

REACHING TOMORROW'S MEDICINE TODAY...

SARAJEVO

19-22 SEPTEMBER

ABSTRACT BOOK



2024
IMED
INTERNATIONAL MEDICAL
STUDENTS' CONGRESS

ABSTRACT BOOK

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Table of Contents

| | | |
|--------------|---|----|
| |  | |
| Preface | Welcome letter | 4 |
| Organization | Our Faculty | 5 |
| | Organizing committee | 6 |
| | Advisory board | 13 |
| | Ambassadors | 14 |
| | Sponsors | 15 |
| Congress | Program | 16 |
| | Workshops | 17 |
| | Theme events | 27 |
| Abstracts | Endocrinology and metabolism | 35 |
| | Cardiology, Pulmonary and Vascular Diseases | 45 |
| | Infectious diseases and immunology | 53 |
| | Surgery and Surgical Techniques | 63 |
| | Neurology and Neurosurgery | 69 |
| | Oncology and Cancer Research | 77 |
| | Pediatrics and Forensic Medicine | 84 |
| | Public Health and Education | 91 |

PREFACE

WELCOME LETTER

Dear SaMED 2024 Participants,

we are delighted to welcome you to the 8th Sarajevo International Medical Students' Congress. Each member of our Organizing Committee has dedicated themselves to representing our association and faculty with excellence, through the successful implementation of projects in medical education, public health, student activism, and volunteering. Organizing SaMED 2024 has been an invaluable experience for all of us. Over 50 students have worked full-time on this project since January 2024 to bring it to life. After countless meetings, shared ideas, and discussions, we are proud to present the culmination of our efforts, offering you the opportunity to expand your knowledge, forge new connections, and experience the best of our city, Sarajevo.

SaMED 2024 brings together over 250 students from across the Balkan region and the world. The topics, such as robotics in surgery, genetic research and personalised medicine, cancer-fighting vaccines, nanorobotics, leading in drug delivery and the fastest treatment of infections and many other, will be explored by five distinguished international medical experts whose work has significantly impacted the field of medicine. The congress also features 17 specialized workshops led by the top medical professionals from our country. We extend our deepest gratitude to our esteemed professors, sponsors, and especially to you, our participants, for placing your trust in us to guide you through the fascinating world of medical science.

We sincerely hope that you enjoy every aspect of SaMED 2024, as each detail has been meticulously crafted with you in mind. We look forward to meeting you all and are excited to see the incredible connections and friendships that will be formed here. Thank you for joining us, and while you immerse yourself in learning, don't forget to have some fun along the way!

Enjoy the congress!

OUR FACULTY

FACULTY OF MEDICINE SARAJEVO

Studies at the Faculty of Medicine, University of Sarajevo, are renowned for the 70-year-long experience in teaching and modern education. The open-ness to including positive elements and experiences from teaching models of other medical schools into our curriculum has provided the study's compliance with the study plans of the neighboring countries, Western European countries and the European Union Directive. The distribution of the courses throughout the semester and the forms of teaching delivered are adapted to a better receiving of the necessary knowledge and skills. The teaching process is being conducted in 7 amphitheatres, 11 practical classrooms equipped with the latest equipment and 5 labs for expert diagnostic and scientific work. At clinics and in contact with patients, students acquire knowledge and familiarity with diseases, methods of their identification, prevention, treatment and rehabilitation. Students are also being introduced to the basics of scientific research, and can participate in some of these activities. After graduation students obtain 360 ECTS, and receive a Medical Doctor title and are competent to work as a general practitioner (GP).



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2024 **SARAJEVO**
19-22 SEPTEMBER
PROGRAM

thu
19/09

19:30

OPENING CEREMONY

UNITIC

fri
20/09

09:45 - 11:30

SESSION ONE:

- "Artificial Intelligence and Forensic Science: The Future" Francesco Sessa
- "The Next Frontier: Forensic Medicine's Response to Climate-Induced Deaths" Emina Dervišević
- "Oncogenetics: The Future of Cancer Treatments" Daria Ler

UNITIC

11:45 - 12:00

12:00 - 12:15

COFFEE BREAK

SPONSORED LECTURE: MJESTO

CEFIKSIMA U TRETMANU

BAKTERIJSKIH INFEKCIJA

12:15 - 13:25

ROUND TABLE: New Era of Medicine: Integrating AI and modern technologies
Francesco Sessa, Emina Dervišević, Amila Akagić

13:25 - 14:25

LUNCH

14:25 - 15:35

SESSION TWO:

- "Application of innovative models and therapeutic strategies in development of new treatments for brain diseases" Dinko Mitrečić
- "The New Era of Brain Care: Exploring Modern Neurological Interventions" Adisa Kuršumović

15:35 - 15:50

15:50 - 17:00

COFFEE BREAK

ROUND TABLE: From Lab to Clinic: Bridging the Gap Between Neurological Research and Patient Care" Adisa Kuršumović, Dinko Mitrečić, Mirsada Čaušević, Lilijana Oruč

sat
21/09

08:45 - 12:00

12:00 - 13:00

13:00 - 16:00

WORKSHOP SESSION 1

LUNCH

WORKSHOP SESSION 2

Faculty of
Medicine,
University of
Sarajevo

sun
22/09

10:00 - 11:30

ROUND TABLE: "Emerging Medicine: The Experience of a Young Doctor in the Balkans"

UNITIC

12:00

CLOSING CEREMONY

Workshop 1: Cardiac surgery patient in primary care medicine

The workshop 'Cardiac Surgery Patient in Primary Care Medicine' enables an easier understanding of the principles in choosing patient's treatment after cardiac surgery. It aims to present characteristic post-operative changes on the ECG in cardiac surgery patients, which significantly influence treatment decisions.

Coordinated by Prim. Dr. Sci Sanko Pandur, this workshop will undoubtedly enhance participants' understanding of post-operative treatment for cardiac surgery patients.

Workshop 2: Ultrasound diagnosis of peripheral nerve lesions

The workshop "Ultrasound diagnosis of peripheral nerve lesions" enables the participant to fully understand the methods of ultrasound probe positioning through practical performance on the ultrasound machine.

The skills acquired in this workshop, with the help of prof. Dr. Milorad Vujnić, will greatly facilitate participant's treatment in selection and identification of the peripheral nervous system lesions.

Workshop 3: Laparoscopic surgery

If you have an affinity for laparoscopy and surgery, then the laparoscopy workshop is the right choice. During the workshop, our educators will cover the basics of laparoscopy and guide participants through introductory exercises on the laparoscopic simulator.

Following the introduction, participants will be divided into two groups to practice on laparoscopic simulators. The workshop aims to enhance knowledge, motor skills, and manual dexterity through various exercises on the simulator, including suturing simulations on models of the gastrointestinal tract.

Workshop 4: Rh positive

Are you curious to discover the most precious gift one can give? We bet you're interested. Prepare to be amazed! Just one blood donation can potentially save up to three lives. Explore fascinating facts in hematology, learn more about blood types and refine your skills at our upcoming Transfusion Medicine Workshop!

Workshop 5: Orthopedics in Primary Healthcare

Gain practical skills and knowledge through hands-on sessions and expert-led discussions. Master the basics of orthopedic care in primary settings, learn to analyze X-ray images with precision, get hands-on experience with casting techniques and understand various types and fundamentals of immobilization. Don't miss this chance to enhance your clinical skills and prepare for real-world medical challenges. Secure your spot now and take a step closer to becoming the doctor you aspire to be!

Workshop 6: Next-Gen Thoracics: Introduction to VATS

Step into the future of thoracic surgery! Join us for "Next-Gen Thoracics: Introduction to VATS", led by the renowned Tomaž Štupnik.

This workshop offers unique blend of interactive learning and hands-on experience with VATS (Video Assisted Thoracic Surgery), the leading edge in minimally invasive techniques. Whether you're a seasoned surgeon or an aspiring medical professional, this event will elevate your surgical skills and expand your professional network. Don't miss out on this opportunity to push the boundaries of medical innovation! Register now and be part of the revolution in thoracic care.

WORKSHOPS

Workshop 7: Basics of the FAST protocol and orientation color Doppler

Led by esteemed professors, this workshop offers aspiring medical professionals the chance to delve into cutting-edge techniques. Gain invaluable skills in utilizing Color Doppler technology to analyze blood flow, interpret images, and make accurate diagnoses.

Embark on a journey into the forefront of emergency medicine with the FAST protocol workshop! Guided by expert instructors, this workshop equips budding healthcare professionals with essential skills for rapid assessment and diagnosis in critical situations. Learn to swiftly perform focused assessments using ultrasound to detect traumatic injuries, such as those affecting the abdomen, chest, and pelvis.

Workshop 8:

Intraosseous Drug Delivery & Transcutaneous Pacing

Intraosseous administration of drugs and transcutaneous pacing represents a unique opportunity to expand your knowledge and acquire new skills. You will get the possibility of independent application of intraosseous medicine on a special model, as well as the possibility of a deeper understanding of transcutaneous pacing.

Workshop 9: Era of modern Pathology: Focused on breast cancer

Era of modern Pathology with focus on breast cancer is a workshop that will help candidates recognize the process of diagnosing malignant diseases.

Candidates will have the opportunity to learn about the process itself and the methods that are used during the preparation of the tissue for analysis.

Čamdžić Nina, Associate Professor and Pathologist at Faculty of Medicine, University of Sarajevo, is going to teach the candidates how to look for specific signs of pathology in breast tissue under the microscope and the importance of early diagnosis of the disease.

Workshop 10: AI Assisted Healthcare: Data Analysis and Predictive Modelling in Excel

The AI Assisted Healthcare workshop provides an introductory overview of AI Applications in medicine for participants, including highlights of real-world example of AI applied-healthcare such as gamification in healthcare education, AI telemedicine virtual assistants, virtual reality advanced learning methods in medicine and game-based learning as employed in physical and cognitive therapy enhancement.

This workshop will at its foundation have a data analysis and visualization in Excel portion where attendees will have a chance to apply basics of descriptive statistics and data visualization through a hands-on activity as well as an introduction to predictive modeling in Excel part where regression analysis and building a predictive modeling will be applied.

Workshop 11: Printing a Healthier Future: Exploring 3D Applications in Medicine

Dive into the world of 3D printing and its revolutionary applications in medicine. From prosthetics to organ models, the possibilities are endless! And guess what? Each participant will take home a printed model as a souvenir!

Gain hands-on expertise in the essential transradial approach under ultrasound guidance—a skill set at the forefront of modern healthcare.

Workshop 12: Virtual Reality in Medicine

Join us for an immersive workshop exploring the use of Virtual Reality (VR) technology in medical education, specifically for learning anatomy. This innovative approach leverages the power of VR to create detailed, interactive 3D models of the human body, allowing students to visualize and interact with anatomical structures in a dynamic and engaging way.

During this workshop, participants will:

- Experience hands-on demonstrations of VR applications designed for anatomy education.
- Learn how VR can enhance understanding of complex anatomical concepts.
- Discuss the future of VR in medical education and its potential to revolutionize traditional teaching methods.

Whether you are a medical student, educator, or healthcare professional, this workshop offers valuable insights into how VR technology can transform the learning experience and improve comprehension in the field of anatomy.

Workshop 13: Understanding EKG: From Basics to Advanced Interpretation

Electrocardiogram (ECG) is considered as a main diagnostic tool, interpretation of its results helpful in establishing the diagnose of cardiac and even respiratory conditions.

Our goals of this workshop is to make students able to:

1. Understand the main basis of the heart's electricity.
2. Identify and understand the basics of ECG parts.
3. Reporting ECG in adequate and clinical manner.
4. Determine the Normal ECG and normal variations in healthy individuals.
5. Diagnosis of common heart diseases through ECG.

Workshop 14: The Anatomy of Human Facial Beauty

Plastic surgery, fillers, hyaluronic acid, and botox:

This workshop will explore the latest innovations in aesthetic medicine, focusing on attractive procedures in plastic surgery as well as the use of fillers, hyaluronic acid, and botox. Through a combination of theoretical lectures, practical demonstrations, and discussions, participants will have the opportunity to delve into the essential concepts, techniques, and applications of these popular treatments. We will discuss indications, contraindications, advantages, and limitations of each procedure, with an emphasis on patient safety and achieving natural results.

Workshop 15: Cardiac Electrostimulation: Pacemakers and defibrillators

The goal of this workshop is to educate and familiarize medical students with modern pacemakers. The introductory part of the workshop will focus on the theoretical part on the way pacemakers function and on the indications for their implantation. The next part of the workshop includes the actual implantation of a pacemaker in a pig carcass, with a practical demonstration of the entire procedure.

The final part of the workshop consists of a surgical suture of the pigskin, in which student volunteers will be able to participate. The end of the workshop is set aside for a discussion where students will be able to ask questions to the educator.

Workshop 16: Advanced Life Support - ALS

The ALS workshop provides a standardised approach to cardiopulmonary resuscitation in adults. This workshop aims to train candidates to identify the causes of cardiac arrest, recognise patients in danger of deterioration, and manage both the cardiac arrest and the 'peri-arrest' problems encountered in the first hour or so after initial resuscitation from a cardiac arrest. We hope that you will take the opportunity to acquire basic skills through this workshop, which we will conduct in collaboration with the Emergency Medical Institute of the Sarajevo Canton.

Workshop 17: Ultrasound guided central line placement in pediatric patients:

Why keep yourself blind if there is a way to see where you going.

The workshop "Ultrasound guided central line placement in pediatric patients" is an intensive educational program that provides practical experience and theoretical knowledge to young physicians and medical students about the safe and effective procedure of placing a central venous catheter in children using ultrasound guidance. Through interactive presentations, demonstrations, and practical exercises, participants will learn different techniques for catheter placement, recognize anatomical structures and complications, and develop skills in real-time ultrasound technology application. This workshop emphasizes the importance of precision, safety, and care for the child's well-being during the procedure, and provides participants with reliable methods and strategies to improve the quality of care and reduce risks for patients. Through a multidisciplinary approach and expert guidance, this workshop empowers healthcare workers to deliver the highest level of care to pediatric patients requiring central venous access. Ultimately, participants will leave the workshop with increased confidence, knowledge, and skills necessary for successfully conducting the procedure of placing a central venous catheter in children under ultrasound guidance.

Theme event 1: “The New Era of Brain Care: Exploring Modern Neurological Interventions” by Adisa Kuršumović

Interventional neuroradiology is a cutting-edge medical field that has emerged as a key player in modern neurological care. This field primarily focuses on treating cerebrovascular disorders, including intracranial aneurysms, arteriovenous malformations (AVMs), strokes, carotid artery stenosis, and spinal vascular issues. By using advanced imaging and catheter-based technologies, interventional neuroradiology allows for precise, targeted treatments with shorter recovery times and fewer complications.

Recent advancements in technology have further expanded the scope of this field. For example, chronic subdural hematomas can now be managed through embolization of the middle meningeal artery, and venous stenting is being explored for idiopathic intracranial hypertension. Additionally, the potential for treating neurological conditions like brain tumors and even neuromodulation via endovascular approaches is becoming more feasible, signaling exciting developments on the horizon.

For medical students, interventional neuroradiology presents a unique opportunity to be at the forefront of medical innovation. Those interested in combining cutting-edge technology with hands-on patient care will find this field both rewarding and impactful, offering the chance to shape the future of brain care.

Theme event 2: "Application of innovative models and therapeutic strategies in development of new treatments for brain diseases"

by Dinko Mitrečić

Here we present research strategies arising from emerging technologies, including 3D cultures of human brain tissue in the form of brain organoids and innovative applications of electromagnetic fields. By applying protocols invented or significantly upgraded by our own group we developed models which include cells of the nervous tissue (neurons, astrocytes) in various stages of their maturity.

Moreover, by long-term growing (up to 150 days) of brain organoids during which cytoarchitectonic of all 6 layers of neocortex develops, we are able to observe events present both in normal, but as well in disturbed brain cortical structures. Here we present an overview of application of advanced models of the nervous tissue with the goal to detect and influence phenomena present after hypoxic/ischemic incident, including neuroinflammation and cell death. Moreover, we use brain organoid models to decipher cellular and molecular phenomena present in the Down's Syndrome and in the Alzheimer's disease. This already allowed us to detect genes involved in both detrimental processes in the cortical tissue (e.g. DYRK1A, involved in cellular aging) or genes which bring cell-protective effects (e.g. BACE2, anti-amyloidogenic action).

Theme event 3: "Oncogenetics: The Future of Cancer Treatments" by Daria Ler

Oncogenetics plays a key role in understanding cancer by examining how genetic mutations lead to its development. Mutations in oncogenes can promote cancer, while damaged tumor suppressor genes increase cancer risk. Common mutations include BRCA1/2 in breast cancer and KRAS in colorectal cancer.

Technologies like next-generation sequencing (NGS) and CRISPR are advancing genetic testing, while non-invasive liquid biopsies detect cancer mutations through blood samples. Personalized medicine tailors treatments to genetic profiles, such as Herceptin for HER2-positive breast cancer. Immunotherapies benefit from genetic insights, enhancing treatment effectiveness.

Gene therapy and CAR-T cell therapy offer promising new approaches. However, the complexity of cancer genetics, technological limitations, and ethical concerns like genetic privacy remain challenges. AI is expected to play a significant role in analyzing genetic data and improving treatment predictions.

In summary, oncogenetics is transforming cancer treatment, offering more personalized and effective therapies.

Theme event 4: "The Next Frontier: Forensic Medicine's Response to Climate-Induced Deaths" by Emina Dervišević

Scientific data on the role and association of hyperthermia and hypothermia as a cause of sudden cardiac death are limited, and further research is needed in this field. Current scientific evidence suggests a causal relationship between hyperthermia and the cardiac response, according to the pathophysiological sequence of events in era of climate changes. In forensic terms, there is limited evidence of the pathophysiological mechanism leading to sudden cardiac death. Deaths due to changes in core temperature caused by the new climate changes and research related to drowning. Dervišević MD, is a pioneer in the introduction of the experiment with the tooth of a drowned person in river Bosna - a new method that was awarded in front of the forensic society in Italy.

The mentioned method has proven to be highly successful in assessing the location and time of drowning on a global scale, but it has not yet been widely adopted in local contexts. By optimizing the "Diatom Test" method in experimental settings, it could potentially become a routine method in the future. This is just the initial research that leads us toward optimizing tests in cases of unresolved etiology, when there are no preserved soft tissue structures for autopsy, and teeth and bones become available materials for diagnosing the cause of death with standardized nonspecific findings when there are no organs for micro and macroanalysis.

Theme event 5: "Artificial Intelligence and Forensic Science: The Future" by Francesco Sessa

Artificial Intelligence (AI) is transforming forensic science by improving the analysis and interpretation of evidence in criminal investigations. Machine learning (ML) and computer vision are enhancing the accuracy, efficiency, and reliability of forensic processes. Neural networks are now used for tasks like age estimation and human identification, while AI is revolutionizing forensic genetics by improving the classification of large genetic datasets and increasing the accuracy of DNA analysis.

In forensic anthropology, AI is aiding in the analysis of cranial bone fractures, providing insights into injury mechanics. AI has also streamlined the determination of drowning as a cause of death by automating diatom testing. Furthermore, AI is helping identify firearm-related evidence, analyzing projectile specimens and entrance/exit wounds. In forensic odontology, AI plays a crucial role in identifying individuals from dental records, especially in mass disaster scenarios.

As forensic science advances, AI's ability to manage complex biological data, such as DNA and protein markers, will enhance forensic analyses. The development of AI algorithms specifically for forensic genetics will continue to improve the speed and precision of investigations, helping to solve crimes more effectively. Over the next decade, AI will become an essential tool in forensic science, reshaping the way criminal cases are approached and resolved.

Round table 1: New Era of Medicine: Integrating AI and modern technologies" Francesco Sessa, Emina Dervišević, Amila Akagić

The discussion will focus on how AI and climate change are influencing forensic investigations, particularly in evidence analysis and determining causes of death. Participants will also explore innovations in forensic techniques and the challenges and opportunities these advancements present. Key topics will include how AI is transforming the analysis of forensic evidence, the benefits and challenges of integrating AI into forensic research, and its role in improving DNA analysis, bone damage assessment, and ballistics investigations. The conversation will also touch on the ethical implications of AI, such as responsibility for errors and its future in forensics.

The impact of climate change on forensic investigations will be addressed, particularly in cases involving hyperthermia, hypothermia, and sudden cardiac death. The panel will discuss innovative methods for analyzing evidence, such as teeth from drowning victims, and explore the challenges in adopting new forensic techniques.

Additionally, the role of AI and emerging technologies in medicine will be examined, including their applications in supporting physicians and the ethical concerns surrounding AI's growing influence in medical decision-making. The discussion will also highlight advancements in AI and robotics, with a focus on their potential to revolutionize forensic science and medicine.

Round table 2: From Lab to Clinic: Bridging the Gap Between Neurological Research and Patient Care

Adisa Kuršumović, Dinko Mitrečić, Mirsada Čaušević, Lilijana Oruč

This Round Table brings together experts from Neuroscience, Neurosurgery and Psychiatry to explore the crucial steps in translating scientific discoveries into practical treatments for patients. Discussions will focus on the challenges and opportunities involved in bridging the gap between laboratory research and clinical application, with an emphasis on fostering collaboration between researchers and healthcare providers.

Attendees will gain insights into patient-centered approaches and strategies for overcoming barriers to the implementation of innovative therapies. Dr. Adisa Kuršumović, a neurosurgeon, dr. Dinko Mitrečić, a neuroscientist, prof. Mirsada Čaušević, a research scientist, and prof. dr Lilijana Oruč, a psychiatrist, will discuss about how to translate research breakthroughs into clinical practice, how to overcome challenges in neurological and psychiatric treatment development and how does the research focus on patient care in the process of implementation.

This session is essential for professionals and students in neurology, healthcare, and related fields who are dedicated to advancing patient outcomes through integrated research and clinical practice.

THEME EVENTS

Round table 3: "Emerging Medicine: The Experience of a Young Doctor in the Balkans" is a panel discussion featuring young doctors from the Balkan region, sharing their first-hand experiences as they transition into their professional careers.

The panelists will explore the challenges they face in modern healthcare systems, the impact of medical innovation, and their aspirations for shaping the future of medicine in the region. This insightful session will offer a unique perspective on the evolving role of young medical professionals in addressing regional and global health challenges.

1

Endocrinology and Metabolism

Addison's Disease: From Initial Symptoms to Diagnosis and Therapeutic Response - A Case Report

RUŽA BAŠIĆ , Christian Kurina , Lđcija Kerner , Anđa Akmadđić , Luka¹Tomaš , Tatjana¹ Bačun

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Case Report Text Introduction: Addison's disease is a clinical syndrome that arises from insufficient secretion of adrenal gland hormones, most commonly resulting from the autoimmune destruction of the adrenal cortex.

Case description: Due to generalized weakness persisting for three months, a 21-year-old man with no significant prior illnesses was admitted to the Department of Internal Medicine, Endocrinology Division. In the preceding two months, he had experienced nausea and abdominal pain accompanied by diarrhea, with stool cultures consistently returning negative results. Upon admission, his father carried him into the clinic; his blood pressure was recorded at 90/60 mmHg. Laboratory tests revealed hyponatremia (130 mmol/L) and hyperkalemia (6.0 mmol/L). The patient was afebrile, immobile due to dizziness, with pale skin and visible mucous membranes. The Romberg test could not be performed due to severe weakness in the upright position, though other physical examination findings were unremarkable. The endocrinological assessment indicated elevated ACTH levels (384.1 pmol/L) and low 8 AM cortisol levels (47.68 nmol/L), confirming a diagnosis of Addison's disease. Treatment with 100 mg hydrocortisone via isotonic infusion, supplemented with 5% glucose infusion and one ampule of Torecan (Thiethylperazine), elicited a favorable therapeutic response.

Discussion: Addison's disease results in chronic adrenal insufficiency, manifesting as generalized weakness, anorexia, weight loss, nausea, diarrhea, and hyperpigmentation. Typical laboratory findings include low sodium and chloride concentrations, elevated potassium levels, and low fasting glucose levels. Blood and urine assays reveal decreased cortisol and aldosterone levels, while ACTH and renin activity are elevated.

Conclusion: This case underscores the necessity of educating patients with Addison's disease about the importance of adjusting corticosteroid doses during periods of illness, injury, surgical procedures, and other stressful situations. Given their heightened susceptibility to infections, regular vaccinations are recommended. Furthermore, managing comorbidities and other endocrine and autoimmune diseases frequently associated with Addison's disease is crucial.

Keywords: Addison's disease, diarrhea, weakness, cortisol, infections

Centrally Mediated Abdominal Pain Syndrome - Expressing Our Pain By Emotions - A Case Report

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Case Report Text Introduction: Centrally mediated abdominal pain syndrome is a complex condition characterized

by severe and often continuous pain in the abdomen lasting at least six months with no apparent physical cause. Our case highlights the diagnostic challenges posed by 40 years of atypical abdominal pain.

Case description: This case report describes the diagnostic difficulties for a 73-year-old female, L.E., who was admitted in our institution for diffuse abdominal pain, predominantly periumbilical, with a nonspecific character of lancination and pressure. The clinical picture included bloating, inappetence, and fatigue. The physical exam revealed anxious facies and tenderness to deep palpation of the umbilical area. The diffuse abdominal pain insidiously occurred 40 years ago and preserved the same pattern until the admission. The patient described the associated symptoms as « weakness », « malaise », « irritability », « helplessness ». Therapeutic interventions such as antispasmodics, anti-inflammatories, gastrointestinal motility regulators, gastric antisecretory agents brought no relevant improvements. Gastroscopy revealed antral erythematous gastritis, while colonoscopy highlighted uncomplicated internal hemorrhoids. The abdominal ultrasound and the abdominopelvic MRI described the presence of steatotic liver disease. Based on the Rome IV criteria, the clinical diagnosis was determined as centrally mediated abdominal pain syndrome, a D1-classified functional gastrointestinal disorder. Treatment with amitriptyline, simethicone and drotaverine was initiated. At the 6-months follow-up, disease progression was favorable with significant pain reduction. Discussion: The emotional characterization of symptoms

and the significant pain relief achieved following the initiation of amitriptyline treatment underscore the importance of considering functional disorders in our diagnostic framework. Finally, this disorder highlights the clinical challenges of differential diagnosis with a plethora of both organic and functional conditions such as irritable bowel syndrome, abdominal migraine, postoperative adhesion syndrome, and autonomic diabetic neuropathy.

Conclusion: This case underscores the intricate balance between mind and body in diagnosing chronic pain.

Keywords: Centrally Mediated Abdominal Pain Syndrome, Atypical abdominal pain, Psychiatry, Emotions

Functional Hypothalamic Amenorrhea

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Introduction: Clarifying the irregularity of the menstrual cycle is essential in the daily clinical routine of gynecological practice. Understanding the exact cause of the bleeding disorder is crucial for effective therapy. The complete absence or cessation of menstruation, known as amenorrhea, necessitates a thorough assessment and identification of the underlying cause.

Case description: A 33-year-old woman presented with secondary amenorrhea after significant weight loss and increased physical activity over two years. She had regular menstrual cycles from menarche at age 13 until age 31. The diagnosis was made based on her history of weight loss and excessive exercise.

Discussion: Functional hypothalamic amenorrhea (FHA) is a form of secondary amenorrhea caused by stress, significant weight loss, or excessive exercise, resulting in the disruption of the hypothalamic-pituitary-ovarian (HPO) axis. Addressing underlying stressors and promoting healthy weight gain is key to restoring normal menstrual function.

Conclusion: After applying a holistic approach, the menstrual cycle gradually returned. Regular monitoring and educating the patient about the importance of a balanced lifestyle proved essential for preventing recurrence.

Keywords: amenorrhea, menstrual cycle, reproduction.

Improved Glycemic Control in a Type 1 Diabetes Patient: Efficacy of Insulin pump with hybrid closed loop system

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Case Report Text

Introduction: Insulin pump with hybrid closed-loop system is an advanced technology with an algorithm that provides automated basal and correction bolus insulin delivery.

Case description: A female patient was diagnosed with diabetes mellitus type 1 at the age of seven. At the age of twelve, the patient reports frequent headaches, dizziness, and abdominal pain as a result of uncontrolled type 1 diabetes and irregular insulin use. The patient has been hospitalized multiple times due to diabetic ketoacidosis. The patient has not achieved adequate glycemic levels despite multiple re-educations.

Discussion: The sensor showed a time in-range (TIR) value of 17% with a time above-range (TAR) of 82%. HbA1c has been above 13%. Since conventional methods have failed to achieve adequate diabetes control, transitioning to the insulin pump was indicated. The basic settings of the pump were adjusted based on the total daily insulin dose, and the patient inputs the carbohydrate value depending on the meal. After one month of using the insulin pump, the patient achieves excellent glycemic control, with a mean glucose of 6.7 mmol/L, TIR of 92%, TAR of 3%, TBR of 3%, and GMI of 6.2%.

Conclusion: In conclusion, implementing insulin pump with hybrid closed-loop systems has shown remarkable effectiveness in achieving excellent glycemic control while reducing the risk of hypoglycemia. Our patient's significant improvement in diabetes management highlights the potential of advanced technologies to transform the care landscape for individuals with uncontrolled type 1 diabetes.

Keywords: automated insulin delivery; hybrid closed loop; hyperglycemia; time in range; type 1 diabetes

Type of presentation: Original research

Non-invasive liver fibrosis indices as predictors of cardiovascular risk in type 2 diabetic patients

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Abstract Text

Background: The risk factors for liver fibrosis disease closely mirror those associated with atherosclerotic cardiovascular disease, and there's evidence suggesting that liver fibrosis may independently contribute to the risk of developing cardiovascular disease. Individuals with diabetes are particularly vulnerable to both conditions.

Aim: To assess the role of non-invasive liver fibrosis indices as markers of cardiovascular risk in patients with type 2 diabetes mellitus (T2DM).

Methods: A two-year prospective study included 90 T2DM subjects with low cardiovascular risk at the beginning of the study. At the end of the study period, all patients are divided into two groups with low and moderate 10-year risk for heart disease (HD) and fatal heart disease (FHD). Liver enzyme levels, platelet count, total cholesterol, HbA1C, systolic pressure, and high-density lipoprotein (HDL) were measured in all participants. Non-invasive liver fibrosis indices (APRI, AGPR, FIB-4, ARPRI) are calculated by the use of proper equations. 10-year cardiovascular risks for HD and FHD are evaluated by using UKPDS Risk software.

Results: A statistically significant negative correlation was shown between the variables FIB-4 and ARPRI and the 10- year risk for HD ($r=-0.223$, $p=0.035$; $\rho=-0.368$, $p=0.000$), and a statistically significant negative correlation was also shown between the variables AST, APRI and ARPRI and the 10-year risk for FHD ($r=-0.310$, $p=0.003$; $\rho=-0.292$, $p=0.005$; $\rho=-0.333$; $p=0.001$). The ROC curve analysis revealed that ARPRI (AUC of 0.364

($p=0.039$) sensitivity of 77%, specificity of 65%) could be used as markers in distinguishing between T2DM subjects with low and moderate 10-year risk for HD.

Conclusion: In conclusion, a connection between non-invasive indices for liver fibrosis and heart failure ought to be elucidated in future research due to the two models of heart risk. However, ARPRI disclosed a statistically significant correlation in both models for the low-risk heart failure group in the aforementioned heart failure-risk models.

Keywords: liver indices, diabetes mellitus, cardiovascular risk

Nutrition Of The Student Population Of The University of Sarajevo

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Background: Proper lifestyle habits related to nutrition can significantly reduce the risk of developing chronic diseases and enable a person to live a longer, healthier life. The student population has a different lifestyle compared to the general population. Student lifestyle affects the formation of habits, including habits related to nutrition, which often continue in the later stages of life. Habits related to nutrition that are created during the period of study arise under the influence of stress, tight schedules, and numerous obligations. During student life, students begin to make independent decisions about their diet, often formatting negative eating habits.

Aim: The aim of this study is to examine the eating habits of the student population of the University of Sarajevo.

Methods: Cross-sectional study in which it is used as a research instrument. a standardized questionnaire (Food Frequency Questionnaire) was used.

Results: The research involved 240 students from the University of Sarajevo. Results show that a large number of students have adopted unhealthy eating habits. Among the surveyed students, 50.8% regularly eat breakfast every day and 35% of students additionally salt their food without tasting it first. Only 51.2% of respondents eat vegetables several times a week, and 25.8% eat vegetables once or more a day. Besides that, 44.2% of respondents answered that they eat fruit several times a week, and 31.7% of respondents eat fruit once or more a day. According to the respondents, 44.6% of students stated that they consume sweets once or several times a day. The study shows that coffee is an important drink for students considering that 48.3% of respondents consume coffee once or more times a day

Conclusion: University of Sarajevo students have a large number of unhealthy eating habits, and it would be necessary to work on their education.

Keywords: students, habits, nutrition

Primary Adrenal Insufficiency Presented As Hypoglycemia After Laparoscopic Cholecystectomy

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Introduction: The presence of symptomatic hypoglycemia in patients without diabetes and the subsequent relief of symptoms after glucose administration confirm the Whipple triad. This should prompt a high clinical suspicion of a pathologic disorder.

Case description: A 42-year-old female patient underwent laparoscopic cholecystectomy due to symptomatic cholecystolithiasis. In the early morning, a day after surgery, she could not be woken up. Low glucose (1.6 mmol/L) was measured, and she completely recovered after receiving glucose infusion. There were no other remarkable events before, during, and after surgery, but she fasted for over 30 hours. The physical exam was normal, besides slightly tanned skin - “as always,” she said. Previous medical history was insignificant, but she described severe vomiting and weakness during a COVID-19 infection two years ago, requiring infusion in the emergency department. As she was planned for release from the hospital, she received a continuous glucose monitor with instructions in case of hypoglycemia and returned for further outpatient workup. Low normal early morning serum cortisol was measured, but cortisol did not rise in a corticotropin stimulation test. Very high serum ACTH arrived, confirming primary adrenal insufficiency (AI). Prompt hydrocortisone replacement was introduced.

Discussion: While drugs, alcohol, and critical illnesses might be apparent causes of hypoglycemia in previously ill patients, endogenous hyperinsulinism and factitious hypoglycemia are most likely causes in seemingly well individuals. However, AI as a cause of hypoglycemia should be excluded first because of a life-threatening adrenal crisis risk, especially with surgical stress or other acute conditions. AI might present with insidious, nonspecific symptoms of fatigue, weakness, weight loss, and hypotension. Typical hyponatremia and hyperkalemia were absent, but hyperpigmentation suggests prolonged and gradual development of primary AI in this patient.

Conclusion: This rare presentation of AI with hypoglycemia was finally a good sequence of events, enabling a timely diagnosis.

Keywords: hypoglycemia, adrenal insufficiency, cortisol, adrenal crisis, surgery

The Prevalence Of Anxiety And Depression Among Students Of The Faculty Of Medicine At The University Of Sarajevo

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Abstract Text Background: Faculty of Medicine is often recognized as one of the most laborious.

Student

workload, constant exposure to stressful situations, fear of failure, pressure from parents, exposure to death and human suffering are some of the many factors associated with increasing levels of anxiety and depression among medical students.

Aim: The aim of this study was to estimate the severity of anxiety and depression disorders among medical students.

Methods: In this cross-sectional study, self-report anonymous online survey was distributed to the students of all six years of the Faculty of Medicine, University of Sarajevo. In this survey, which consisted of 33 questions, we gathered general information and the Beck's Anxiety and Depression Inventory were used to assess the severity of anxiety and depression, whereby respondents received points by answering each question, and after scoring, they were categorized in different groups based on the severity of anxiety and depression.

Results: 129 students completed the survey. Considering the Beck's Anxiety Inventory, 56% scored for the "Low anxiety" group, 33% scored for the "Moderate Anxiety" group, 11% scored for the "Potentially concerning levels of anxiety". Considering the Beck's Depression Inventory, 43% of the students scored for the group "These ups and downs are considered normal", 21% scored for "Mild mood disturbances", 9% for the "Borderline clinical depression", 19% for "Moderate depression", 6% for "Severe depression", 2% for "Extreme depression".

Conclusion: Psychiatric morbidity found needs to be identified and treated at the earliest, because it can lead to suicidal ideation. Medical students should be encouraged to seek help and adequate facilities should be available to all of them.

Keywords: Anxiety, Depression, Medical students, Beck's Anxiety Inventory, Beck's Depression Inventory

Utilization of Continuous Glucose Monitoring in a patient with "brittle" Latent Autoimmune Diabetes in Adults: A Case Report

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Case Report Text

Introduction: This case report presents a patient diagnosed with latent autoimmune diabetes in adults (LADA). LADA is a slowly developing autoimmune condition diagnosed in adulthood, often referred to as "brittle" diabetes due to its pronounced glucovariability. Continuous Glucose Monitor (CGM) is a wearable device that continuously tracks blood glucose levels and estimates glucoregulation parameters.

Case description: A 45-year-old female patient was misdiagnosed with T2DM in 1999 and treated with premix insulin preparations. In 2014, due to signs of insulinopenia, the diagnosis was reassessed. The antibody confirmation test identified the patient with LADA type of diabetes, leading to a switch to basal-bolus therapy. During clinical examinations, the patient reported frequent symptoms of hypoglycemic episodes. Due to poor glucoregulation and unsatisfactory HbA1c levels, in 2020, the patient was issued a CGM device. In 2022, following the CGM introduction, the Time in Range (TIR) was below the target, at 48%, with HbA1c at 8,1%. However, the patient experienced fewer symptomatic hypoglycemic episodes, particularly at night, using the CGM.

Discussion: LADA is often misdiagnosed as type 2 diabetes mellitus (T2DM), leading to inappropriate therapy and challenging glucose regulation. Due to high insulin sensitivity and glucovariability in LADA, switching to basal-bolus therapy doesn't necessarily stabilize glucose levels. Continuous glucose monitoring (CGM) can help by detecting hypoglycemia and hyperglycemia trends behind HbA1c values, aiding in better management of the condition. Moreover, real-time glucose monitoring enables easier insulin dose adjustment and thus the prevention of hypoglycemic episodes.

Conclusion: This case highlights the importance of accurate diagnosis and advanced monitoring in LADA. While basal-bolus therapy alone was insufficient, CGM use significantly improved glucose management by reducing hypoglycemic episodes. Although target glycemic levels were not fully reached, CGM enhanced the patient's quality of life and demonstrated its value in managing LADA effectively.

Keywords: Continuous Glucose Monitoring, Hypoglycemia, Latent Autoimmune Diabetes in Adults

2

**Cardiology,
Pulmonary
and Vascular
Diseases**

After Procedure Life Quality: Coronary Artery Bypass Grafting Versus Hybrid Coronary Revascularization

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Abstract Text

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

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

Methods: This was a retrospective observational study. The study enrolled 60 patients, with 30 patients assigned to each group. Health-related QoL was assessed two months after the procedure using a generic SF-36 questionnaire. The SF-36 questionnaire was translated and adapted to the Bosnian language. Data analysis was performed in Excel and SPSS.

Results: Preliminary analysis of our data suggests that the average quality of life was better in patients undergoing HR, with a statistically significant difference ($p < 0.05$). The most notable difference between the two groups was observed in the domain of limitations in performing tasks due to physical condition, favoring the HR group.

Conclusion: CABG is the gold standard for revascularization, but HCR is equally effective and less invasive. Our results suggest higher HRQoL in the HCR group. Still, it is essential to note that this observation is based on a limited dataset and factors such as comorbid diseases were not taken in observation. A prospective study with a larger sample size would yield more precise results, contributing valuable insights to clinical decision-making process.

Keywords: quality of life, coronary artery disease, coronary artery bypass grafting, hybrid revascularization

Cardiac Arrest as a Consequence of Drug-drug Interaction

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Case Report Text Introduction: The underlying causes of sudden cardiac arrest can result from cardiac and non-cardiac etiologies. Non-cardiac causes are less common, and this group also includes drug interactions as one of the causes.

Case description: In this case report, we present a 71-year-old female with Parkinson's disease who experienced a cardiac arrest. Following an urgent call, in which the patient was reported to be febrile and with tremors, paramedics found her unresponsive and apneic in her apartment. After the team determined that it was a pulseless electrical activity (PEA), cardiopulmonary resuscitation (CPR) measures were initiated, which resulted in successfully established heart rhythm and breathing. In consultation with colleagues, it was learned that after admission to the Intensive care unit (ICU), she developed hyperthermia, hyperreflexia, spontaneous myoclonus, and tremors. On the fifth day, a head computed tomography (CT) scan showed signs of cytotoxic edema. On the eleventh day, the patient became hemodynamically unstable and passed away despite all adequate resuscitative measures.

Discussion: After an insight into the medical history it was found that the patient's chronic antiparkinson medication regimen consisted of rasagiline among other. Furthermore, due to a history of depression, she took duloxetine occasionally. However, several days before the onset of cardiac arrest, the patient started taking duloxetine again, due to low mood. Serotonin syndrome (SS) is a serious and potentially life-threatening condition that results from excessive serotonergic activity throughout the central nervous system. With an underestimated frequency, SS can develop following an overdose, a therapeutic dose increase, or drug to drug interaction of at least one serotonergic agent.

Conclusion: Cardiac arrest is one of the most urgent conditions and sometimes it is very difficult to determine the real reason behind it. Less common causes should also be taken into account during differential diagnosis, in order to avoid a fatal outcome.

Keywords: cardiopulmonary resuscitation, cardiac arrest, drug interactions, serotonin syndrome

Clinical Characteristics of Patients with Asthma and Bronchiectasis Coexistence. Findings from Institute for Pulmonary Diseases of Vojvodina

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ABSTRACT TEXT

Background: Asthma is a widespread disease characterized by reversible obstruction of airways, which leads to most common symptoms in the form of difficulty breathing, coughing, and wheezing. Bronchiectasis is a chronic lung disease characterized by irreversible enlargement of the bronchial lumen, reduced mucus clearance, and frequent respiratory tract infections.

Aim: To compare clinical characteristics, frequency of exacerbations, and asthma control in patients with asthma who have associated bronchiectasis versus patients treated for asthma alone.

Methods: A retrospective study was conducted at the Institute of Pulmonary Diseases of Vojvodina and included data from 80 patients in the period from October 2021 to October 2023. Patients were divided into two groups: those in whom the presence of asthma and bronchiectasis was determined and those in whom only asthma was diagnosed. With the presence of typical symptoms, the diagnosis of asthma was confirmed by spirometry, and bronchiectasis by computed tomography (CT) of the chest.

Results: Exacerbations, older age, more severe airway obstruction, lower FEV1, and lower FEV1/FVC ratio occur more often in patients with asthma and associated bronchiectasis compared to patients without this comorbidity and it was found that there is a statistically significant difference ($p < 0.001$). There is no statistically significant difference between gender, smoking status, years of life at which asthma was diagnosed, FVC, blood eosinophil, and IgE antibody levels, ACT and AQL test values between patients with asthma and associated bronchiectasis and those without.

Conclusion: Bronchiectasis contributes to more difficult control of asthma, and patients with asthma and bronchiectasis experience more frequent exacerbations and have worse prognoses compared to patients without this comorbidity.

Keywords: asthma; bronchiectasis; comorbidity; exacerbations

D-DIMER AS A MARKER OF INFLAMMATION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT

Background: Rheumatoid arthritis (RA) is a systemic autoimmune disease characterized by synovial inflammation, erosion of bones and cartilage with periods of exacerbation and remission. It is well recognized that coagulation disorders are linked to RA and fibrinogen is a key component of the coagulation cascade. The most often utilized breakdown product of fibrinogen that indicates the coagulation system's activation is D-dimer. It is primarily connected with acute thrombotic events, however it has been linked more and more recently to inflammatory diseases.

Aim: This study aims to determine whether D-dimer can be considered as an indicator of inflammation and to identify its relationship with other laboratory markers of inflammation in RA patients.

Methods: A retrospective observational study was conducted on 50 RA patients admitted to the Clinic for Heart, Blood Vessel and Rheumatic Diseases CCUS between January 2022 and July 2024. Patients with other autoimmune diseases, malignancies, infections and incomplete laboratory findings were excluded from the study. Spearman's correlation analysis was applied to evaluate the association between variables. Statistical significance was considered as a two-tailed P value less than 0.05.

Results: The study included 40 women and 10 men with an average age of 61.6 years. Among the respondents, 86% had elevated D-dimer values in the blood (>0.55 mg/L) with a median of 1.32 mg/L (interquartile range: 0.77- 2.56). Following the correlation analysis, we found that D-dimer positively correlates with: CRP and SE ($p < 0.001$) and a negative correlation was observed with: iron levels, RBC count and hemoglobin concentration ($p < 0.001$). We did not establish a statistically significant correlation with: fibrinogen, ferritin, vitamin D, WBC count and platelet count.

Conclusion: D-dimer's correlations with other laboratory markers suggest that it could be used as an inflammatory marker in RA patients. This study demonstrated that autoimmune disorders like RA should be considered in patients with elevated D-dimer levels.

Keywords: D-dimer, rheumatoid arthritis, autoimmune diseases, rheumatology

D-DIMER AS A MARKER OF INFLAMMATION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT

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Keywords: D-dimer, rheumatoid arthritis, autoimmune diseases, rheumatology

Unveiling The Connections: Dilated Cardiomyopathy In A Young Man With A Long-Standing History Of Rheumatoid Arthritis

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Case Report Text Introduction:

Rheumatoid arthritis (RA) is frequently associated with heart failure, which can have a detrimental impact on patients' prognosis. We present the case of a 42-year-old male patient, a former smoker, with a 20-year history of rheumatoid arthritis. The patient presented to the cardiologist's office complaining of dyspnea on exertion. Physical examination revealed a systolic murmur of low intensity, no rales, no peripheral oedema, a BP of 120/70 and a HR of 57.

Case description:

From the time of diagnosis, he had been treated with various disease-modifying antirheumatic drugs (DMARDs): Methotrexate, Sulfasalazine and Leflunomide; leading to worsening pain and persistent arthritis. In 2018, a Janus kinase inhibitor was initiated (Tofacitinib), and shortly after, he was admitted with unrelated symptoms, including palpitation, asthenia, and fatigability.

The patient had sinus rhythm, negative T waves in leads DIII and aVF, and a heart rate of 57/min. Bloodwork showed raised NT-proBNP level (252.0 pg/ml) and mild hyperkalemia (5.1 mEq/l). Echocardiography revealed dilated cardiomyopathy with a 64mm LV end-diastolic dimension, reduced LV ejection fraction (42.7%), hypokinesis of basal segments, with a global longitudinal strain of -14.1%, and mild-to-moderate mitral regurgitation. There were also prominent trabeculations of the lateral and anterior wall. Ambulatory 24-hour EKG monitoring showed low burden of premature ventricular contractions and non-sustained ventricular tachycardia. These findings prompted subsequent evaluation by cardiac MRI, which confirmed hypertrabeculation of the lateral and anterior wall, with a Peterson index of 2.9, suggestive of non-compacted left ventricle. However, there was also hypokinesis and mild edema of the lateral and anterior wall, suggestive of recent myocarditis. Given these aspects, a formal diagnosis of post myocarditis dilated cardiomyopathy with hypertrabeculation of the left ventricle was made.

The patient's biological treatment with Tofacitinib was halted due to cardiovascular risk, and instead, they received low dose ARB (Candesartan), beta-blocker (Bisoprolol), and aldosterone receptor antagonist (Spironolactone), and their treatment for RA was switched to Ciclosporin. The patient had a favourable clinical course, echocardiography revealing an improved ejection fraction of 45%, but wall motion abnormalities and left ventricle hypertrabeculation persisted. Treatment with SGLT2 inhibitor was initiated in October 2023, in accordance with the 2023 Focused Update on Heart Failure.

Discussion:

Despite receiving treatment with a JAK inhibitor, no findings suggested an ischemic cause. Myocardial involvement is uncommon in rheumatoid arthritis, but immunosuppressant agents may predispose patients to infections. Hypertrabeculation of the left ventricle could contribute to the patient's heart failure.

Conclusion:

This case posed a challenge in accurately identifying the cause of dilated cardiomyopathy and heart failure in a young patient with a long-standing history of rheumatoid arthritis.

Keywords: rheumatoid arthritis, heart failure, DMARDs, hypertrabeculation

3

**Infectious
Diseases and
Immunology**

Chronic hepatitis C - modern therapeutic approach

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Abstract Text

Background Hepatitis C is an inflammation of the liver parenchyma caused by the hepatitis C virus, affecting approximately 50 million people worldwide today. Acute hepatitis C progresses to chronic hepatitis C in 70-85% of cases, with chronic fatigue being a prominent symptom. The disease progresses to liver cirrhosis in 20% of patients over 10 to 30 years, with cirrhosis being a major risk factor for hepatocellular carcinoma. Classical therapy has involved a combination of interferon-alpha and ribavirin, which has been partially successful. Nowadays, the first-line treatment for chronic hepatitis C is direct-acting antiviral therapy (DAA), which directly inhibits viral proteins. Its success rate worldwide ranges from 95% to 100%.

Aim: The aim of this study is to investigate whether the treatment success rate of chronic hepatitis C using direct-acting antivirals at the University Clinical Center Sarajevo corresponds to global standards.

Methods: A retrospective cohort study was conducted at the Clinic for Infectious Diseases of the University Clinical Center in Sarajevo, in the period 2017-2024. Total of 220 patients were included in the study and the effect of DAA (sofosbuvir/velpatasvir and glecaprevir/pibrentasvir) was monitored. Achievement of SVR and reduction of serum bilirubin and transaminase values were observed.

Results: The mean value of viremia before starting therapy was 1,450,000 IU/ml. After therapy in all patients (100%) viremia dropped to unmeasurable values (the PCR result was negative) and remained so at the next control, so the SVR rate was 100%. The mean values of serum bilirubin, ALT and AST significantly decreased after the therapy and these concentrations remained stable at the control measurement.

Conclusion: The process of treating chronic hepatitis C using direct antiviral therapy at the University Clinical Center in Sarajevo follows world norms and standards in all parameters, and the success rate, according to this research, is 100%.

Keywords: DAA, efficacy, sofosbuvir, velpatasvir, glecaprevir

Disseminated tuberculosis in a patient with late HIV diagnosis

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5

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Introduction :

HIV and tuberculosis co-infection is a significant global health challenge. Tuberculosis remains a leading cause of death among HIV-infected individuals worldwide.

Case description:

52-year old male patient first developed symptoms of weight loss and then dysuria in October 2023, followed by urinary retention in November. He was given 3 courses of antibiotics with tamsulosine. In December these symptoms returned with a dry cough and subfebrile fevers. Laboratory findings revealed microcytic anemia, high values of CRP and sterile pyuria. Chest X-ray showed bilateral interstitial infiltrates in the upper lobes. He was treated as acute prostatitis with 2 more courses of antibiotics, but his symptoms persisted. In January 2024 pulmonary MSCT revealed nodular infiltrates and mediastinal lymphadenopathy. Bronchoscopic samples taken in February tested positive for tuberculosis by PCR, while HIV was confirmed by the Ag/Ab test. His initial CD4+ count was 87 cells/ μ L and HIV viremia was 71 900 copies/mL. He was given a four-drug antituberculous regimen. A week later antiretroviral therapy with dolutegravir, emtricitabine and tenofovir, along with prednisolone for four weeks, was initiated. Subsequently, the patient developed abdominal pain and symptoms of ileus as part of IRIS. Abdominal MSCT and colonoscopy were performed, confirming ileocecal tuberculosis. He now has undetectable HIV viremia and a CD4+ count increased to over 180. Still, patient continues to have symptoms of chronic bowel obstruction with weight loss so surgical evaluation is necessary.

Discussion:

WHO estimated 10.6 million new tuberculosis cases in 2021, 6.7% of whom were people living with HIV. HIV weakens the immune system, increasing susceptibility to tuberculosis. HIV-infected patients with advanced immunosuppression are at increased risk of extrapulmonary and disseminated tuberculosis.

Conclusion:

This case underscores the critical importance of timely suspicion and detection of tuberculosis and HIV infection. Early diagnosis and prompt initiation of combined antiretroviral and antitubercular therapy are essential for significant

patient improvement.

Keywords: tuberculosis, HIV, ileus, abdominal pain

From Sore Throat to Septic Shock: A Rare Case of Lemierre Syndrome

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Case Report Text

Introduction: Lemierre syndrome (LS), also known as postanginal septicemia, is characterized by thrombophlebitis of the internal jugular veins with metastatic anaerobic septicemia. It often follows bacterial oropharyngeal infections like tonsillitis, potentially extending into the neck spaces and mediastinum.

Case description: A 19-year-old female was admitted to the Department of Pulmonology and Intensive Care at Osijek Clinical Hospital Centre with septic shock. She had no significant medical history or chronic therapy. Earlier in the month, she experienced bacterial tonsillitis. One week before admission, she had fever and fatigue, and two days prior, neck, and right shoulder pain. Upon admission, she was in poor condition with hemodynamic instability. Chest X-ray revealed subcutaneous emphysema in the right shoulder and hemithorax, bilateral inflammatory infiltrates, and pleural effusions. CT scan showed abscesses in the posterior cervical triangle, peritonsillar and parapharyngeal spaces, anterior mediastinitis, and hepatosplenomegaly. Immediate parenteral rehydration, correction of thrombocytopenia, vasopressor support and empirical treatment with broad – spectrum antibiotics were initiated. Emergency surgery by maxillofacial and thoracic teams was performed. Postoperatively, the patient underwent tracheostomy, sedation, and mechanical ventilation. CVVHDF was conducted on the second day. *Fusobacterium necrophorum* was isolated from intraoperative and oropharyngeal samples, leading to the addition of metronidazole. A surgical revision and right-sided thoracic drain placement occurred on the fourth day. With these treatments, inflammatory markers improved, and she was gradually weaned off mechanical ventilation and transferred to the Maxillofacial Surgery Department. **Discussion:** This case aligns with LS given the symptoms, clinical findings, and bacterial isolation. LS is rare due to improved tonsillitis treatment, with an incidence of about 1 in 1,000,000, predominantly affecting young, previously healthy males aged 10 to 35 years. Early detection is challenging due to nonspecific initial symptoms. *Fusobacterium necrophorum*, an obligate anaerobic, gram-negative bacterium, is the primary pathogen. **Conclusion:** Given its lethality, Lemierre syndrome should be considered in the differential diagnosis of acute tonsillar abscess. Management should involve a multidisciplinary team including intensivists, surgeons, infectious disease specialists and otolaryngologists.

Keywords: lemierre syndrome, fusobacterium necrophorum, septic shock, thrombophlebitis, tonsillitis

Managment of cellulitis in elderly patients

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Introduction: Cellulitis is a common bacterial infection of the skin that can lead to serious complications if not properly managed. This case is a 70-year-old man with multiple diseases who presented with cellulitis of the left lower leg. His clinical course was complicated by sepsis and nosocomial COVID-19 infection.

Case description: A patient presented to the emergency department on August 21, 2022, with cellulitis on his left lower leg. Initial treatment consists of oral cephalexin and symptomatic therapy. His condition worsened, which led to his hospitalization on August 22. His medical history included hypertension, hyperlipidemia, benign prostatic hyperplasia, diverticulosis, and previous orthopedic surgery. On admission, he showed signs of sepsis with a high fever (39.2°C) and signs of high fever. Blood cultures revealed *Aliarcobacter butzleri*. Treatment consists of intravenous ciprofloxacin and cefazolin. During his stay, he contracted COVID-19, which was confirmed by a PCR test. The patient's condition worsened due to hyperglycemia and severe renal impairment. Treatment includes intravenous fluids, heparin for thromboprophylaxis, and supportive care. Her cellulitis improved with antibiotic therapy, and her sepsis resolved.

Discussion: Managing cellulitis in an elderly patient with severe disease presents difficult. *Aliarcobacter butzleri*, although rare, can cause severe infections that require targeted antibiotic treatment. Nosocomial COVID-19 infection has added complexity, requiring antimicrobial therapy and isolation strategies. Sick patients require careful treatment. Treatment is due to severe renal impairment and hyperglycemia.

Conclusion: This case highlights the importance of a comprehensive approach to managing complex diseases in elderly patients. Targeted antibiotic therapy, supportive care, and management of comorbidities are essential for a good outcome. Early recognition of complications and prompt treatment adjustments are essential. This case emphasizes caution in the prevention and control of industrial infections in vulnerable populations

Keywords: Cellulitis, sepsis, COVID-19

Mycosis Fungoides Resistant To Conventional Therapy

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Introduction: Mycosis fungoides (MF) is the most common cutaneous epidermotropic T cell lymphoma. It is clinically presented with itching and erythematous plaques on the skin. Plaques most often appear on the lower trunk, gluteal region and lower extremities. Case description: A male patient in his fifties has noticed erythematous lesions on his body for 16 years. He suffers from arterial hypertension, lymphadenopathy, suffered a STEMI myocardial infarction. Mycosis fungoides IIA was pathohistologically verified 8 years ago. On several occasions, the patient was treated for erythematous plaques. The patient was treated with PUVA photochemotherapy from XIV exposures, with local treatment of the changes with corticosteroid creams. Regression of the changes occurred after the mentioned therapy. The lesion on the right lower leg did not respond to the indicated therapy, therefore a surgical excision of the lesion on the right lower leg was performed, and after inadequate wound healing, skin transplantation from the right upper leg was indicated. Platelet rich plasma (PRP) was also used to improve wound healing. Discussion: PUVA therapy works by inducing the apoptosis of malignant T cells and reducing their number in the skin. However, long-term use increases the risk of skin cancer, so monitoring of patients is necessary. Solar erythema is a frequent complication. Chronic lesions resistant to conventional therapy can be treated surgically, which often requires excision of changes and reconstruction of the wound with the help of skin grafts. PRP can also be used as an aid to accelerated wound healing, which accelerates the healing of chronic wounds.

Conclusion:

Mycosis fungoides is a complex disease that requires accurate diagnosis and a personalized approach to treatment. PUVA therapy has been shown to be effective in reducing the symptoms of the disease, but carries the risk of developing skin cancer.

Keywords: Mycosis Fungoides, PUVA Therapy, Platelet-Rich Plasma

Phleboviral Infections In Hospitalized Patients With Neuroinvasive Disease In Croatia (2017-2024)

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Abstract Text :

Background: Phleboviruses belong to a large group of arboviruses transmitted to humans by sandflies. Human infections usually manifest as febrile diseases, so-called “three-day fever” (“pappataci fever”), while Toscana virus (TOSV) can cause neuroinvasive disease. TOSV, sandfly fever Sicilian (SFSV), and sandfly fever Naples (SFNV) viruses have been reported in Croatia so far.

Aim: This study analyzed the prevalence of phleboviral infections in hospitalized patients with neuroinvasive disease in Croatia.

Methods: 830 hospitalized patients with neuroinvasive disease were tested from April 2017 to July 2024. Cerebrospinal fluid (CSF) samples were tested for the presence of TOSV RNA using RT-PCR, while serum samples were tested for the presence of TOSV, SFSV, SFNV, and sandfly fever Cyprus virus (SFCV) IgM and IgG antibodies using indirect immunofluorescence assay (Sandfly Fever Mosaic, Euroimmun, LĹubeck, Germany).

Results: Neuroinvasive TOSV infection was confirmed in 5/0.6% of patients. All cases were from Split-Dalmatia County, where sandflies are widely distributed. Patients’ ages ranged from 17 to 77 years. Unusually, three out of five were under 22. Two patients presented with meningoencephalitis, while others had meningitis. The patients developed symptoms from May to October, which coincides with typical sandfly activity during warmer months. Furthermore, 14 IgG seropositive individuals were detected: TOSV 7/0.8%, SFSV 3/0.4%, SFNV 3/0.4%, and SFCV 1/0.1%. Most of the patients were residents of coastal Croatian areas (9/64.3%). The majority of seropositive patients were over 60 years old (9/64.3%). The median age of seropositive individuals was 66 (IQR=49-72) years.

Conclusion: This study confirmed the presence of phleboviruses in Croatia. Detection of acute neuroinvasive TOSV infections confirmed the emerging role of this still neglected virus in the etiology of central nervous system infections. Further studies on a large number of patients are needed to determine the true prevalence and clinical significance of phleboviruses in the Croatian population.

Keywords: Phleboviral infections, Neuroinvasive disease, Croatia, Sandflies

Seroprevalence Trends of Toxoplasmosis in Childbearing-Aged Women in Croatia, 2014-2023

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Abstract Text

Background : *Toxoplasma gondii* is a sporozoan parasite with domestic cats and their relatives as definitive hosts. In healthy individuals, toxoplasmosis is often asymptomatic or causes mild mononucleosis-like symptoms. However, infection during pregnancy can result in congenital toxoplasmosis, leading to miscarriage, hydrocephalus, blindness, hearing loss, or mental retardation. Aim: This study aims to analyze the seroprevalence trends of toxoplasmosis in childbearing-aged and pregnant women in Croatia over 10 years (2014-2023). Methods: The study included 1032 participants aged 16 to 45 years. IgM and IgG antibodies to *T. gondii* and the avidity of IgG antibodies (in serum samples with positive IgM/IgG antibodies) were determined using an automated enzyme-linked fluorescence assay (ELFA; Vidas, Marcy-l'Étoile, France). Results: *T. gondii* IgG antibodies were detected in 208 (20.2%; 95% CI = 17.7-22.7) participants. Four participants had positive IgM and IgG antibodies with high IgG avidity excluding acute/recent toxoplasmosis. The overall IgG seropositivity was higher in the period from 2014 to 2018: 105/465 (22.6%; 95% CI = 18.9-26.7) compared to the period from 2019 to 2023: 103/567 (18.2%; 95% CI = 15.1-21.6), however, these differences did not reach statistical significance ($p = 0.078$). Analyzing the seroprevalence rate by years, in the first period, seropositivity ranged from 21.1% to 31.3%, with a deviation in 2017 (14.3%). In the second period, seroprevalence was 20.4% in 2019 and 24.1% in 2020, followed by a decline in 2021 (16.5%), after which it remained stable (15.9% and 16.4% in 2022 and 2023, respectively). Conclusion: A high overall prevalence of seronegative women of childbearing age (79.9%) was found, who are at risk of possible primary toxoplasma infection during pregnancy. Furthermore, a decreasing temporal seroprevalence trend was observed after 2020. Information on the serological status in this high-risk population group is important for the prevention of congenital toxoplasmosis.

Keywords: Toxoplasma, Toxoplasmosis, Croatia

The Predictive Significance of Determining The Neutrophil- To- Lymphocyte Ratio In Patients With NSCLC Treated With Atezolizumab In The Second Therapeutic Line

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Background: Neutrophil-to-lymphocyte ratio (NLR) has previously been established as a prognostic factor for chemotherapy response in patients with NSCLC. As immunotherapy is increasingly taking a prominent place in the treatment of NSCLC, NLR becomes interesting as a cheap and reproducible predictive factor for response to immunotherapy.

Aim: This study aimed to determine whether NLR can serve as a predictive factor for immunotherapy response for NSCLC.

Methods: This is a retrospective study including number of 40 patients who received atezolizumab as immunotherapy in the second line of treatment. NLR was determined in all patients included in the study according to the formula (absolute number of neutrophils/absolute number of lymphocytes) x 100, where the normal ratio value is 1-3, elevated value is 6-9, and high value is above 9. (evaluated radiologically - as stable disease, partial regression, or complete regression). Demographic characteristics of patients, clinical and pathological characteristics of the tumor, type of previous therapy, and NLR were considered, and their correlation with the type of response to therapy was analyzed. The differences in the values of numerical variables were tested using Student's t-test for two data groups or one-way analysis of variance (ANOVA) with an appropriate post hoc test for three or more data groups. In addition to descriptive statistical methods, Spearman's correlation was used. In the interpretation of results, statistical significance of $p < 0.05$ was considered the minimum level of significance.

Results: Based on statistical analysis of the data, a correlation between the NLR value and gender, tumor type according to pathohistological diagnosis, stage of the disease and PFS was not established.

Conclusion: Considering the lack of statistical significance, it cannot be confirmed with certainty that NLR can serve as a predictive factor for immunotherapy response. Despite the small number of patients and lack of statistical significance, our research also found that patients with calculated NLR within reference values had a longer period without disease progression.

Keywords: neutrophil-to-lymphocyte ratio; bronchial carcinoma; immunotherapy; atezolizumab

Treatment of pneumococcal sepsis in acute COVID-19 infection

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Introduction: The main cause of meningitis, sinusitis, pneumonia, and otitis media is streptococcus pneumoniae. This gram-positive, encapsulated bacterium colonizes the nasopharynx in 5-20% of adults and is pre-requisite for developing pneumococcal disease. Major risk factors, such as age, splenectomy, and immunosuppression predispose serious infections. Viral infections are known to raise the risk of secondary bacterial infections as their immune response weakens defense mechanisms against bacteria. Similarly, invasive pneumococcal disease (IPD) and other secondary bacterial infections are possible with coronavirus disease 2019 (COVID-19). However, the temporal correlations between COVID-19 and IPD need further research.

Case description: A 88-year-old male with a past medical history of hypertension, diabetes, atrial fibrillation, heart infarction, prostate cancer, hypotireosis, LBBB, AV block, resected submucosal lipoma in small intestines and carotid stenosis presented to the emergency department with nausea, dyspnea, chills and a fever of 39°C that started the day prior. The patient previously received a complete four-part vaccination series against COVID-19 and seasonal influenza. Vital signs showed compromised state, with lowered oxygen saturation and hyperglycemia while physical exam showed rales. Microbiology testing revealed a positive SARS-CoV-2 test and peripheral hemocultures tested positive to S. pneumoniae.

Discussion: Treatment included low dose oxygen at 3L/min, remdesivir for 5 days, piperacillin-tazobactam for 10 days and azythromycin for 3 days. Metilprednisolone at a de-escalation scheme was added because of worsening radiological imaging. Treatment went without further complications.

Conclusion: This case highlights the value of receiving pneumococcal immunization in populations at risk as well as receiving IPD treatment and diagnosis as soon as possible.

Growing antibiotic resistance, inadequate drug penetration, and overlapping presentations with coinfections like COVID-19 all contribute to the life threatening nature of IPD.

Keywords: COVID-19, sepsis, pneumonia

Tricuspid valve infective endocarditis in an intravenous drug addict

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Introduction:

Acute infective endocarditis is a febrile illness that rapidly damages the heart, spreads hematogenously and can cause death. Here we present the case of a 39-year-old intravenous drug addict who developed sepsis and tricuspid valve infective endocarditis (TVIE) caused by *Staphylococcus aureus*.

Case description:

Male, 39-years-old, urgently hospitalized at UKCS (14.3.-19.4.2024), after transfer from KB Bihać. According to the transfer letter, he fell ill 1,5 months ago with fever, weakness, dry cough. Drug addict (heroin and cocaine). Therapy according to the isolate was started immediately upon admission (UKCS). Examinations and recommendations of cardiologist and cardiac surgeon have been carried out on several occasions. On TEE on 21.03.2024, an endocarditic verruca (14x80 mm) was verified on the posterior cusp of the tricuspid valve. On TEE, on the day of discharge, the still present vegetation (14x16 mm) was verified. He is discharged as recovered with recommendations for a follow-up examination by a cardiac surgeon in one month, when a decision on surgical treatment will be made. At discharge, the patient was conscious, oriented, communicative, hemodynamically stable, afebrile, with a systolic murmur on the entire precordium, with discrete pretibial edema on both sides.

Discussion:

The diagnosis is established by TEE and Dukes criteria. The following were monitored: CBC, DBC, CF, clinical biochemistry, immunology, proteins, general urinalysis, ABS, microbiology, hepatitis markers, HIV-Ag/Ab-Combo, Brucella Elisa and radiological tests. Surgical intervention is common and is considered for this patient. The most important thing in this case is early detection and treatment, in order to prevent hematogenous spread and damage to other structures and ultimately a fatal outcome.

Conclusion:

TVIE is a rare but serious form of infective endocarditis. Surgical intervention, including multivalve replacement, is common and is considered for this patient. Early diagnosis and treatment are necessary for a favorable outcome.

Keywords: TVIE, intravenous drug addict, staphylococcal sepsis

4

**surgery and
surgical
Techniques**

3D printing can save time... and surgeon's nerves

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Introduction: Advancements in technology are transforming medicine, enabling a more personalized approach to patient treatment. This is particularly important for viscerocranium fractures, which are complex and time-consuming due to numerous essential structures in a small area. 3D printing is being introduced in medicine to facilitate preoperative planning and improve the outcome of patient treatment.

Case description: A 54-year-old female patient was admitted to the Emergency Department due to a fall in the level. She had a “blow-out” fracture of the right orbit and a nasal bone fracture. She was transferred to the Department of Maxillofacial and Oral Surgery. The decision was made to produce a patient-specific 3D model for preoperative planning and more accurate shaping of the titanium mesh used in bone defect cover. The patient's Digital Imaging and Communications in Medicine (DICOM) data from the head computer tomography (CT) scan was imported into the 3D Slicer, an open-source software for segmentation. Semi-automatic segmentation was used to create the patient-specific computer-aided design (CAD) 3D model of both orbital regions, and the entire procedure took less than an hour. Using the 3D modeling software, the right orbit was altered to appear uninjured. The model was 3D printed on a Fused Deposition Modeling (FDM) printer with polylactic acid (PLA) filament. The maxillofacial surgeon shaped the titanium mesh according to the “uninjured” appearance of the right orbit. After releasing the orbit's incarcerated contents, a titanium mesh was installed over the bone defect and secured with two screws.

Discussion: Poor viscerocranium fracture repair can cause complications, so precise fragment fixation is necessary. 3D printing was used for pre-shaping the osteosynthetic mesh, resulting in greater accuracy and reducing later complications like diplopia.

Conclusion: 3D printing improves preoperative planning by enhancing understanding of space and anatomy, enabling personalized implant generation, and resulting in better outcomes and shorter procedure times.

Keywords: three-dimensional (3D) printing, personalized medicine, blow-out fracture, craniomaxillofacial surgery

Cholecystectomy, operative approach and complications, retrospective study

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Abstract Text:

Background:

Cholecystectomy, the surgical removal of the gallbladder, is one of the three most common abdominal surgeries. Conditions requiring cholecystectomy include acute and chronic cholecystitis, symptomatic cholelithiasis, biliary dyskinesia, calculous cholecystitis, tumor masses, biliary colic, and stone-induced pancreatitis. The two key operative approaches are minimally invasive (laparoscopy and robotic surgery) and open surgery. Laparoscopy is the gold standard, while robotic surgery is not commonly used for cholecystectomy in Bosnia and Herzegovina. Aim: The aim of the study is to determine: which is the most commonly used operative approach and the most common complications that occur during surgery, immediately after surgery or within a month of surgery, also the indications for performing cholecystectomy. Methods: This retrospective study included patients treated at the department of Abdominal Surgery, Clinical Center University of Sarajevo in period 2021 – 2023. In the course of the study, male and female patients over the age of 18 who underwent cholecystectomy were included, regardless of the urgency of admission - both elective and urgent patients, and regardless of the operative approach - both laparoscopic and open (with or without conversion). The study did not include patients under the age of eighteen and patients who did not have an isolated indication for cholecystectomy. Results: The study included 589 patients, with 257 males and 332 females. The most common indication for cholecystectomy was chronic calculous cholecystitis 59.76% of patients, followed by acute calculous cholecystitis 18.84%. Laparoscopic surgery was performed on 75.04% of patients, while 18.33% underwent open surgery. Conversion to open surgery was necessary in 5.26% of cases. Bile duct injury and wound dehiscence were the most common complications, each occurring in 0.51% of patients. Conclusion: In most cases a laparoscopic approach was used. Complications are rare. In cases that complications happened, complications were wound dehiscence and damage to the biliary tract.

Keywords: cholecystectomy, minimally invasive surgical procedures, intraoperative complications, bile duct injury

Neonatal Outcomes After Preinduction With Dinoprostone: Retrospective Study

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Abstract Text Background: The induction of labour is a frequently performed obstetric procedure. Its

effectiveness depends on the state of preparation of the cervix. The most popular pharmacological agents for preinduction of labour are prostaglandins (a dinoprostone vaginal insert). It works by stimulating collagenase, sensitizing the myometrium to oxytocin and inducing contractile activity of the uterine muscle.

Aim: We were checking if the preinduction with a dinoprostone vaginal insert has an impact on neonatal outcomes.

Methods: Included into the study were patients admitted to Department of Obstetrics and Perinatology of University Hospital in Krakow in years 2019-2021 and their newborns. The intervention group consisted of newborns from mothers preinducted with dinoprostone in form of vaginal insert 10 mg, whereas in the control group were newborns from spontaneous labor. The patients were qualified to the induction according to polish guidelines because of hypertension, diabetes mellitus, intrahepatic cholestasis of pregnancy, fetal grow restriction, post-term pregnancy. The primary outcomes were results of blood gas, morphology, length of hospitalization, Apgar in 1., 5., 10. minute, birth weight, use of phototherapy. The Student t-test for independent groups and the Mann–Whitney U test were applied.

Results: During the study period 80 newborns were included into the intervention group and 80 others into the control. There were no statistically significant differences in neonatal primary outcomes beside bilirubin concentration which was higher in the control group – the mean value in the control group was 90,6375 umol/l and in the intervention group 67,45 umol/l ($p=0,006$). The difference of other results revealed as statistically insignificant. Despite higher bilirubin concentration in the control group the usage of phototherapy was equally common (11,25%). **Conclusion:** The results presented in our analysis support the claim that newborns of mothers with high-risk pregnancy and undergoing induction of labour with prostaglandin have similar primary outcomes as newborns of physiological pregnancy.

Keywords: dinoprostone, neonatal outcomes, preinduction of labour, prostaglandins

Reverse Shoulder Arthroplasty In Right Shoulder Luxation: A Case Report

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Introduction: The reverse shoulder arthroplasty (rTSA) is a type of artificial joint that is geometrically different than the native glenohumeral joint. It “reverses” the concavities of the glenoid and humerus in a way that the concave humeral prosthesis is placed below the glenosphere, preventing superior migration of the humeral head during deltoid contraction. rTSA is a viable treatment option for end-stage degenerative ailments of the shoulder.

Case description: A 61-year-old female patient was admitted to the Department of Orthopedics and Traumatology in June 2024 due to a fall injury obtained six months prior. Two months prior to admission, an X-ray of the right shoulder confirmed a chronic luxation where the head of the humerus was dislocated anterior and medial to the glenoid. Her history notes that she had previously undergone two total hip endoprostheses and received transfusions to correct her anemia. Regarding the nature of the injury, surgery was put forward. The procedure was performed in the beach chair position with a deltopectoral approach. The patient was under general anesthesia. The cephalic vein was preserved and the head of the humerus was removed due to avascular necrosis. The surgical staff decided to proceed with a LimaCorporate SMR Reverse 40 mm insert. Total stability was achieved and the deltoid muscle is now responsible for full abduction. Heparin and thromboprophylaxis were administered. The patient had begun physical therapy and was taking pain medication when necessary. Postoperative X-ray showed the implant was adequately placed. Stitches were removed in 10 days.

Discussion: The aim of the surgery was to restore function of the right shoulder and to alleviate major movement limitations. Surgery was postponed due to her comorbidities.

Conclusion: With many benefits of the rTSA and its ongoing development in a biomechanical sense, a better understanding will surely aid orthopedic surgeons in achieving better patient outcome and implant durability.

Keywords: reverse shoulder arthroplasty, luxation, X-ray

Treatment of postintubation tracheal stenosis with diode laser

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Introduction:

Postintubation tracheal stenosis can be caused by ischemic damage to the trachea due to the cuff of the endotracheal tubus. Most patients with tracheal stenosis are candidates for tracheal resection and reconstruction, but such stenosis can be managed with laser endoscopic surgery.

Case description: A 44-year-old patient was admitted to the Department who complained of difficult breathing. The patient's documentation confirmed that he was extubated a month ago after long-term mechanical ventilation. The patient was intubated for a total of 28 days due to septic shock followed by multiorgan failure. Fiberoptic endoscopy was performed, and subglottic concentric narrowing of the trachea was visualized with narrowing of its lumen by 50%.

Considering that the patient had normal saturation, tracheotomy was not performed. The patient underwent a computer tomography scan of the neck and thorax, which showed scar stenosis in the projection of the third and fourth tracheal rings with a length of 26 millimeters. Regarding the location and length of the stenosis, the multidisciplinary team decided to reduce it with a diode laser under general anesthesia. The patient was intubated with a rigid bronchoscope, the stenosis was reduced in 3 places, and the trachea was additionally dilated with a balloon. The site of the stenosis was coated with mitomycin. At the follow-up examinations one month and three months postoperatively, no signs of restenosis were shown, and the patient was well and breathing properly.

Discussion: Tracheal stenosis can be treated with tracheal resection and reconstruction, but in cases of smaller stenosis, diode laser treatment is also a viable option. Bleeding is reduced, there is no inflammatory reaction and tissue swelling postoperatively, and there is no need for a temporary tracheotomy.

Conclusion: Diode laser is a useful and effective form of therapy for treating postintubation tracheal stenosis.

Keywords: post-intubation tracheal stenosis, diode laser, endoscopy

5

**Neurology
and
Neurosurgery**

A Case Study of Minimally Invasive Unilateral Approach for Spinal Tumors

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Abstract Text

Background: In spinal cord tumor surgery, the primary goal is to localize and access the lesion, remove it surgically, and maintain the surrounding structures and stability of the spinal cord. Unilateral hemilaminectomy led to its recent acceptance among surgeons due to its reduced complication rate.

Aim: To present the type and localization of spinal tumors operated on with a unilateral approach.

Methods: This retrospective study investigated surgically treated spinal tumors removed through a unilateral, less invasive approach between 2019-2024, conducted at the Department of Neurosurgery, Clinical Center University of Sarajevo. Metastatic lesions, and extradural tumors which extensively invaded local soft tissues bilaterally were excluded. The spinal level, location in the spinal canal, size of the removed tumor, and pathological reports of each extracted tumor were evaluated.

Results: The study included 9 males and 11 females, aged 26-77 (mean: 51). All patients experienced local or radicular pain and sensory or motor disturbances. Tumor locations were 1 extradural, 14 intradural extramedullary, and 5 intramedullary. Tumor levels were cervical (N=7), thoracic (N=9), and lumbar (N=4). Pathology revealed 5 schwannomas, 4 ependymomas, 7 meningiomas, 1 hemangioblastoma, 2 gliomas, and 1 solitary fibrous tumor. All tumors were successfully removed without damage to the spinal cord or major osteo-ligamentous complexes. No complications, such as cerebrospinal fluid leakage, postoperative instability, or neurological worsening, occurred.

Conclusion: A unilateral hemilaminectomy is an effective method for removing smaller, laterally positioned spinal tumors. This approach provides advantages like shorter surgery duration, minimized blood loss, quicker recovery times, faster patient mobilization, reduced hospital stays, less postoperative pain, and better spinal stability.

Keywords: minimally-invasive surgical procedure, spinal cord neoplasm, compressive myelopathy, intraoperative monitoring

An “ascending” future for treatment of ALS

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Introduction: Amyotrophic lateral sclerosis (ALS) is a fatal and currently incurable neurodegenerative disease in which the motoneurons of the spinal cord and brain deteriorate. Patients gradually develop a complete weakness of voluntary musculature, including those necessary for breathing. As ALS progresses, patients have intact cognition, vision and hearing, which makes it a psychologically difficult ailment. Until recently, riluzole was the only registered drug that slowed the disease progression: in 2024, EMA has approved an antisense oligonucleotide aimed to reduce the production of superoxide dismutase 1 (SOD1) under the name Qalsody (tofersen). By lowering the levels of SOD1 protein in the CSF and blood, tofersen can slow down the rate of disease progression and enhance the quality of life of patients with SOD1 ALS, representing a significant advancement in neurology.

Case description: A 61-year-old male was admitted to the Neurology department due to muscle weakness, partial atrophy and fasciculations in both upper extremities. He underwent a broad somatic and neurological examination alongside regular neurology check-ups considering the lack of necessary criteria to establish the diagnosis of a motor-neuron disease. In 9 months time, he developed upper motor neuron signs as well as mild dysphagia and respiratory symptoms. Treatment with riluzole was put forward and testing for SOD1 mutation was done.

Discussion: It is of great importance to have such patients come to the clinic for regular check-ups in order to monitor the disease progression. The SOD1 test was sent to Zagreb for confirmation.

Conclusion: The effects of the scientific community are focused on identifying the proteins responsible for the health of motoneurons on a cellular and genetic level, whereby the first steps towards successful treatment are finally on the horizon.

Keywords: amyotrophic lateral sclerosis, riluzole, superoxide dismutase 1, muscle weakness

Awake Brain Surgery in a Patient Suffering from Pharmacoresistant Epilepsy due to Tuberous Sclerosis

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Case Report Text

Introduction:

Approximately one third of patients suffering from epilepsy are resistant to pharmacotherapy. One of the causes is tuberous sclerosis, a rare genetic disorder that causes the growth of benign tumors in the brain and other organs. The aim of this report is to present awake brain surgery (ABS) as a treatment method for pharmacoresistant epilepsy due to tuberous sclerosis.

Case description: The patient is a 27-year-old male suffering from pharmacoresistant epilepsy caused by tuberous sclerosis. His first epileptic seizure occurred at the age of 4. During his life he was treated unsuccessfully with many different antiepileptic drugs (e.g. topiramate, oxcarbazepine, brivaracetam). MR examination showed bilateral frontoparietal changes consistent with tuberous sclerosis. EEG video monitoring suggested the source of the epileptic activity was in the left frontal lobe. Due to the pharmacoresistant and frequent seizures (up to 10 per month) stereoelectroencephalography (SEEG) was indicated, which confirmed that the source of the epileptic activity was in the left superior frontal gyrus near a tuber. ABS was performed in May 2024. After craniotomy under anesthesia, the patient was awakened. Speech arrest and plegia of the right arm were achieved by bipolar cortical stimulation of the area around the tuber with a current of 3 mA. The tuber was anatomically resected. The patient was anesthetized again and surgery was completed. After satisfactory postoperative recovery, the patient continues to take antiepileptic drugs (sodium valproate, oxcarbazepine, brivaracetam) and will remain under observation during following months.

Discussion: The literature shows that 55% of patients with tuberous sclerosis who underwent ABS had a complete regression of epileptic seizures (with or without antiepileptic drugs), whereas 27% of patients had a 70% reduction in seizure frequency. However, studies with more patients are needed.

Conclusion: Awake brain surgery after SEEG is a safe and promising option for pharmacoresistant epilepsy due to tuberous sclerosis.

Keywords: awake neurosurgery, pharmacoresistant epilepsy, stereoelectroencephalography, tuberous sclerosis

TYPE 1 DIASTEMATOMYELIA ACCOMPANIED WITH SPINA BIFIDA AND HYDROCEPHALUS: A DIAGNOSTIC OVERVIEW

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Case Report Text

Introduction:

Spina bifida is a congenital spinal condition often associated with hydrocephalus and anomalies like diastematomyelia. Diastematomyelia, or split cord malformation, involves a longitudinal spinal cord split, typically caused by a bony or fibrous spur. Type I diastematomyelia is a more severe form than Type II, which generally presents with milder features. Case Description: A 45-year-old male with history of spina bifida and hydrocephalus, managed by a ventriculoperitoneal (VP) shunt since birth, presented with new sphincter dysfunction, chronic headaches, and lumbar pain. Neurological examination revealed chronic left-sided radicular lesions in the L3-L5 myotomes, suggesting spinal cord involvement. Lumbosacral computed tomography (CT) showed reduced anteroposterior diameter of the L3-L5 vertebral bodies and spinal canal expansion from L3 to S4, with disrupted posterior elements and paravertebral muscle atrophy. Magnetic resonance imaging (MRI) confirmed Type I diastematomyelia, featuring duplicated dural sac and a bony spur dividing the spinal cord into two hemicords. The patient also exhibited tethered cord syndrome and hydrosyringomyelia. Cranial CT showed persistent hydrocephalus, marked supratentorial ventricular dilation, and cerebellar tonsillar descent below the foramen magnum. Discussion: This case highlights the diagnostic challenges of Type I diastematomyelia, especially when accompanied by spina bifida and hydrocephalus. The bony spur at L2/L3, identified through MRI, underscores the importance of advanced imaging for accurate diagnosis. The added complexity of tethered cord syndrome requires a multidisciplinary approach. Persistent hydrocephalus and cerebellar tonsillar herniation pose ongoing risks, emphasizing the need for vigilant long-term management to prevent further complications and ensure optimal outcomes. Conclusion: Accurate diagnosis and management of Type I diastematomyelia require both CT and MRI. These imaging techniques are crucial for assessing structural anomalies, guiding clinical decisions, and ensuring optimal outcomes. The integration of these methods is essential for managing complex spinal dysraphism, highlighting the need for a coordinated, multidisciplinary approach.

Keywords: Diastematomyelia; Spina bifida; Hydrocephalus; Tethered cord syndrome; Split cord malformation

Eosinophilic Granuloma Versus Neuroendocrine Tumor Metastasis: A Diagnostic Challenge in a 20-Year-Old Female

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Case Report Text Introduction: Eosinophilic granuloma is a benign, localized form of Langerhans cell

histiocytosis that typically affects the bone, and occasionally the adjacent dura, presenting as a solitary osteolytic lesion with potential for spontaneous regression. Case

description: A 20-year-old female presented with severe, persistent right frontal headaches lasting several weeks. A magnetic resonance imaging (MRI) of the brain revealed an extra-axial lesion in the right frontal bone and dura. The lesion's MRI characteristics—a benign lesion involving both bone and dura, with heterogeneous signal intensity on T1- and T2-weighted sequences and mild contrast enhancement—suggested eosinophilic granuloma as a differential diagnosis. A subsequent full-body CT scan incidentally revealed a bronchial carcinoid in the lungs, raising concerns that the intracranial extra-axial lesion might be a metastasis from the primary disease. However, a follow-up MRI showed a slight reduction in lesion size with no significant change in its characteristics, reducing the likelihood of metastasis. MR spectroscopy using single-voxel techniques with PROBE 144 and 31 localization showed lipid resonances, further supporting the initial MRI interpretation favoring a benign process.

Discussion: The differential diagnosis of the lesion initially included eosinophilic granuloma and a possible metastatic neuroendocrine tumor. Although the imaging characteristics were more consistent with a benign lesion, the possibility of metastatic disease could not be entirely dismissed without further investigation. Given the clinical suspicion and the potential consequences of a missed diagnosis, a NET-specific skeletal scintigraphy was considered to definitively exclude metastatic involvement.

Conclusion: This case report highlights the diagnostic challenges of an osteolytic frontal bone and dural lesion in a 20-year-old female, with an incidental bronchial carcinoid finding, underscoring the need for thorough imaging and clinical evaluation in young patients with atypical lesions. Follow-up MRI and additional imaging may be necessary to monitor the lesion and guide further management.

Keywords: eosinophilic granuloma, neuroendocrine tumor, MR spectroscopy, bronchial carcinoid, radiology

Epileptic seizure revealed diffuse high-grade glioma: a case report

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Case report text

Introduction:

Glioma is a type of primary tumor that grows in the brain or spinal cord. It can look similar to healthy brain cells called glial cells. Glioma-related epilepsy is the most frequent presenting symptom in diffuse low-grade gliomas, occurring in 65%–90% of patients. As for diffuse high-grade gliomas, the incidence of glioma-related epilepsy is about 40%–64%.

Case description: A 40-year-old male patient was admitted to the Department of Neurology at the University Hospital Centre Split because of the first epileptic seizure in his life occurring with spasms in his left arm and uncontrolled urination. An epileptic seizure is a focal seizure with a motor onset and transition to bilateral tonic-clonic seizures. An emergency MRI of the brain was performed, which showed an expansive process of size 3x2,5x1 cm on the frontal right side, with inhomogeneous postcontrast opacification. Based on the findings, the patient was referred to the Department of Neurosurgery of the Zagreb University Hospital Center, where an urgent robotic-assisted stereotaxic procedure was performed to remove the glioma and prepare it for pathohistological diagnosis. RONNA (Robotic Neuronavigation) is a project to develop a robotic stereotactic navigation system to improve the process of navigation by linking patient tomographic images, computerized operation plans, and robots. It achieves better and faster-performing surgery, less invasiveness of the intervention, and faster patient recovery. The biopsy showed that the findings correspond to diffuse high-grade glioma, immunohistochemically IDH 1 negative. The patient is now under the observation of an oncologist.

Conclusion: It is important to know how epilepsy can be the initial symptom of a high-grade glioma. Also, by using RONNE, the diagnosis, and treatment of this severe pathology have been accelerated, showing us a window into the future of medicine.

Keywords: Biopsy, Epileptic seizure, Neoplasm, Robotics

Narcolepsy Unveiled: The Hidden Struggle Of Constant Sleepiness

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Introduction: Narcolepsy type 1 (NT1) is characterized by a deficiency of orexin in the cerebrospinal fluid and the presence of cataplexy, which is often triggered by positive emotions. Narcolepsy type 2 (NT2), however, lacks orexin deficiency and is not associated with cataplexy. Both types can manifest with excessive daytime sleepiness (EDS), hallucinations, and various sleep disturbances.

Case Description: A 64-year-old woman was presented to the Sleep Disorders Infirmary with complaints of EDS, which had persisted since May 2023. She reported falling asleep quickly while sitting or resting but denied experiencing cataplexy or apneas during sleep. Her sleep was undisturbed, an average duration of 10 hours per night. Physical and neurological examinations were normal. The Epworth Sleepiness Scale indicated mild EDS, and the STOP-Bang questionnaire suggested an intermediate risk of obstructive sleep apnea (OSA). Polysomnography performed on March 2nd, 2024 confirmed mild OSA, and revealed a slightly reduced rapid eye movement (REM) latency, though sleep efficiency remained excellent. The Multiple Sleep Latency Test (MSLT) documented three Sleep-Onset REM Periods with a REM latency of 5.2 minutes, which confirmed the diagnosis of narcolepsy. Modafinil was prescribed at an initial dose of 100 mg daily, leading to a significant symptom improvement within a month. The dosage was increased to 200 mg daily, and at the three-month follow-up, her symptoms were fully resolved.

Discussion: Diagnosing NT2 is a challenge, despite its higher prevalence in comparison to NT1. This patient's sole symptom was EDS, often caused by medications, or other chronic diseases, especially when first presented at older age. OSA can also cause EDS and mask narcolepsy, particularly in NT2, where cataplexy is absent.

Conclusion: Narcolepsy's pathophysiology, clinical manifestations, and treatment require further research. Despite the challenges, narcolepsy should be considered in the differential diagnosis of patients presenting with EDS. Accurate diagnosis and appropriate treatment can significantly improve the quality of life for these patients.

Keywords: narcolepsy, obstructive sleep apnea, polysomnography, REM sleep

Outcome Following Mild Traumatic Brain Injury In The Elderly Population

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Abstract text:

Background: The incidence of traumatic brain injury (TBI) among the elderly population is rising worldwide. Falls to the ground, either from standing or from heights, are the most common causes of TBI in the elderly, since both motor and physiological functions decline. Additionally, chronic conditions and the use of anticoagulants and antiplatelets increase the consequences of these injuries.

The Aim: To determine the most significant prognostic factors for TBI, with a particular focus on the impact of age.

Methods: The study included 568 participants (34.3% women, 65.7% men) aged 18 to 96 years, with an average age of 56.56. Participants were divided into age categories, under 65 years and 65 years and older. The research used routine medical procedures, including CT scans, clinical observation, and neurological evaluations. Standard statistical methods, including chi-square tests and Mann-Whitney U tests, were used to analyze the data.

Results: The sample included 537 participants without a fatal outcome and 30 participants with a deadly outcome. The younger group, under 65 years, had a higher incidence of epidural hematoma ($p=0.025$), while older participants had higher rates of hypotension ($p=0.044$) and were more likely to be on anticoagulant ($p=0.000$) and antiplatelet therapy ($p=0.002$). The Mann-Whitney U test showed that older participants had worse scores on the Marshall and Helsinki scales ($p=0.044$ and $p=0.033$).

Conclusion: Traumatic brain injury (TBI) is a life-changing event with severe consequences for the elderly population. The clinical outcome of TBI is influenced by several factors, including the use of anticoagulant and antiplatelet therapy, as well as the presence of hypotension during treatment. Individual CT characteristics play a crucial role in accurately predicting outcomes. Therefore, age should not be a limiting factor in the treatment of patients with TBI.

Keywords: traumatic brain injury; elderly population, prognostic factors

6

**Oncology and
Cancer
Research**

Bladder Endometriosis: A Rare Case Report and Clinical Management

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Introduction: Endometriosis is a polymorphic and multifocal disease defined by the presence of functional endometrial glands and stroma-like tissue outside the uterine cavity, and is associated with fibrosis and an inflammatory reaction. The pelvic cavity is the most common location of endometriotic implants.

Case description: A 35-year-old woman, at 35 weeks of pregnancy, was admitted to the gynecology department with a history of two previous cesarean sections and diagnosed with endometriosis in the urinary bladder. Her symptoms began earlier in the form of severe abdominal pain and recurrent urinary infections, accompanied by negative urine cultures that did not respond to the prescribed therapy. Examination revealed a distended urinary bladder, with a solid formation invading the bladder wall and connected to the anterior uterine wall. MRI findings showed a solid, T2 isointense formation in the dome of the urinary bladder, centrally and parasagittally on the left side, measuring 33 x 30 x 16 mm with multiple punctate T1W hyperintensities indicating hemorrhagic foci.

During her elective cesarean section, the abdominal wall was opened, and the uterus was carefully incised to deliver a live male newborn weighing 2740g. In the same surgical procedure, a urologist removed a tumor, which was confirmed by pathohistological analysis as a decidual reaction and not a malignancy. The bladder was reconstructed, J-J stents were placed in both ureters, and the bladder was repaired with a cystostomy.

Discussion: Bladder endometriosis, the most common urinary tract manifestation, occurs in about 1% of cases, typically affecting the posterior wall and dome. While cyclic hematuria is a known sign, it appears in less than 30% of cases due to the submucosal nature of lesions. In this case, the absence of hematuria and recurrent UTIs complicate the diagnosis, highlighting the need for imaging like MRI. The patient's cesarean history may have contributed to atypical endometrial implantation, necessitating a multidisciplinary surgical approach during delivery.

Conclusion: This case underscores the imperative of considering bladder endometriosis in the differential diagnosis of women with prior caesarean sections and refractory urinary symptoms.

Keywords: Endometriosis; Urinary Bladder; Pregnancy

Integration of Psycho-Oncological Support in the Treatment of Prostate Cancer

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Case Report Text

Introduction:

Psycho-oncology addresses the psychological, emotional, and social aspects of cancer and its impact on patients and their families. A liaison psychiatrist plays a crucial role in this context, working collaboratively with oncology teams to provide psychological support and address the psychiatric implications of the disease. This holistic approach ensures comprehensive care, addressing both the physical and psychological needs of cancer patients.

Case description: We present the case of a 77-year-old patient diagnosed with prostate cancer following a history of bladder tumor and subsequent recurrence. Post-diagnosis and surgery, the patient was referred to a psychiatrist due to a worsening mental condition characterized by anxiety, restlessness, insomnia, frequent stoma checking, and constant fear of stoma rupture. His wife reported behavioral changes, including irritability, impulsivity, verbal aggression, isolation, withdrawal from daily activities, depression, apathy, and anhedonia. Based on these symptoms, a working diagnosis of mixed anxiety-depressive disorder was made, and treatment with fluvoxamine, diazepam, and promazine was initiated. Additionally, the patient's wife and son independently sought consultation and counseling, receiving psychotherapeutic support.

Discussion: At a follow-up examination, the patient reported feeling better, with improved mood and sleep patterns. His wife and son noted that he was participating in household activities within his capabilities, spending time walking and reading, and maintaining an active and positive outlook. One year after the last psychiatric check-up, the patient was diagnosed with a recurrence of the tumor on the urethra. However, this time the patient adapted surprisingly well.

Conclusion: This case underscores the importance of integrating psycho-oncological support into cancer treatment. Such integration facilitates patients' adaptation to new health challenges, enhances their psychological well-being, and improves treatment outcomes and overall quality of life.

Key words: psycho-oncology, cancer, liaison psychiatry, anxiety-depressive disorder, quality of life

Nanorobots in Cancer Treatment

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Abstract Text:

Background: Cancer poses a huge global health challenge, affecting millions of people each year. Traditional treatments like chemotherapy often lead to side effects that impose dose reduction, as well as treatment delay. With great advancements in technology and the popularization of nanorobotics in medicine, nanorobots have shown great potential as effective and precise cancer therapy tools. Aim: To provide a clear and concise overview of how nanorobots can be utilized in cancer treatment to overcome current limitations, thus offering a promising tool in the advancement of cancer therapy. Methods: The potential of nanorobots for the diagnosis and treatment of the most prevalent types of cancer was evaluated through a detailed analysis of published systematic reviews. Relevant scientific literature was accessed via platforms such as PubMed and the Google Scholar scientific database, focusing exclusively on research published between 2020 and 2024. To access the needed literature, the following keywords were used: 'breast cancer', 'lung cancer', 'prostate cancer', 'cancer treatment', 'nanorobots', 'nanotechnology'. Results: The results of the observed studies regarding breast, lung, and prostate cancer- three of the most common types- showed that nanorobots could be used as effective treatment tools. By addressing the limitations of current treatment methods, and their ability to selectively target cancer cells, these devices illustrate how nanotechnology can be integrated into existing practices, offering a promising, effective, and innovative approach.

Conclusion: Despite showing great potential for cancer treatment, nanorobots still face certain issues. Before adopting these devices and integrating them into common medical practice numerous clinical trials, improved accessibility, and financial support are required.

Keywords: cancer; cancer treatment; nanorobots; nanotechnology

Peritoneal gliomatosis and ovarian teratomas: clinicopathological correlation

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ABSTRACT TEXT

Background:

Peritoneal gliomatosis is a rare condition, which usually occurs simultaneously with an immature teratoma. It is made of mature glial tissue, which can be further confirmed by the histopathological examination of the specimen. Benign glial tissue is usually implanted in the peritoneum, omentum and abdominal lymph nodes. Ovarian teratomas are tumors originating from all three germ layers, which can appear in a benign (mature) or malignant (immature) form. Peritoneal gliomatosis may be confused with peritoneal carcinomatosis on computed tomography scan.

Aim: The aim of this review was to present clinicopathological correlation between peritoneal gliomatosis and ovarian teratomas, their genetic background and pathogenesis, as well as clinical decision making and therapeutic management through case reports.

Methods: Review articles and case reports published in the last 5 years have been extracted from the Pub Med and Google Scholar databases.

Results: Case reports in three different studies showed ovarian teratoma and peritoneal gliomatosis occurred simultaneously, patients had very similar symptoms even though they were all of different age, which include palpable abdominal mass and increased alpha fetoprotein (AFP) and cancer antigen 125 (CA-125) tumor marker levels.

Conclusion: Ultrasound, computed tomography, and magnetic resonance imaging are specific imaging methods for mature teratoma, however, for immature teratoma, they are not very specific. Histopathological analysis of ovarian tissue is the gold standard. Previous research has shown that teratoma and gliomatosis have a different genetic background, and that one does not cause the other, nor that gliomatosis represents a type of teratoma metastasis. Although no consensus has yet been reached regarding the management of these tumors, it will be focused on further analysis of genetic background, general treatment and chemotherapy management, especially when it comes to pediatric population. Generally speaking, their prognosis is very good, the survival rate is high, and the preservation of the patients' fertility is very satisfactory.

Keywords: ovarian teratoma, peritoneal gliomatosis, histopathology, tumor management

Psychopharmacological Properties of Lysergic Acid Diethylamide (LSD) – A Novel Treatment Approach

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Abstract Text

Background: Lysergic acid diethylamide (LSD) is a potent psychotomimetic drug effective at doses below 1 µg/kg. It affects thought, perception, and mood without significant psychomotor effects. LSD became popular in subcultures like the hippie movement for its mind-opening properties, primarily acting on 5-HT_{2A} receptors. A microdose is about one-tenth to one-twentieth of a recreational dose. Mental health conditions such as depression, anxiety disorders, OCD, PTSD, and panic disorder involve persistent challenges that impair daily functioning.

Aim: Identification of new treatment of psychiatric disorders with LSD according to the published studies. Comparison of efficacy and safety of the treatments according to the published studies. **Methods:** This research is a systematic literature review of an

observational-analytical

nature. Keywords identified were LSD, anxiety, depression, GAD, pharmacology, psychedelics, microdosing, OCD, PTSD, and panic disorder. Searches were conducted on PubMed, Cochrane Library, and Clinical Trials.gov without time limitations, including full-text articles in English. PRISMA guidelines were used for further evaluation based on specific inclusion and exclusion criteria.

Results: 7 published works were used for the descriptive analysis and evaluation. LSD is currently being explored as a potential therapeutic tool in LSD-assisted psychotherapy for conditions such as depression, anxiety, and other psychiatric disorders. Only minor side effects were reported such as nausea, headache, anxiety, increase in blood pressure and heart rate, bad trips, and emotional stress. **Conclusion:** Psychedelic substances like

LSD may offer therapeutic benefits, especially when combined with psychotherapy. Studies indicate that LSD can reduce anxiety in controlled, supervised settings, necessitating larger “randomized, double-blind” studies to confirm its efficacy. To differentiate drug effects from therapy effects, it is crucial to minimize psychological therapy in these studies while ensuring patient safety and support.

Keywords: LSD, anxiety, depression, GAD, psychedelics

Pathohistological Characteristics of Myeloproliferative Diseases in Patients Treated at the University Clinical Center of Vojvodina in Novi Sad

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Introduction: Myeloproliferative neoplasms (MPNs) represent a group of clonal hematologic malignancies first described by Dameshek in 1957. The most common MPN are polycythemia vera (PV), essential thrombocythemia (ET), chronic myeloid leukemia (CML), and primary myelofibrosis (PMF).

Aim: The aim of this study is to analyze the morphological parameters and histopathological characteristics of myeloproliferative diseases in patients treated at the University Clinical Center of Vojvodina in Novi Sad.

Materials and Methods: A retrospective study was conducted at the Center for Pathology and Histology, University Clinical Center of Vojvodina in Novi Sad. Data from a five-year period (January 2019 - December 2023) obtained from the archive of histopathological findings of patients with confirmed diagnosis of this condition were used.

Results: Myeloproliferative diseases predominantly occur in the female population. The average age of onset of myeloproliferative diseases was 64.1 years. The majority of patients were referred with a clinical diagnosis of Morbus myeloproliferative. The most common histopathological diagnosis was Polycythemia vera. Clinical referral diagnosis and histopathological diagnosis were compatible in only 77 patients (31.6%). The most common grade of reticular base in polycythemia vera was grade 1. The most common grade of reticular base in chronic myeloid leukemia was grade 2. In primary myelofibrosis, grade 1 and grade 3 were equally represented. The most common grade of reticulin base in essential thrombocythemia was grade 1. The average cellularity value was 58.6%.

Conclusion: The average age of onset for myeloproliferative neoplasms (MPNs) was 64.1 years. The average age for the onset of initial symptoms in primary polycythemia was 63.9 years. The median cellularity in essential thrombocythemia was 61.9%. Significant discrepancy between our study and the literature highlights the potential importance of analyzing these parameters for timely diagnosis of these diseases.

Keywords: myeloproliferative diseases, histopathological findings, morphological characteristics.

UNCOMMON PRESENTATION OF PELVIC MASS - CASE REPORT

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Introduction: The objective of this study is to provide a detail account of a nonspecific clinical presentation resulting from a pelvic tumor. Mucinous cystadenoma of the ovaries is a kind of epithelial neoplasm that constitutes 40% of non-malignant proliferations and 60% of all ovarian malignancies. Typically, these tumors appear as large cystic masses on imaging, which also describes our situation. In this study, a case of ovarian mucinous cystadenoma is presented. **Case description:** A 32-year-old woman was sent to the OB/GYN ambulance because she had severe anemia and had not responded to iron supplement treatment. As the abdomen was palpated, the patient complained of dull discomfort. An MRI and ultrasonographic assessment both identified a tumor originating from the left ovary. The patient was prepared for a salpingo-oophorectomy. A postoperative pathology evaluation supported the diagnosis of left ovarian mucinous cystadenoma. **Discussion:** In general practice, women with abdominal-pelvic masses provide a challenge since the physical examination results and clinical characteristics are typically vague. Nevertheless, in the case of a localized illness, symptoms often appear gradually and at longer intervals. The significance of conducting a comprehensive evaluation on women experiencing vague abdominal pain followed by anemia is underscored in this case study. The main issue with this benign tumor is that it can cause consequences including hemorrhage, abdominal mass rupture, and torsion. Despite the exceptional frequency of the ailment, if not adequately detected and treated in a timely manner, it can be hazardous in its enormous form. **Conclusion:** In this research, we highlight the importance of early detection and treatment of ovarian tumors before they get large enough to pose a surgical risk and improve the prognosis following surgery. The number of instances that are identified and reported early may rise as knowledge of these illnesses rises.

Keywords: Mucinous cystadenoma, Anemia, Ovarian tumor

Frequency Comparison Of Local Recurrence After Radical And Breast-Sparing Breast Cancer Surgeries

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ABSTRACT TEXT

Background: Breast cancer is one of the most common cancers. Treatment of breast cancer consists of hormonal therapy, chemotherapy, radiation therapy, targeted therapy, immunotherapy, bone-directed therapy and surgery. Surgically, breast cancer is treated with radical or with breast-sparing surgery. Radical surgery of breast cancer implies total amputation of the breast, and is often performed with lymphadenectomy, while with sparing surgery only a part of the breast tissue containing the tumor is removed. Both types of surgery give the possibility of local recurrence, and safety of sparing procedure was evaluated in many clinical trials, similar to Milan 1 Trial, or European Organization for Research and Treatment of Cancer 10801. Frequency of local recurrence is still being researched.

Aim: Our research is conducted in Breast Unit, Cantonal Hospital Zenica, on patients threatened for breast cancer since the beginning of 2020, up to the latest dates in 2024, to compare the frequency of local recurrences after radical and sparing surgery of breast cancer.

Methods: The research is conducted on 50 subjects, treated for breast cancer for the first time. This is a retrospective study using data from the Zenica Cantonal Hospital database. The statistical methodology was done using Chi2 test, with a significance level of Alpha=0.05, and Fisher's exact test when the sample size was small.

Results: Our research shows that out of 50 patients diagnosed with breast cancer, radical surgery was performed in 22 (44%) patients, and local recurrence occurred in 4 (8%) patients. In the rest of the patients (56%), a sparing procedure was performed, and in 12 (24%) patients a local recurrence occurred.

Conclusion: Statistically, the difference in the frequency of local recurrences in these two types of breast cancer surgery is insignificant, with a p-value equal to 0.121, therefore a sparing procedure for breast cancer is a safe option if there are no contraindications.

Keywords:breast cancer, breast-sparing, local recurrence, radical surgery

7

**Pediatrics and
Forensic
Medicine**

Analysis of Factors on Admission in Predicting Development of Acute Cerebellitis During Hospitalization in Pediatric Patients with Chickenpox

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ABSTRACT TEXT

Background: Chickenpox is a viral infection occurring predominantly in pediatric population. It can present with a broad spectrum of manifestations. One of the most serious complications occur in central nervous system with acute cerebellitis (AC) being the most commonly observed complication. **Aim:** Analyzing association of potential predictive factors on development of AC during hospitalization in pediatric patients with chickenpox. **Methods:** The study included pediatric patients hospitalized in the Infectious Diseases Department of Cantonal Hospital of Zenica under the diagnosis of chickenpox during 2022 and 2023. Demographic data, basic clinical and laboratory parameters on hospital admission, as well as the complications occurring during the hospitalization were collected from medical records. **Results:** Overall, 24 patients were hospitalized due to diagnosed chickenpox with a mean age of 4.31 ± 2.99 . The median number of days passed since first symptoms occurred to hospital admission was 6 (interquartile range - IQR 4-7). Nine patients (37.5%) developed central nervous system complications during hospitalization, of which five (55.6%) presented with AC. Patients developing AC during hospitalization were significantly older, compared to the patients who did not develop AC (8.20 ± 2.49 vs. 3.29 ± 2.18 ; $p < 0.001$). Additionally, these two groups of patients showed significant differences in terms of body temperature and several laboratory parameters on admission. Univariable binary logistic regression showed patient age, platelet count and levels of C-reactive protein above normal on admission to be predictors of later development of AC during hospitalization. Only patient age was observed as an independent positive predictor on admission of AC during hospitalization in these patients ($p = 0.049$, $OR = 2.848$, $95\%CI$ 1.006-8.068). **Conclusion:** Patients with AC during hospitalization were significantly older than the patients who did not develop that complication. Age is a single positive independent predictor of developing AC in hospitalized pediatric patients with chickenpox with almost

three-fold increase in chance of developing this complication during hospitalization with each year of increase in age. All five patients diagnosed with AC received treatment with oral antiviral therapy (acyclovir), corticosteroids, and additional supportive measures. Each patient exhibited improvement in their condition and was subsequently discharged from the hospital in full recovery.

Keywords: chickenpox; central nervous system; acute cerebellitis

Analysis of the causes of death of autopsied bodies at the Department of Forensic Medicine of the Medical Faculty in Sarajevo in 2021 and 2022.

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ABSTRACT TEXT

Background: The cause of death is any pathological condition – injury or disease that directly leads to the death of a person. Violent deaths can be characterized as a homicide, suicide, accident, or an unknown manner of death. Generally speaking, mechanical injuries are among the most common injuries and often result in deaths. Mechanical asphyxia includes hanging, drowning, and asphyxia by a foreign body. Based on research results, certain risk groups can be linked to specific causes of death, enabling the targeting of preventive measures towards these groups.

Aim: The aim of this study was to present an overview of the most common causes of violent deaths and identify potential risk groups.

Methods: The research was conducted as a retrospective, analytical, descriptive study.

It included all cases of deaths of individuals who died in 2021 and 2022, and whose autopsies or external examinations were performed at the Department of Forensic Medicine, Faculty of Medicine, University of Sarajevo. During this period, a total of 277 individuals were examined. The analysis was conducted using the Statistical Package for Social Sciences (SPSS) IBM Statistics v26.0 and MS Excel 2016.

Results: During the observed period, 204 men and 73 women were examined. The majority of examined individuals belonged to the age group 66+ years. The largest number of people died from accidental deaths, followed by suicides. A decrease in accidental deaths and an increase in suicides were recorded in 2022 compared to 2021. Mechanical injuries were the most common causes of death, followed by asphyxiation injuries.

Conclusion: Men are more prone to violent death than women. Violent deaths are more common among middle-aged and older individuals. The Covid19 pandemic lead to an increase of suicides and a decrease of accidental deaths. People with lower levels of education have a higher risk of violent death. There is a weak correlation between gender and age categories concerning violent deaths in 2021. There is no statistically significant difference between genders and the nature or cause of violent deaths.

Keywords: cause of death, autopsy, forensic medicine

Biochemical parameters as indicators of the difference between primary and secondary hypothermia

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Abstract Text

Background: Primary hypothermia is caused by excessive exposure to low environmental temperature without any medical conditions prior to that. Secondary hypothermia is caused by alteration in thermoregulation by disease, trauma, surgery, drugs, alcohol or infections.

Aim: Postmortem biochemistry has emerged as a valuable tool in forensic investigations, providing insights into tissue damage and organ dysfunction related to the process of death. The aim of the research is to present various biochemical markers and their meaning in the differentiation of primary and secondary hypothermia

Methods: The total 21 Wistar rats distributed into three experimental groups as:

Control group rats exposed only to hypothermic condition (n=7); Alcohol + hypothermia (n=7); and -Benzodiazepines + hypothermia (n=7). The temperature points that were analyzed in study were: normal core temperature, core temperature during an injection of 0,3 mg/ml ketamine, temperature of immersion and the temperature when rats have entered hypothermia and temperature of death. The research took place at the Veterinary Faculty, University of Sarajevo. Results: Significant

differences in glucose and creatinine levels were observed ($p < 0.001$) between primary and secondary hypothermia. Urea levels also showed significant differences in the groups ($p < 0.001$). Phosphorus levels showed a significant difference ($p = 0.004$), with post-hoc tests confirming significant differences between the alcohol and benzodiazepine groups ($p = 0.014$) and the benzodiazepine and control groups ($p = 0.014$). Potassium levels and the sodium to potassium ratio were significantly different ($p < 0.001$) between all groups, collectively and individually. Additionally, calculated osmolality was significantly different among the experimental groups ($p < 0.001$), with post-hoc analysis confirming significant difference for the alcohol vs. control ($p = 0.013$) and benzodiazepine vs. control ($p = 0.002$) comparisons primary and secondary hypothermia. Conclusion: In summary, while biochemical analyses have advanced the understanding and investigation of deaths related to primary and secondary hypothermia, ongoing research and methodological developments are crucial to address current challenges and enhance the reliability of forensic biochemical testing.

Keywords: forensic, hypothermia, primary, secondary, biochemical analyses

Morphometric Analysis Of The Lingual Frenulum In Young Adult Subjects

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Background: The lingual frenulum is mucosal fold that extends on the midline of the inferior surface of the tongue and connects tongue to the floor of the oral cavity. Its function is to limit certain movements of the tongue. A short and tight lingual frenulum can cause the tongue to be attached to the floor of the oral cavity, a condition known as "tongue-tie" or ankyloglossia, which can be associated with improper swallowing, snoring, and limited tongue movement that prevents food from being removed from the teeth, potentially leading to dental caries.

Aim: To evaluate morphological analysis of lingual frenulum and assess differences according to gender.

Methods: The study was conducted on 55 subjects (27 men, 28 women), students of the Faculty of Medicine at the University of Novi Sad, aged 19 to 24 years. The criteria for participation were the absence of speech difficulties caused by oral cavity malformations or a history of diseases and surgical interventions in the studied region. Parameters from photographs of the subjects (length, front edge, top edge, bottom edge, and surface area of the lingual frenulum) were measured using the "Image J 1.48v" program and statistically analyzed with "IBM SPSS Statistics 23". The comparison of average values between two different groups was performed using the *t*-test, with statistical significance determined at $p < 0.05$.

Results: Out of 55 subjects, 12 did not have a lingual frenulum. The average measurements were for lingual frenulum length 14.25 ± 4.21 mm, for front edge of lingual frenulum 15.22 ± 5.20 mm, for top edge 8.94 ± 5.05 mm, for bottom edge 13.31 ± 5.50 mm, and surface area of the lingual frenulum was 58.50 ± 49.10 mm². Statistical analysis revealed no significant differences between the examined parameters based on gender.

Conclusion: Morphometric characteristics of the lingual frenulum do not show any structure differences according to gender.

Key words: morphometry; lingual frenulum; ImageJ 1.48v

Pediatric Supracondylar Fracture Complicated by Brachial Artery Thrombosis: A Case Report

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Case Report Text

Introduction: Supracondylar fractures are common in pediatric patients due to increased ligamentous laxity and the thin distal humerus. These fractures often result from falls onto an outstretched arm with the elbow fully extended. A rare but severe complication is brachial artery thrombosis.

Case description: A 6-year-old male was admitted to the Pediatric Surgery Department at the Osijek Clinical Hospital Centre for surgical treatment of a distal humerus fracture. The injury occurred when the child fell off an electrical scooter onto his outstretched elbow. He had no significant medical history, chronic medication use, or known drug allergies. On admission, there was visible deformity and swelling of the left elbow, with no movement possible, although the neurovascular status was initially normal. X-rays confirmed a displaced distal humerus fracture. After brief preoperative preparation, open reduction and internal fixation with Kirschner wires were performed. During surgery, mild cyanosis of the left-hand fingers was noted, prompting a color Doppler ultrasound, which revealed brachial artery thrombosis. An immediate thrombectomy was carried out. The early postoperative period was uneventful, with appropriate wound healing. The child was discharged on the fifth postoperative day with satisfactory radiographic findings and stable local and neurovascular status.

Discussion: Supracondylar fractures most commonly occur in children aged 5 to 7 years due to high physical activity levels and fall risks. These fractures are often associated with vascular injuries, especially to the brachial artery, with thrombosis occurring in less than 5% of cases. Prompt intervention is essential to prevent ischemic complications.

Conclusion: Although rare, brachial artery thrombosis should be suspected in any case of cyanosis following a supracondylar fracture to enable timely therapeutic intervention.

Keywords: Supracondylar Fractures, Brachial Artery Thrombosis, Elbow Injuries, Thrombectomy

8

**Public Health
and Education**

Alcoholism: Not Just an Adult Issue - A Case Study of Teen Alcohol Dependency

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Introduction: Alcohol is the most commonly used substance among adolescents, posing significant health and safety risks. Indirect consequences of underage drinking can lead to injuries or death due to aggressive behavior, violence, and accidents. While direct consequences as alcohol dependence and repercussions of chronic alcohol abuse are rare among adolescents, they can occur.

Case description: We report a case of a 19-year-old female diagnosed with alcohol dependence. A few weeks prior to her admission, she underwent detoxification at an urgent care center due to acute alcohol intoxication. The patient began drinking alcohol during her late high school years, initially on weekends. However, over the past six months, her consumption escalated into a daily habit. Her dependence made her unable to continue her education. She also suffers from an unspecified eating disorder and had a depressive episode. Her family history reveals a pattern of alcoholism, with her father being addicted to alcohol and other substances. She reported past use of cannabis and amphetamines but has exclusively consumed alcohol in the past year. Chronic alcohol abuse has resulted in liver damage, evidenced by initial hyperechoic lesions interpreted as fatty liver degeneration and elevated liver enzyme levels. According to Lesch's alcoholism typology, she is classified as Type 1.

Discussion: Research has shown that 70% of high school seniors had tried alcohol in the past, 40% reported using alcohol in the last month and 3% of them reported daily use. Children of alcoholics are 4 to 10 times more likely to develop alcoholism than children who do not have close relatives with alcoholism.

Conclusion: With the right genetic and socioeconomic predispositions, alcohol dependence and related liver damage can develop in individuals as young as nineteen. Pediatricians should screen for underage alcohol use and family alcohol dependence during health visits. Early intervention is key for managing the long-term effects of chronic alcohol abuse.

Keywords: alcohol dependence; adolescent; psychiatry

Body Composition of Medical, Pharmacy, and Dentistry Students Assessed by InBody 270 Device

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Background: Understanding body composition is critical for health and physical fitness, particularly in medical fields where students are future health role models. This study aims to assess and compare the body composition of students from three different faculties—medicine, pharmacy, and dentistry—using the InBody 270 device.

Aim: The aim of this study was to evaluate the body composition among students of medicine, pharmacy, and dentistry, identify potential differences between these groups, and propose appropriate measures to improve lifestyle, including physical activity and diet, where necessary.

Methods: A total of 117 students (67 medicine, 31 dentistry, and 19 pharmacy) participated in the study. Body composition was measured using the InBody 270 device, which assesses parameters such as water content, protein, mineral content, skeletal muscle mass, and body fat percentage. Statistical analysis was conducted using SPSS software (version 27.0) and MedCalc, with non-parametric methods applied due to deviations from normality.

Results: The analysis revealed significant differences in several body composition parameters among the student groups. Medical students exhibited higher water content (34.6%, $p = 0.020$), protein levels (9.4%, $p = 0.010$), and skeletal muscle mass (26.2 kg, $p = 0.011$) compared to pharmacy and dentistry students. While BMI and body fat percentage did not show significant differences, the trends suggest that medical students have a more favorable body composition profile, potentially reflecting different lifestyle or physical activity patterns.

Conclusion: The study highlights notable differences in body composition among students of different faculties, with medical students showing higher levels of muscle mass and hydration. Based on these findings, tailored recommendations for improving lifestyle, including physical activity and dietary habits, may be warranted to enhance overall health and fitness among students in pharmacy and dentistry.

Keywords: Body composition, InBody 270, lifestyle improvement

Education for Scientific Research Work at the Josip Juraj Strossmayer University of Osijek

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Abstract Text

Background: Writing scientific research papers demands not only knowledge about a certain science field but also search, quotation and processing literature skills and knowledge of statistical basics.

Aim: The goal of this research was to question final-year-undergraduate and graduate students at the Josip Juraj Strossmayer University in Osijek about the sufficiency of scientific research education and the frequency of writing scientific research papers. The hypothesis of this paper is that education about scientific research procedures at the University was not adequate.

Methods: In May 2022 a cross-sectional study was conducted as an anonymous online questionnaire that consisted of 5 questions. Differences in nominal data were tested using Chi-square test. The significance level was set at $P < 0.05$.

Results: 153 students answered the questionnaire. The first question: “Did you have formal education in scientific research during your studies?” was answered positively by 83 (54.25 %) participants, significantly different ($P = 0.005$) between the students of the particular study groups (humanistic, natural and technical studies). Students in humanistic and natural studies had similar formal education ($P = 0.814$). Students in humanistic and natural studies considered to have more education about scientific research than students in technical studies ($P = 0.003$ and $P = 0.004$ respectively). 60 (39.22 %) participants answered that they did have participated in scientific research during their studies, significantly different between the study types ($P = 0.006$). Students in humanistic studies participated in more scientific research than students in technical ($P = 0.007$) and natural ($P = 0.672$) studies.

Conclusion: According to the presented results, we can conclude that education about scientific research was not sufficient at the University of Osijek. More than a half of surveyed students did not participate in scientific research.

Keywords: Education; Research knowledge; Students; Surveys and Questionnaires; University

Evaluating the ThoraX App: A Randomized Controlled Study of Traditional versus App-Based Learning Methods in Surgical Training

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Background: The integration of innovative educational tools in medical training can significantly enhance learning outcomes. This study evaluates the effectiveness and satisfaction of a new app-based learning tool, ThoraX, developed by Prof. Štupnik, compared to traditional in-person instruction for teaching Video-Assisted Thoracic Surgery (VATS) to medical students.

Aim: To compare the effectiveness and learner satisfaction between traditional classroom instruction and the ThoraX app for VATS training.

Methods: In a randomized controlled trial, 30 medical students were split into two groups. The control group received conventional instruction, while the experimental group used the ThoraX app, which provides remote feedback on a two-minute exercise video via a detailed scoring sheet. Performance was assessed using a standardized scoring system, and participant satisfaction was measured through a comprehensive questionnaire.

Results: The ThoraX app received high satisfaction scores, with its feedback PDF rated 92.89% in usefulness. Instructional PDFs were reviewed by 55.56% of students. The most challenging task was aligning and rotating the grasper (41.75%). Feedback was a strong motivator, with a mean score of 4.5/5. The majority (98.33%) supported incorporating the app into medical education, and 96.67% would recommend it to peers.

Conclusion: The ThoraX app offers a flexible and effective alternative to traditional instruction, providing personalized feedback and high student satisfaction. Its potential for broader use in surgical education is promising.

Keywords: VATS training, app-based learning, medical education, surgical simulation, feedback

Bladder Endometriosis: A Rare Case Report and Clinical Management

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Introduction: Endometriosis is a polymorphic and multifocal disease defined by the presence of functional endometrial glands and stroma-like tissue outside the uterine cavity, and is associated with fibrosis and an inflammatory reaction. The pelvic cavity is the most common location of endometriotic implants.

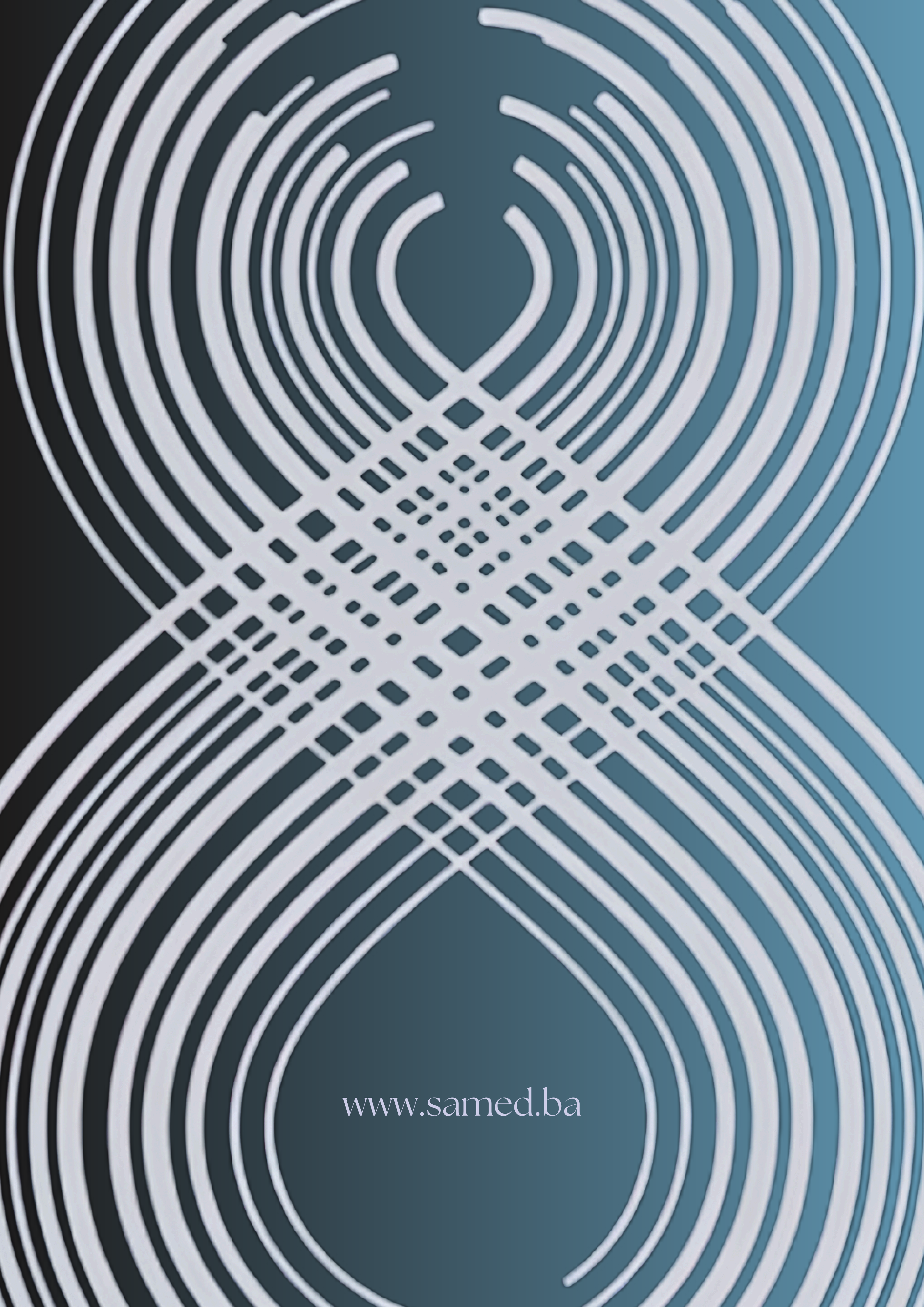
Case description: A 35-year-old woman, at 35 weeks of pregnancy, was admitted to the gynecology department with a history of two previous cesarean sections and diagnosed with endometriosis in the urinary bladder. Her symptoms began earlier in the form of severe abdominal pain and recurrent urinary infections, accompanied by negative urine cultures that did not respond to the prescribed therapy. Examination revealed a distended urinary bladder, with a solid formation invading the bladder wall and connected to the anterior uterine wall. MRI findings showed a solid, T2 isointense formation in the dome of the urinary bladder, centrally and parasagittally on the left side, measuring 33 x 30 x 16 mm with multiple punctate T1W hyperintensities indicating hemorrhagic foci.

During her elective cesarean section, the abdominal wall was opened, and the uterus was carefully incised to deliver a live male newborn weighing 2740g. In the same surgical procedure, a urologist removed a tumor, which was confirmed by pathohistological analysis as a decidual reaction and not a malignancy. The bladder was reconstructed, J-J stents were placed in both ureters, and the bladder was repaired with a cystostomy.

Discussion: Bladder endometriosis, the most common urinary tract manifestation, occurs in about 1% of cases, typically affecting the posterior wall and dome. While cyclic hematuria is a known sign, it appears in less than 30% of cases due to the submucosal nature of lesions. In this case, the absence of hematuria and recurrent UTIs complicate the diagnosis, highlighting the need for imaging like MRI. The patient's cesarean history may have contributed to atypical endometrial implantation, necessitating a multidisciplinary surgical approach during delivery.

Conclusion: This case underscores the imperative of considering bladder endometriosis in the differential diagnosis of women with prior caesarean sections and refractory urinary symptoms.

Keywords: Endometriosis; Urinary Bladder; Pregnancy



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