA, only 2 (0.95%) were not seen on native MRA. CE-MRA, improved visualization in 5.22% of cases, with no significant difference (p=0.99) in PComA visualization between native and CE-MRA. Out of 209 PComA visualized on native MRA, 54 (25.84%) were visible on axial 3D TOF angiograms, but not on MIP reconstructions. Basic 3D TOF tomograms significantly outperformed MIP images (p=0.038) in visualizing PComA.

Conclusion: Contrast MRA does not significantly improve the visualization of PComA compared to native MRA, but basic 3D TOF tomograms are significantly better in visualizing PComA compared to MIP reconstructions.

Keywords: posterior communicating artery aplasia, MRA, 3D TOF, MIP reconstruction

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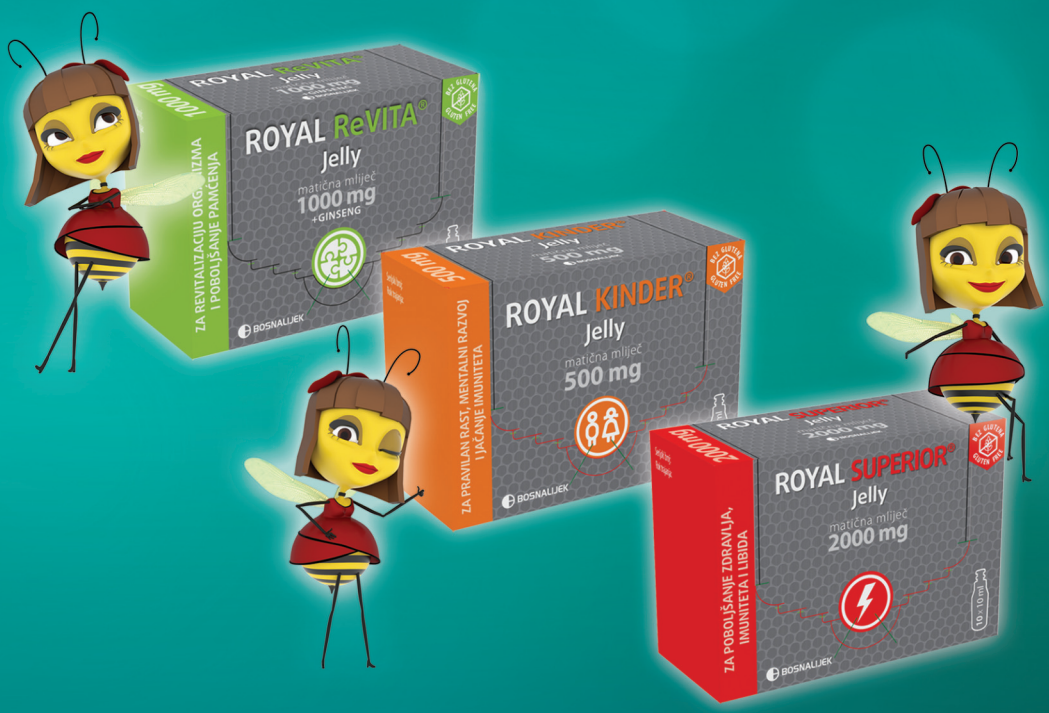

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