RIMSA CONGRESS

Rzeszow International Medical Students' Association

RIMSA CONGRESS 2023

Rzeszow International Medical Students' Association Congress 2023

PROGRAM | ABSTRACTS

26-28 May 2023
Rzeszów

Uniwersytet Rzeszowski

Honorary patrons

Uniwersytet Rzeszowski

Uniwersytet Rzeszowski
Kolegium Nauk Medycznych
Instytut Nauk o Zdrowiu

rzeszów
stolica innowacji

Patrons

Uniwersytecki
Szpital Kliniczny
im. Fryderyka Chopina
w Rzeszowie

nowiny24

IFMSA-Poland
Międzynarodowe Stowarzyszenie
Studentów Medycyny

SAMORZĄD
STUDENTÓW
UNIWERSYTETU
RZESZOWSKIEGO

BIZNESiSTYL.pl
Podkarpacki portal opinii

Sponsors

MEDYK

LEPOLEK

więcej niż LEK

F. ARMY

MedPharm Polska
WIEDZA • NAUKA • PASJA

medycyna praktyczna

Partners

AMSERVICE
instalacje alarmy sieci

geo
pard

AUTHORS:
Maksymilian Kłosowicz
Julia Inglot
Agata Wawrzyniak
Sabina Galiniak
Krzysztof Balawender

SCIENTIFIC COMMITTEE

ORGANIZING COMMITTEE

Chairman

Maksymilian Kłosowicz, Julia Inglot

Honorary members

Anita Krowiak, Dorota Waz
Jadwiga Inglot, Joanna Barwacz
Karol Bednarz, Krystian Andryszko
Matylda Mikołajczyk, Michał Mazur
Michał Orczyk

Members

Adrian Morawiec, Agata Glac
Agata Ossolińska, Aldona Sokołowska
Aleksandra Adamczyk, Aleksandra Bartoszek
Aleksandra Karnas, Aleksandra Kotlińska
Aleksandra Lasek, Aleksandra Pawlik
Aleksandra Roztoczyńska, Aleksandra Sołtys
Alicja Ochenduszka, Angelika Wiatr
Anna Jędral, Anna Krzysztofińska
Anna Olszewska, Barbara Nowak
Dagmara Gładysz, Dagmara Olszewska
Daria Grobelny, Daria Warzocha
Daria Wikiera, Ewa Polewczak-Karp
Gabriela Majka, Jakub Klecha
Jan Potkański, Jakub Szarłowicz
Joanna Chomiczewska, Julia Adamiuk
Julia Jastrzębska, Julia Popielska
Justyna Panek, Justyna Warchoł-Kalinowska
Karolina Kopeć, Karolina Jabłońska
Karolina Krowiak, Karolina Miś
Karolina Sobek, Karolina Trębacz
Katarzyna Koszarska, Katarzyna Piekarz
Magdalena Kowal, Magdalena Kowalczyk
Małgorzata Kraska, Maria Jasiewicz
Marta Biskup, Martyna Orzechowska
Mikołaj Grodzki, Natalia Ruszak
Natalia Skubis, Natalia Ziaja
Patrycja Karnas, Patrycja Kolano
Patrycja Marta, Patrycja Przebieradło
Paulina Wierzbińska, Paweł Ściuk
Sandra Kupryjaniuk, Sara Bień
Seweryn Bąk, Sylwia Krasoń
Wiktoria Tabin, Zofia Goliszek

Uniwersytet Rzeszowski

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Welcome message

Ladies and Gentlemen,

Welcome to the Rzeszow International Medical Students' Association Congress 2023 (RIMSA Congress 2023) organized by association of medical student affiliated to the Institute of Medical Sciences, Medical Collage of Rzeszow, University of Rzeszow.

RIMSA Congress 2023 is the first international medical conference organized by Rzeszow University students on such a large scale. The event is aimed at students, doctors, and young scientists who are involved in the field of medicine in its broadest sense. During the conference we heard sessions of student speeches divided into 14 thematic panels. Each panels were preceded by opening lecture held by distinguished Doctors and Professors - personalities known in the world of medicine as authors of numerous publications and authorities in their fields. The offer of our conference, was enriched by a diverse range of workshops, where participants have had the possibility to gain practical skills, necessary for their future work.

On behalf of the whole Scientific and Organizing Committee of the RIMSA Congress 2023 we wish you a pleasant and well spent time! This book contained all abstracts of the scientific papers wchich was presented on RIMSA Congress 2023!

Professor Agata Wawrzyniak
Chairman of Scientific Committee

Krzysztof Balawender M.D., PhD
Vicechairman of Scientific Committee

Sabina Galiniak PhD
Vicechairman of Scientific Committee

Maksymilian Kłosowicz
Chairman of Organizing Committee

Julia Inglot
Chairman of Organizing Committee

DETAILED PROGRAM

Friday (26/05/2023) – main auditorium, A5 building

09:00 – 10:00 – Conference Inauguration
10:00 – 10:30 – Inauguration Lecture: Professor Adam Reich

11:00 – 11:30 – Opening lecture of Pharmacology and Addiction session: Professor Piotr Tutka
11:30 – 14:00 – Pharmacology and addiction session: students' presentations

14:15 – 14:45 – Opening Lecture of Cardiology session: Professor Andrzej Przybylski
14:45 – 17:15 – Cardiology session: students' presentations

17:30 – 18:00 – Opening Lecture of Surgery session: Professor Jacek Szczygielski
18:00 – 20:30 – Surgery session: students' presentations

Friday (26/05/2023) – small auditorium, A5 building

11:30 – 12:00 – Opening Lecture of Anesthesiology and Intensive Care session: Professor Bogumiła Wołoszczuk-Gębicka
12:00 – 14:30 – Anesthesiology and Intensive Care session: students' presentations

14:45 – 15:00 – Opening Lecture of Gynecology session: Professor Krzysztof Gałczyński
15:15 – 17:45 – Gynecology session: students' presentations

Friday (26/05/2023) – workshops

08:00 – 09:30 – Dermatoscopy workshops: Magdalena Żychowska M.D., PhD (G4 building)

11:00 – 12:30 – Histology workshops: members of Students Histology Club of Rzeszow University (A5 building)

14:30 – 16:00 – Laparoscopic workshops: Krzysztof Balawender M.D., PhD, Piotr Młodożeniec M.D., Mateusz Zasadny M.D., Rafał Przybyła M.D. (CSM UR)

16:00 – 17:30 – Echocardiography workshops: Magdalena Kisiel M.D., Maurizio Porcu M.D., FESC (CSM UR)

16:00 – 18:00 – Newborn Resuscitation workshops: Kamil Gierek M.D. (CSM UR)

Saturday (27/05/2023) – main auditorium, A5 building

09:00 – 10:00 – Opening ceremony

10:15 – 10:45 – Opening Lecture of Neuroscience session: Adrian Chrobak M.D., PhD
10:45 – 13:15 – Neuroscience session: students' presentations

13:30 – 14:00 – Opening Lecture of Internal Diseases session: Maurizio Porcu M.D., FESC
14:00 – 16:30 – Internal Diseases Session: students' presentations

16:45 – 17:15 – Opening Lecture of Immunology session: Professor Jacek Tabarkiewicz
17:15 – 19:45 – Immunology session: students' presentations

Saturday (27/05/2023) – small auditorium, A5 building

10:45 – 11:15 – Opening Lecture of Oncology and Hematology session: Professor Beata Sas-Korczyńska
11:15 – 13:45 – Oncology and Hematology session: students' presentations

14:00 – 14:30 – Opening Lecture of Poster session I: Professor Tommaso Cassano
14:30 – 16:30 – Poster Session I: students' presentations

17:15 – 17:45 – Opening Lecture of Poster Session II: Professor Małgorzata Kapica
17:45 – 19:45 – Poster Session II: students' presentations

Saturday (27/05/2023) – workshops

10:00 – 11:30 – ECG workshops: Professor Wojciech Wąsek, Maurizio Porcu M.D., FESC (A5 building)

10:00 – 11:30 – Ultrasonography workshops: Iwona Kucharska-Miąsik M.D.,
Jadwiga Krukowska M.D., Monika Wisz M.D. (CSM UR)

Sunday (28/05/2023) – main auditorium, A5 building

09:00 – 09:30 – Opening Ceremony
09:30 – 10:00 – Inauguration Lecture: Professor Kazimierz Widenka

10:15 – 10:45 – Opening Lecture of Pediatric session: Professor Marta Rachel
10:45 – 13:15 – Pediatric session: students' presentations

14:00 – 14:30 – Opening Lecture of Genetic session: Antoni Pyrkosz M.D., PhD
14:30 – 17:00 – Genetic session: students' presentation

Sunday (28/05/2023) – small auditorium, A5 building

10:45 – 11:15 – Opening Lecture of Neurology session: Natalia Leksa M.D.
11:15 – 13:45 – Neurology session: students' presentations

14:30 – 15:00 – Opening Lecture of PhD session: Professor Urszula Kosior-Korzecka
15:00 – 15:30 – Opening Lecture of PhD session: Patrycja Pańczyszyn-Trzewik PhD
15:30 – 17:30 – PhD session: students' presentation

Sunday (28/05/2023) – workshops

10:00 – 11:30 – Surgical suturing workshops: Anna Pliszka M.D., Michał Kłos M.D. (CSM UR)

13:00 – 14:30 – Neurology workshops: Natalia Leksa PhD

18:00 – 19:00 – Closing ceremony

LIST OF THE SESSION:

1. **Anesthesiology and intensive care**
2. **Cardiology**
3. **Genetics**
4. **Gynaecology**
5. **Hematology and oncology**
6. **Immunology**
7. **Internal diseases**
8. **Neurology**
9. **Neurosciences**
10. **Pediatrics**
11. **Pharmacology and Addiction**
12. **Phd session**
13. **Poster session I**
14. **Poster session II**
15. **Surgery**

1. Anesthesiology and intensive care

- ***Untypical mechanism of motorbike accident - Forensic Medicine Case Report***- Anna Kaczmarska, Piotr Juda, Milena Nowak, Łukasz Wójcik, Dawid Pajor

- ***Severe complication after general anesthesia in a dental implant procedure*** - Agnieszka Kaczmarska, Zuzanna Paluch, Joanna Chajec, Bartosz Mazur

- ***Case report: Sepsis due to infection of the prick wound Robinia acacia*** - Michał Żak, Julia Krasińska, Magdalena Królikowska, Anna Kowal

- ***The analysis of injury-related deaths with blood alcohol content over 3,5 ‰*** - Ewa Bokiniec, Patrycja Kłaptocz, Katarzyna Łukoś, Paula Słabosz

- ***The case of a teenager with decapitation on toboggan run – Forensic Medicine Case Report*** - Anna Kaczmarska, Piotr Juda, Dawid Pajor, Milena Nowak, Łukasz Wójcik

- ***Pain management of atypical infiltrations in the course of CLL – a case report*** - Joanna Chajec, Jakub Buziak, Patrycja Bździuch, Katarzyna Cencelewicz, Julia Siek

- ***Polish version questionnaire Quality of Recovery*** - Karol Bednarz, Jadwiga Inglot, Julia Inglot, Maksymilian Kłosowicz, Gabriela Trestka

2. Cardiology

- ***Fatal acute myocarditis secondary to chronic eosinophilic pneumonia*** - Augustė Senulytė
- ***Coronary vasospasm resulting in myocardial infarction – a case report*** - Jakub Michal Zimodro, Magda Mucha
- ***Recurrent postinfarction ventricular tachycardia in multimorbid patient with implantable cardioverter defibrillator – a complex case report*** - Magda Mucha, Jakub Zimodro
- ***Hemoglobin-Based Oxygen Carriers as a Blood Substitutes*** – Katarzyna Gołda, Natalia Świst
- ***Left Atrial Appendage Occlusion Performed with Watchman Device – Mortality Rate and Death Causes Based on MAUDE Database Reports*** - Jakub Batko, Jakub Rusinek, Daniel Rams

3. Genetics

- ***FRMPD4 gene as a cause of untypical phenotype*** - Benedykt Baljon, Justyna Bogdan
- ***Tetralogy of Fallot with DiGeorge syndrome*** - Yana Nyankovska, Katarzyna Gunia
- ***A clinical case of a 9-year-old boy with hereditary distal motor neuropathy-an unknown variant of the REEP1 gene*** - Katarzyna Gunia, Yana Nyankovska
- ***Setmelanotide - a new drug to treat obesity*** - Aleksandra Kotlińska, Katarzyna Koszarska
- ***Clinical features of a patient with an unbalanced chromosomal rearrangement in the form of 46, XY,der(8)t(3;8)(q26.3;p23.1)*** - Jadwiga Inglot, Karol Bednarz, Julia Inglot, Maksymilian Kłosowicz

4. Gynaecology

- ***Pregnancies in a woman with Turner syndrome (45 X0) – a huge challenges*** - Maja Kłopecka, Paulina Przybysz
- ***Intramural fibroids in the lower part of the uterine body in a 52-year-old woman - a case report*** - Dominika Bać
- ***Biomarkers for the Prediction of Pre-Eclampsia in Early Pregnancy*** - Lorna Muscat Baron
- ***Breast cancer and the quality of women's sexual life*** - Gabriela Sołga, Janina Bażan
- ***Pregnancy after hip replacement in woman with idiopathic osteoporosis*** - Wiktoria Garbacz, Aleksandra Ziółkewicz
- ***Congenital first degree heart block in fetus*** – Maria Jasiewicz, Daria Warzocha
- ***Hydoprops fetalis in 36-week fetus*** – Daria Warzocha

5. Hematology and oncology

- ***Melatonin in Cancer Treatment*** - Kinga Dyndał, Karolina Czerkiewicz, Paweł Cybula

- ***Primary central nervous system lymphoma - a fulminant course in a 47-year-old patient*** - Martyna Orzechowska, Adrian Potocki

- ***Nanomedicines Targeting Lung Cancer*** - Tomaszek Barbara

- ***Microsatellite instability in endometrial cancer - immunohistochemical evaluation of the expression of MLH1, PMS2, MSH2 and MSH6/MMR proteins*** – Aleksandra Jeńć, Aleksandra Roztoczyńska

6. Immunology

- ***Platelets and their role in the immune system*** - Natalia Świst , Katarzyna Gołda
- ***Acute Graft-v-Host Disease following allogeneic hematopoietic stem cell transplantation in patient with Acute Lymphoblastic Leukemia*** - Julia Stańczyk
- ***Immune thrombocytopenic purpura linked with lymphoma therapy*** - Ilona Zembrzuska--Kaska
- ***A case of severe juvenile idiopathic arthritis in an adult*** - Emilia Saj
- ***Still's disease treatment process - case study*** - Justyna Bogdan, Benedykt Baljon
- ***Fibrodysplasia ossificans progressive (FOP)- advances in diagnosis and treatment*** - Aldona Sokołowska

7. Internal diseases

- ***Therapy in Crohn's disease with two biologic drugs. Case report*** - Aleksandra Karnas, Sabina Skrzynecka, Izabella Prządo, Łukasz Karaś , Mateusz Banasik

- ***Rhnull - a golden blood*** - Michał Orczyk, Martyna Orzechowska

- ***No-reflow phenomenon in STEMI patients is still a challenge for cardiologists*** - Małgorzata Biernikowicz, Weronika Pilch

- ***Fatal ischemic complications of procedures performed in mitral part of coronary sulcus can be avoided?*** - Jakub Batko, Daniel Rams, Wojciech Olejek

- ***Case of 56-years old women with rare hematological disease*** - Konrad Wróbel, Justyna Bogdan, Monika Błądek, Benedykt Baljon

- ***A long and difficult way to determine the cause of recurrent mouth sores and ulcers in a teenager*** – Emilia Saj

- ***A review of recent findings in the dietary treatment of prediabetes, and type 2 diabetes with a focus on low carbohydrate intake*** – Krystian Andryszko, Karolina Krowiak, Anita Krowiak

8. Neurology

- ***The relationship between sleep disturbances and mental health – literature review and survey research*** - Karolina Czerkiewicz, Kinga Dyndał, Paweł Cybula
- ***The role of neurotrophins in the pathogenesis and pharmacology of mental disorders*** - Anna Antonik
- ***Role of mitochondria dysfunction in depressive disorder – a clinical overview*** - Antonina Pieluszczak
- ***Diagnostic problems in identifying the etiology of symptoms in a thirty-eight-year-old female*** – Aleksandra Fryncel
- ***Synuclein Alpha in Parkinson's disease*** - Wiktor Marek
- ***Esketamine as a novel drug for the treatment of depression - clinical safety and efficacy profile*** - Maciej Kozłowski

9. Neurosciences

- ***The role of aquaporin 4 (AQP4) in the pathogenesis and therapy of Alzheimer's disease (AD)*** - Martyna Sarzyńska, Kinga Polityńska, Sylwia Lepek

- ***How sleep affects various aspects of life? The ways to improve sleep quality*** - Paweł Cybula, Kinga Dyndał, Karolina Czerkiewicz

- ***Changes in the mental health and education of Ukrainian students amidst wartime*** - Anatolii Miahkokhlib, Anastasia Zezekalo, Sogebi Mofiyinfoluwa Oluyemisi, Odulate Olawale Oluwatise, Veronika Mamontova

- ***The Microbiota-Gut-Brain Axis – Role in the Pathomechanism and Pharmacotherapy of Depressive Disorders*** - Klaudia Wojciechowska, Michał Broszkiewicz

- ***Young – Onset Parkinson's Disease – Case Report*** - Katarzyna Koszarska, Aleksandra Kotlińska

10. Pediatrics

- ***Ethical challenges in a case with mosaicism*** - Milena Wątek, Kinga Zaczyk

- ***Mechanical thrombectomy in pediatric ischemic stroke - a case report*** - Kinga Polityńska, Sylwia Lepak

- ***Difficulties in diagnosis and treatment of invasive aspergillosis in extremely low birth weight premature infant*** - Emilia Dybała, Anna Grabowska

- ***Life-saving actions in extremely preterm infants on the verge of survival: A retrospective study- 2004-2022*** - Julia Kuszewska, Oliwia Bolek, Dominika Paw, Marta Szymska

11. Pharmacology and Addiction

- ***Affective disorders in children and adolescent - diagnostic challenges, clinical safety and efficacy profile of standard pharmacotherapy*** - Małgorzata Gierlicka

- ***Effects of marijuana on the kidneys*** - Weronika Buczek, Mikołaj Wiśniewski, Jolanta Wiśniewska, Anna Oleszczuk

- ***The effect of aspirin intake on serum sFLT1 levels in women at high risk of preeclampsia in pregnancy*** - Lorna Muscat Baron,

- ***Sex differences in antiplatelet therapy: a review*** - Jakub Michal Zimodro, Yolande Appelman

- ***Monoclonal antibody as the new future in the treatment of episodic and chronic migraine*** - Bernadetta Jakubowska, Izabela Kiebała

12. Phd session

- ***Perception of pathologists in Poland about artificial intelligence and machine learning in medical diagnosis; a cross-sectional study*** - Alhassan Ali Ahmed, Agnieszka Brychcy, Mohamed Abouzid, Martin Witt

- ***SOX10 expression in mammary gland carcinomas and adenomas in female dogs*** - Joanna Bubak ,Rafał Ciaputa , Izabela Janus , Kacper Żebrowski, Aleksandra Piotrowska

- ***Mucosal IgE production in local allergic rhinitis, a potential diagnostic criterion, and an implementation in allergen immunotherapy*** - Mohamad Mahdi Mortada

- ***The triple network, kinaesthesia and temporal experience: An approach to the disturbance of Bodily Subjectivity in Schizophrenia*** - Camilo Sanchez

- ***The altered expression of GDF11 – TGF-β family member - during intestinal inflammation and colitis-associated colorectal cancer*** - Weronika Machelak, Emilia Januszkiewicz, Mikołaj Mierzejewski

13. Poster session I

- ***Chlorellosis in humans and animals*** - Julia Florek, Mateusz Bartoszek
- ***Total antioxidant capacity of urine in patients with urogenital cancers*** - Agnieszka Mokrzyńska, Patrycja Olech
- ***Total antioxidant capacity of urine in patients with urolithiasis*** - Patrycja Olech, Agnieszka Mokrzyńska
- ***Oxidative stress in patients with benign prostatic hyperplasia*** - Zofia Kobylińska
- ***Isolation, breeding and characteristic of cells taken from the pulp of the tooth use in regeneration medicine*** - Dawid Jeżewski, Nicole Nowak, Joanna Bubak
- ***Prevention methods of white spot lesions in orthodontic patients with fixed orthodontic appliances: a systematic literature review*** - Smilte Paldauskaitė, Roberta Lekavičiūtė
- ***Climate Change, Energy Consumption, and Conflict: Implications for Public Health and Sustainable Development*** - Magnus Heimbucher
- ***Endovascular treatment of popliteal and shin artery occlusion – case study*** - Gabriela Sołga, Julia samczyk, Natalia Szawara
- ***Expression of prodynorphin and kappa opioid receptors in experimental colorectal cancer*** - Mikołaj Mierzejewski, Emilia Januszkiewicz, Weronika Machelak
- ***Comparison of treatments for alopecia areata based on clinical trials*** - Aleksandra Roztoczyńska, Aleksandra Jeńć
- ***Modifiable risk factors for pancreatic cancer and hepatitis B*** – Aldona Sokołowska, Maria Przygoda
- ***Atypical manifestation of hypopituitarism*** – Julia Inglot, Maksymilian Kłosowicz, Jadwiga Inglot, Karol Bednarz

14. Poster session II

- ***Activation of Kappa Opioid Receptors in therapy of inflammatory bowel disease*** - Emilia Januszkiewicz, Mikołaj Mierzejewski, Weronika Machelak

- ***Clinical applications of metabolomics*** - Aleksandra Burbelka

- ***Multidrug-resistant bacteria - current state and prospects for the future*** - Łukasz Zarębski, Aleksandra Burbelka

- ***Use of monoclonal antibodies in melanoma immunotherapy*** - Aleksandra Roztoczyńska, Aleksandra Jeńć

- ***Chemobrain after anticancer treatment - when the necessary treatment has unpleasant consequences*** - Błądek Monika, Drygała Karolina, Barszcz Gabriela

- ***The regenerative potential of mesenchymal stem cells in the treatment of central nervous system diseases*** - Oliwia Krawczyk, Marcelina Kozicka

- ***Bisphosphonates in rheumatic diseases*** - Patryk Brzezicki

- ***You only look as good as your microbiome - how microbiome affects skin condition*** - Drygała Karolina, Błądek Monika, Barszcz Gabriela

- ***Histolopathological changes in hypertrophic cardiomyopathy*** – Maksymilian Kłosowicz, Julia Inglot, Jadwiga Inglot, Karol Bednarz

- ***Cytisine - the drug for the treatment of nicotine addiction. New research perspectives*** - Karolina Maternia-Dudzik, Jagoda Maternia, Marcin Skotnicki, Marek Pyda, Piotr Tutka

15. Surgery

- ***Guillain-Barre´ syndrome following craniotomy for glioblastoma multiforme: a rapid systematic review*** - Andrea Cuschieri

- ***Evaluation of clinical efficacy of electroconvulsive therapy in mental disorders*** - Izabela Kiebała, Bernadetta Jakubowska

Anesthesiology and intensive care

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Untypical mechanism of motorbike accident – Forensic Medicine Case Report

Authors: Anna Kaczmarska, Piotr Juda, Milena Nowak, Łukasz Wójcik, Dawid Pajor

Supervisor: Tomasz Konopka

Affiliation: Student's Scientific Group of Forensic Medicine, Department of Forensic Medicine, Jagiellonian University Medical College, Cracow, Poland

Type of the paper: Clinical case

Introduction and aim. The mechanism of motorbike accidents usually involves another road vehicle, loss of control, or collision with a fixed roadside object. However, fatal accidents involving a motorbike and a glider have not been reported in the medical literature yet. In this case, we will present the results of the autopsy, and analyse the mechanism of injuries sustained in relation to a typical motorbike accident.

Description of the case. The 21-year-old man entered the airport area on a motorbike, which resulted in a collision with a glider approaching land. As a result of that accident the motorcycle driver died on the spot. At autopsy, the dissection of the skull showed subarachnoid hemorrhage. Further examination of the brain revealed the presence of liquid blood in the ventricles and flaccid choroid plexuses. During the inspection of the thorax, ecchymosis in the hilar region and ruptured bronchi were present. The pleural cavities contained liquid blood. Among the injuries to the bones of the trunk and limbs, we reported the destruction of the structures of the atlantooccipital joint, the fracture of the manubrium, numerous fractured ribs, and fractures of the humerus and femur.

Conclusion. The pattern of injury reported in that case is consistent with these which are most commonly described as a motorcycle-related trauma in the literature. As it wasn't mentioned in a report whether or not the victim was wearing a helmet, we can only assume that wearing it could help with the distribution of the impact energy however it wouldn't prevent impulse transmission to intracranial structures.

Keywords. Forensic Medicine, Glider, Motorbike Accident, Untypical Mechanism

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Severe complication after general anesthesia in a dental implant procedure

Authors: Agnieszka Kaczmarska, Zuzanna Paluch, Joanna Chajec, Bartosz Mazur

Supervisor: Michał Borys

Affiliation: Student's Scientific Association, II Department of Anesthesiology and Intensive Care, Medical University of Lublin, Poland

Type of the paper: Clinical case

Introduction and aim. Dental treatment under general anesthesia is often carried out in a hospital setting. Still, it is possible to perform the procedure in an ambulatory setting in a private dental clinic. Treatment in a hospital setting also has a lower risk of complications than private dental clinics due to complete access to qualified personnel, equipment, and medications in case of resuscitation.

Description of the case. A 57-year-old patient with a history of multiple plastic surgeries underwent dental implant insertion under general anesthesia at a private dental clinic. After the anesthesia was ended, the patient was still unconscious, an emergency medical team was called, and the patient was transported to the hospital. On admission to the ICU, the patient's general condition was severe- the patient was unconscious, and initially, her airway was maintained with an oropharyngeal tube. Subsequently, analgosedation was initiated, and the patient was intubated and connected to a ventilator. Also, gastrointestinal feeding treatment via a nasogastric tube was implemented. Later, a tracheostomy emerged, and a percutaneous endoscopic gastrostomy was inserted. Computer tomography and MRI head scans were performed several times, and irreversible damage to the cerebral cortex was confirmed. During the 29-day long stay at ICU, the patient was unconscious, periodically opened her eyes without fixating on her vision, and reacted to stimuli with pathological reflexes. Given the lack of any perspective on neurological condition improvement, the patient was being prepared for transfer to a Care and Treatment Facility with the possibility of ventilator therapy.

Conclusion. Despite the undoubted advantages and benefits of dental treatment under general anesthesia, this method should not be abused, and the risk of complications must be considered. Often patients decide on private dental treatment under general anesthesia because of pain. However, patients and dentists should be aware of the risks of such procedures and different pain management options. Private treatment offices are not undergoing strict inspections of medical equipment as in hospitals, which can be dangerous for patients.

Keywords. Anesthesiology, Dental Implant Procedure, General Anesthesia

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Case report: Sepsis due to infection of the prick wound *Robinia pseudoacacia*

Authors: Michał Żak, Julia Krasińska, Magdalena Królikowska, Anna Kowal

Supervisor: Szymon Białka

Affiliation: Department of Anesthesiology and Intensive Care in Clinical Hospital number 1 in Zabrze, Medical University of Silesia in Katowice, Katowice, Poland

Type of the paper: Clinical case

Introduction and aim. *Robinia pseudoacacia* L. is a plant that produces toxins such as the robin protein toxalbumin and saponins. Despite the potential danger posed by R. *pseudoacacia* toxins, there are few reported cases of poisoning in humans.
Description of the case. We present the course and results of treatment in the intensive care unit of a 61-year-old patient who developed wound superinfection and subsequent sepsis due to a *R. pseudoacacia* prick in the right mandibular angle region. The patient was initially brought to the emergency room for hyperglycemia of 500 mg% with hypoxia (SpO2 90%) and hypotension (RR 90/60 mmHg), with a one-week history of progressive weakness and fever, and progressive skin lesions of the right mandibular angle area after a prick from *R. pseudoacacia* while gardening. The patient was then transferred to the ICU with a diagnosis of sepsis in the course of neck abscess. In the unit, continuous monitoring of vital signs was started, and norepinephrine infusion under RR control and oxygen therapy were continued. Empirical antibiotic therapy was continued, intensive fluid therapy and insulin therapy, diuretics and a probiotic were included, and water-electrolyte disturbances were equalized. After surgical consultation, the neck wound was treated in the operating theater. After a week of treatment in the ICU, the patient began to moderate, and the neck wound began to heal.
Conclusion. The impact on poisoning by *R. pseudoacacia* compounds can be influenced by the site of the prick as well as the clinical condition before the poisoning. Poisoning with these toxins can be a life-threatening condition and the patient may require ICU admission and surgical supplies.
Keywords. Neck Abscess, *Robinia pseudoacacia*, Septic Shock, Toxalbumin

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The analysis of injury-related deaths with blood alcohol content over 3.5 ‰

Authors: Ewa Bokiniec, Patrycja Kłaptocz, Katarzyna Łukoś, Paula Słabosz

Supervisor: Tomasz Konopka

Affiliation: Student's Scientific Group of Forensic Medicine, Department of Forensic Medicine, Jagiellonian University Collegium Medicum, Cracow, Poland

Type of the paper: Research paper

Introduction and aim. Alcohol is a factor that promotes injury-related death - poisoning, vehicle accidents, falls, drownings. Moreover, alcohol consumption contributes to the increase in suicide rate - blood alcohol content is present in many cases. Occasionally, its concentration is so high that it is questionable whether it is possible to commit a suicide or drive with such a high BAC. The study aimed to investigate if individuals with BAC over 3.5‰ can remain active and die of other reason than alcohol intoxication.

Material and methods. Retrospective analysis of sectional protocols of people with BAC over 3.5‰ who did not die because of lethal blood concentration of alcohol from the Department of Forensic Medicine in Cracow in the years 2014-2022 was conducted. After finding cases with BAC over 3.5‰ who did not die as a result of alcohol intoxication, the analysis of the causes of their deaths was performed.

Results. Having excluded subjects that did not meet our requirements, we obtained 43 cases in total – 27 pedestrians hit by some vehicle, 4 drivers, 5 murdered victims, 5 died by hanging and 2 by falling from a height. We also searched for the highest possible BAC in general as well as in particular groups that enabled them remain active, and so we documented a pedestrian with BAC 4.8‰ who died in a road accident while crossing the road.

Conclusion. Intoxicated people with BAC over 3.5‰ are able to perform different kinds of activities, which eventually become the cause of their death. Some people are still able to walk, hang themselves or even drive a car. The vast majority of our cases died in car accidents. The results of our research may thus undermine the claim that people with high blood alcohol levels are not capable of committing suicide.

Keywords. Alcohol Blood Levels, Alcohol Intoxication, Mortal Blood Alcohol Concentration

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The case of a teenager with decapitation on toboggan run – forensic medicine case report

Authors: Anna Kaczmarska, Piotr Juda, Dawid Pajor, Milena Nowak, Łukasz Wójcik

Supervisor: Tomasz Konopka

Affiliation: Student's Scientific Group of Forensic Medicine, Department of Forensic Medicine, Jagiellonian University Collegium Medicum, Cracow, Poland

Type of the paper: Clinical case

Introduction and aim. Deaths due to decapitation are occasional, particularly the ones connected to traffic accidents are rarely found in forensic practice. The exact mechanism can vary depending on the method used, but the result is the same – a separation between the head and the body. In this report, we provide an overview of the mechanisms of injury and postmortem changes, in a case of an accident where the cause of decapitation was an effect of collision with a structural element of the toboggan run.

Description of the case. The decapitated body of a 15-year-old man, was found on the toboggan run. On the body, the striped skin abrasion was present on the left upper torso. At autopsy, the examination of the cervical wound showed occipital bone and the articular surfaces of the occipital condyles in the region of the great foramen, with no damage to the cricoid cartilage from the front. In terms of the neck stump, the cervical spine was visible, and the upper surface of the first cervical vertebra was exposed, with a fracture gap of the vertebral arch at the level of the pivot tooth. Histopathological examination of pulmonary tissue showed signs of acute emphysema. Multiple fractures including a fracture of the mandible and right humerus were reported.

Conclusion. The injuries found at the autopsy do not make it clear from which side the force acted. Based on the edges of the neck stump that rise backward, it can be concluded that the forces that took action involved in this accident were bilateral.

Keywords. Accident, Decapitation, Forensic Medicine, Toboggan Run, Teenager

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Pain management of atypical infiltrations in the course of CLL – a case report

Authors: Joanna Chajec, Jakub Buziak, Patrycja Bździuch, Katarzyna Cencelewicz, Julia Siek

Supervisor: Michał Borys

Affiliation: The Student Research Group of the Second Department of Anesthesiology and Intensive Therapy, Medical University of Lublin, Poland

Type of the paper: Clinical case

Introduction and aim. Chronic lymphocytic leukemia (CLL) is a hematological disease characterized by excessive aggregation of abnormal, monoclonal B-lymphocytes in bone marrow. This is the most frequent cause of leukemia in adult population. The leukemia cells may spread from the blood and bone marrow to other parts of the body, and most often they can be localized in lymph nodes, liver and spleen.

Description of the case. A 64-year-old man with history of hypertension and permanent atrial fibrillation was admitted to the Hematolooncology Department with the diagnosis of CLL. The patient complained about pain in lumbar part of the spine. Patient was diagnosed with CLL 9 years earlier and treated with 6 cycles of Fludarabine-Cyclophosphamide-Rituximab (FCR). The patient has been under observation from that time. Although, there was a double increase of WBC in laboratory tests 2 months earlier, main reason for the admission was strong lumbar pain. The pain was initially treated with oxycodone, ketoprofen and different NSAIDs. The patient was ordered MRI, which showed extraspinal lesions proximal to iliac and cruciate bones with the sings of muscle infiltrations and other infiltrations in the lumbar part of the spine. After MRI, the patient was consulted with an anesthesiologist towards the change of pain management. The patient was advised to start therapy with tapentadol, paracetamol, dexketoprofen, pregabalin, and 5-day lignocaine intravenous drip infusion.

Conclusion. Spine is a rare and uncommon localization of CLL infiltrations, and it is seldom described in literature. Patients with these infiltrations suffer from severe pain, so its management is crucial in order to decrease the patient's suffering.

Keywords. CLL, Infiltrations, Pain

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Polish version questionnaire Quality of Recovery

Authors: Karol Bednarz[1], Jadwiga Inglot[1], Julia Inglot[1], Maksymilian Kłosowicz1, Gabriela Trestka[1]

Supervisor: Bogumiła Wołoszczuk-Gębicka[2], Beata Horeczy[3]

Affiliation: [1] Anesthesiology and Intensive Care Student Research Group, College of Medical Sciences, University of Rzeszow, Rzeszow, Poland
[2] Department of Emergency Medicine and Intensive Therapy, College of Medical Sciences, University of Rzeszow, Rzeszow, Poland
[3] Pro-Familia Hospital, College of Medical Sciences, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. The quality of recovery after surgery is an important issue for doctors and patients. Surgery is associated by patients with suffering and mental stress. The aim of the study is to assess the performance of the Polish version of the "Quality of Recovery" questionnaire. This questionnaire is used in many countries around the world to assess the level of patient care, the development of new surgical techniques and the introduction of new drugs.
Material and methods. This was a prospective scientific research feasibility study conducted in PRO-FAMILIA Specialist Hospital in Rzeszow. Before patient recruitment, the Bioethics Committee of the Medical University of Rzeszow in Rzeszow, Poland (permit number KE-4/06/2021) approved the study protocol. Informed consent was obtained from each patient.
Results. The English-language versions of the quality of recovery questionnaire confirm its effectiveness in many operations. The results collected so far suggest, that, Polish-speaking patients, just like English-speaking patients, experience stress related to the operation and the postoperative period. Preliminary results suggest that Polish-speaking patients feel pain, well-being, mood, and the ability to perform basic activities after surgery in a similar way to English-speaking patients.
Conclusion. The Quality of Recovery scale is a reliable and valid instrument for evaluating postoperative quality of recovery in Polish speaking patients. The psychometric characteristics used to assess postoperative quality of recovery were similar to those in the different language version.
Keywords. Cross cultural comparison, Stress with operation, Quality of recovery,

Cardiology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Fatal acute myocarditis secondary to chronic eosinophilic pneumonia

Authors: Augustė Senulytė[1]

Supervisor: Egidija Rinkūnienė[2], Giedrius Navickas[2], Diana Sudavičienė[2]

Affiliations: [1] Clinic of Cardiac and Vascular Diseases, Vilnius University Faculty of Medicine, Vilnius, Lithuania
[2] Centre of Cardiology and Angiology, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania

Type of the paper: Clinical case

Introduction and aim. Eosinophilic myocarditis is a rare subtype of myocarditis with serious morbidity and mortality. We present and analyse the case of 19-year-old male with 1 year history of eosinophilic pneumonia who later developed acute eosinophilic myocarditis.

Description of the case. The patient presented to the hospital with increasing shortness of breath. Patient's medical history include bronchial asthma, allergic rhinitis, recent *Bartonella henselae* and *Bartonella hominis* infections, and electronic cigarette smoking prior to the disease. Previously, extensive laboratory testing (including tests for ANCA autoantibodies and parasitic infections) was performed hoping to determine the cause of eosinophilic pneumonia, but no clear cause was found. Two days after the start of hospitalisation the patient developed sharp squeezing chest pain. Laboratory tests, ECG and ultrasound imaging was performed, revealing the development of myocarditis. Several chest X-rays were performed during the hospitalisation showing increasing inflammatory changes. The patient did not improve despite the treatment. Pulmonary ventilation and later extracorporeal membrane oxygenation were used to compensate for increasing respiratory and cardiac insufficiency. 8 days after the patient died due to cardiac arrest, ultrasound revealed immobile heart muscle and left ventricle thrombosis. Post-mortem histopathological analysis of the heart muscle revealed eosinophilic infiltrates, confirming the diagnosis of eosinophilic myocarditis.

Conclusion. This case report highlights the diagnostic and therapeutic challenges encountered in managing a patient with eosinophilic pneumonia complicated by acute myocarditis, as well as the importance of monitoring patients with eosinophilic pneumonia for potential cardiac involvement.

Keywords. Acute Myocarditis, Eosinophilic Myocarditis, Eosinophilic Pneumonia

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Coronary vasospasm resulting in myocardial infarction – a case report

Authors: Jakub Michał Zimodro, Magda Mucha

Supervisor: Aleksandra Gasecka, Aleksandra Chabior

Affiliation: 1st Chair and Department of Cardiology, Medical University of Warsaw, Faculty of Medicine, Medical University of Bialystok, Bialystok, Poland

Type of the paper: Clinical case

Introduction and aim. 6-8% of patients with acute myocardial infarction (MI) have no significant lesions (>50% of the vessel lumen) in the coronary arteries. MI with non-obstructive coronary arteries (MINOCA) is more likely to occur in women and in young patients with non-ST-segment elevation MI. MINOCA might be caused by coronary vasospasm or microvascular dysfunction. MINOCA is associated with an increased risk of adverse clinical events, thus must be properly treated.
Description of the case. A 49-year-old female with a history of hypertension, nicotine use and family history of MI was admitted to the Cardiology Department with anginal chest pain at rest and elevated high-sensitivity Troponin I level (12000 ng/ml). Electrocardiography (ECG) showed ST-segment elevation in leads II, III, aVF, V4-V6. Coronary angiography detected no significant lesions in the coronary arteries. During the procedure, previously described ST-segment elevation was not observed. Optical coherence tomography revealed early stage of coronary artery disease. Echocardiography found normal systolic and diastolic function of the left ventricle. Intracoronary acetylcholine provocation testing induced anginal chest pain, ST-segment elevation and vasospasm of the anterior descending branch of the left coronary artery, thus confirmed that underlying cause of MINOCA was a coronary vasospasm. Subsequent ECG showed negative T waves in leads II, III, aVF, V4-V6. Pharmacotherapy with a dihydropyridine calcium channel blocker, an angiotensin-converting-enzyme inhibitor and a statin as well as dual antiplatelet therapy was started.
Conclusion. MINOCA should be considered as a differential diagnosis in patients with MI, especially in young smoking women. In the absence of significant lesions in the coronary arteries, further intracoronary tests can recognize the underlying cause of MINOCA. A diagnosis must be followed by initiation of appropriate therapy.
Keywords. Coronary Vasospasm, MINOCA, Myocardial Infarction

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Recurrent postinfarction ventricular tachycardia in multimorbid patient with implantable cardioverter defibrillator – a complex case report

Authors: Magda Mucha[1], Jakub Zimodro[2]

Supervisor: Joanna Rogozik[2]

Affiliations: [1] Faculty of Medicine, Medical University of Bialystok, Bialystok, Poland
[2] 1st Chair and Department of Cardiology, Medical University of Warsaw, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Patients after myocardial infarction (MI) are prone to develop ventricular tachycardia (VT). Sustained VT might result in hemodynamic instability and sudden cardiac death (SCD). Thus, antiarrhythmic pharmacotherapy, ablation and implantable cardioverter defibrillator (ICD) implantation might be required.

Description of the case. A 75-year-old multimorbid male with a recent history of (1) non-ST-segment elevation MI, treated with drug-eluting stent implantation, (2) chronic heart failure with reduced left ventricular ejection fraction (HFrEF) and (3) arrhythmia, initially misdiagnosed as atrial flatter with right bundle branch block aberration, was admitted to the Cardiology Department due to palpitations. Electrocardiography showed wide QRS complex tachycardia with ventricular rate of ca. 130/min. VT was recognized and terminated by electrical cardioversion. Recurrent episode of VT was terminated by administration of lidocaine. Implantable cardioverter defibrillator (ICD) was implanted as a secondary prevention measure. Subsequently, VT reoccurred, thus electrophysiology study (EPS) was performed. EPS revealed VT originating from the basal-septal region, as well as self-limiting VT originating from the left ventricular outflow tract. The former origin was ablated. Pharmacotherapy with amiodarone was initiated. After 10 months, patient was readmitted due to electrical storm. VT was terminated after several attempts of anti-tachycardia pacing. EPS showed VT originating from the basal-septal region, where two post-MI scars were located. Another catheter ablation was performed. No VT episodes were recorded after the procedure.

Conclusion. In post-MI patients with sustained VT and symptomatic HFrEF, ICD implantation should be considered in SCD prevention. Catheter ablation might additionally reduce the number of VT episodes and ICD interventions. Pharmacotherapy with amiodarone, and eventually ablation, should be considered in patients experiencing recurrent episodes of VT or electrical storm.

Keywords. Ablation, Implantable Cardioverter Defibrillator, Myocardial Infarction, Ventricular Tachycardia

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Hemoglobin-based oxygen carriers as a blood substitutes

Authors: Katarzyna Gołda, Natalia Świst

Supervisor: Waldemar J. Grzegorzewski

Affiliation: Institute of Biology and Biotechnology, College of Natural Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. The purpose of this study was to review the knowledge of Hemoglobin-Based Oxygen Carriers based on the available world scientific literature. The paper presents a description of hemoglobin-based oxygen-carrying products. These are semi-synthetic products in which hemoglobin is the oxygen carrier. The structure and function of hemoglobin are also presented. Hemoglobin-Based Oxygen Carriers have been developed to find an alternative to blood transfusions and in ischemic conditions as oxygen therapeutics. The characteristics of an ideal hemoglobin-based blood substitute are described. Subsequently, the preparations on which preclinical and clinical studies have been conducted in recent years – OxyVita and Hemopure/HBOC-201 – were characterized. After testing, OxyVita was not put into use, as neither the US Food and Drug Administration nor the European Medicines Agency recommended its use. Hemopure, on the other hand, could save lives in cases of life-threatening anemia, but did not replace transfused blood. It had one disadvantage – narrowing of blood vessels – and thus was not approved for use in Europe and America. In contrast, the South African Health Products Regulatory Authority approved its use. Due to the urgent need to develop a blood substitute, research is constantly being conducted in this area, which in the future will allow the development of an ideal oxygen-carrying preparation.

Material and methods. Literature search from 2018 up to November 2022 has been conducted on PubMed database. Following keywords were used to search articles: hemoglobin-based oxygen carriers, HbOCs, oxygen carriers, hemoglobin, blood substitutes.

Analysis of literature. Among the most important results, we focused on ideal characteristics of HBOCs, approaches to HBOC products, preclinical and clinical studies for safety and efficacy evaluations, current challenges and future directions.

Conclusion. Due to the urgent need to develop a blood substitute, research is constantly being conducted in this area, which in the future will allow the development of an ideal oxygen-carrying preparation.

Keywords. Blood Substitutes, Hemoglobin, Hemoglobin-Based Oxygen Carriers

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Comparison of adverse effects associated with left atrial appendage closure between LARIAT and AtriClip device based on MAUDE database

Authors: Jakub Batko[1,2], Jakub Rusinek[1,2], Daniel Rams[1,2]

Supervisor: Krzysztof Bartuś[1,2], Radosław Litwinowicz[1,2]

Affiliations: [1] CAROL - Cardiothoracic Anatomy Research Operative Lab, Department of Cardiovascular Surgery and Transplantology, Institute of Cardiology, Jagiellonian University Medical College, Krakow, Poland
[2] SSG of Anatomy, Jagiellonian University Medical College, Krakow, Poland

Type of the paper: Research paper

Introduction and aim. Left atrial appendage closure (LAAC) is an alternative treatment method to reduce the risk of thromboembolism. Epicardial closure can be performed with LARIAT devices or with AtriClip devices. Manufacturer and User Facility Device Experience (MAUDE) database contains device reports submitted to the U.S. Food and Drug Administration (FDA) by mandatory reporters. The aim of this study was to evaluate and compare the adverse effects of epicardial LAAC between LARIAT and AtriClip device based on MAUDE.

Material and methods. Two independent researchers queried the MAUDE to obtain LARIAT and AtriClip device reports from July 2012 to July 2022. Records were included according to study protocol.

Results. 460 reports were obtained from the MAUDE database. 287 studies were included. Problem with device occurred in 46.8% of reports for LARIAT (29/62) vs. 67.1% for AtriClip (151/225) ($p<0.001$). It coexisted with patient complications in 100.0% of cases with device problem in LARIAT (29/29) vs. 14.6% in AtriClip (22/151) ($p<0.001$). Pericardial effusion and hemorrhage appeared more often in LARIAT group (43.5% vs. 2.2%, $p<0.001$, 45.2% vs. 14.4%, $p<0.001$, respectively). Stroke occurred in AtriClip group more often (0.0% vs. 7.8%, $p=0.042$). Left atrial appendage (LAA) and right ventricle (RV) were perforated more often during LARIAT procedure (80.0% vs. 31.6%, $p<0.001$, 16.0% vs. 0.0%, $p=0.021$).

Conclusion. Adverse effects of the procedure with the usage of two different devices differ significantly. Patients who undergo LARIAT procedure are more prone to pericardial effusion and hemorrhage, as well as LAA and RV perforation.

Keywords. Atriclip, Cardiac Surgery, LARIAT, Left Atrial Appendage Closure, Surgery Complications

Genetics

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: FRMPD4 gene as a cause of untypical phenotype

Authors: Benedykt Baljon, Justyna Bogdan

Supervisor: Antoni Pyrkosz

Affiliation: Student Clinical Genetics Scientific Club, Institute of Medical Sciences, Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Fragile X syndrome is a genetic disorder that occurs when a single gene on the X chromosome shuts down. FXS can affect both genders, although females generally have milder symptoms. Mutations are changes in the genetic sequence. These changes occur at many levels, and they can have different consequences. In this paper we present case of a 4 y.o. patient (46, XY) with mutation of FRMPD4 gene.

Description of the case. The presented paper presents a case of a 4-year-old boy (46, XY) with a hemizygous variant of the FMPD4 gene c5074_5077del loci of the Xp22.2 gene [omim*300 830]. At the age of 16 months, the patient was referred to the Department of Pediatric Neurology due to gait disturbances in the form of internal rotation of the right foot, alternating strabismus and hemangioma of the frontal area. The boy also showed difficult contact with the environment, he was unable to signal his needs. At the age of 2 years and 4 months, he was rehospitalized with a suspected seizure disorder. The cerebrospinal fluid (CSF) examination showed decreased levels of neopterin and biopterin. The aminogram revealed decreased levels of aspartic acid, glutamic acid, ornithine, and increased levels of asparagine and tryptophan. In order to rule out the fragile X syndrome (FRAXA), a molecular test was performed, confirming the correct allele. The boy's mother reported about 15-second episodes of eye fixation with turning the head to the side, during which there was no reaction to external stimuli. The boy is also hyperactive with high motor activity, but a tendency to fall. In the opinion of the psychologist, the patient requires intensive activities to support his psychomotor and socio-emotional development. During visits to the genetic clinic, a clear decrease in head circumference dynamics was found - at the age of 3 years and 2 months, the head circumference was 48.3 cm (18th centile), while at the age of 4 it was 49 cm (1st centile). At the age of 3 years and 3 months, the WES Trio examination was performed (add the place of examination), taking into account the patient's family. A partial deletion of the FRMPD4 gene as above was found. The mutation leads to a frameshift and a premature stop codon.

Conclusion. In the case of our patient, this change occurs in the final section of the coding sequence, which determines the gene product with a structure similar to the correct one. Clinical features may correspond to XLID 104 (#omim300 983).

Keywords. FRAXA, FRMPD4 Gene, Genetics, Heterozygous Mutation

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Tetralogy of Fallot with DiGeorge syndrome

Authors: Yana Nyankovska, Katarzyna Gunia

Supervisor: Antoni Pyrkosz

Affiliation: Student Clinical Genetics Scientific Club, Institute of Medical Sciences, Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. DiGeorge syndrome is a congenital condition caused by a genetic mutation, which can manifest with a wide range of symptoms. The severity of DiGeorge syndrome can be very variable. In our case report, we would like to present a clinical example of a patient who, in addition to the DiGeorge syndrome, was diagnosed with Tetralogy of Fallot.

Description of the case. A woman with a daughter, who had prenatally suspected heart defect -tetralogy of Fallot, appealed to the Genetics Clinic for the consultation. The defect was confirmed on the 2nd day of the patient's life by echo screening. Family history with no complications. The patient had morphological developmental abnormalities. A child was observed in the Clinic of Neonatology for 2 weeks, and 6 weeks later she was hospitalized again for balloon sinuplasty. At 8 months, the patient underwent cardiac surgery. As a result of this surgery, a child required nephrology care on a short-term basis. During one of her hospitalisations, a patient was infected by RSV. Considering the clinical features, a FISH genetic test was prescribed, which showed a microdeletion in the 22q11.2 region. Clinically, a patient started to walk at the age of 18 months.

Conclusion. Currently, the child is cardiopulmonary and respiratory in good condition. A patient is under constant cardiological and immunological supervision. After cardiac surgery, developmental parameters improved significantly, a patient's motor and intellectual development.

Keywords. Congenital Genetic Defects, Digeorge Syndrome, Tetralogy of Fallot

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: A clinical case of a 9-year-old boy with hereditary distal motor neuropathy – an unknown variant of the REEP1 gene

Authors: Katarzyna Gunia, Yana Nyankovska

Supervisor: Antoni Pyrkosz

Affiliation: Student Clinical Genetics Scientific Club, Institute of Medical Sciences, Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Hereditary motor neuropathy type VB (HMN5B) is a rare neurological disorder inherited in an autosomal dominant way. It is characterized by weakness and atrophy of the distal muscles, mainly the internal muscles of the hands and of the lower extremities. A mutation of the REEP1 gene is responsible for the onset of the disease. This scientific work describes a clinical case of a nine-year-old boy with HMN, who had an undescribed variant of the REEP1 gene.
Description of the case. Parents with a 9-year-old son, previously consulted at the Neurology Clinic because of the neuropathic neuromuscular disorders, appealed to the Genetics Clinic. Due to the recommendation, they did the Trio-WES/NGS test at the Neurology Clinic. The test result showed a pathogenic mutation of the REEP1 gene of the autosomal dominant sense change type, inherited from the Mother. The gene variant turned out to be unknown. Changes with lower expression of neurological function were found in the woman's Family (Father, Siblings). Based on the Trio-WES/NGS examination and clinical picture, the boy was diagnosed with hereditary distal motor neuropathy type VB. Currently, he is in good contact, the neurological deficit includes an abnormal gait with a drooping right foot. The patient is under neurological care.
Conclusion. Hereditary motor neuropathies are a heterogeneous group of conditions, which are included into the group of genetic neuropathies. The REEP1 mutations can be identified in two other diseases: hereditary spastic paraplegia and congenital axonal neuropathy.
Keywords. Motor Neuropathy, Mutations, REEP1

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Setmelanotide – a new drug to treat obesity

Authors: Aleksandra Kotlińska, Katarzyna Koszarska

Supervisor: Mariusz Partyka

Affiliation: Students Research Circle of Endocrinology and Nuclear Medicine, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. The purpose of this paper is to provide information on genetically conditioned obesity and to present a modern genotyping-based therapy for obesity using setmelanotide. The connection between obesity and genes has been proven many years ago. Genetics plays significant role in the predisposition to obesity and may contribute up to 70% risk for this disease. Due to the genetic basis, two main groups of obesity can be distinguished – the common polygenic obesity and the rare monogenic obesity. Obesity determined by a mutation of a single gene is extremely rare among the general population, however, in a group of children with early severe obesity, it can underlie 5% to as many as 30% of cases. The genes responsible for this type of obesity are most often associated with the leptin/melanocortin pathway, which proper functioning is essential for energy balance. Advances in genetics make it possible to select an appropriate, cause-specific treatment. The prototype of gynotype – based obesity therapy is recombinant human leptin therapy in patients with its genetically determined and very rare deficiency. The second genotype – based treatment for obesity is setmelanotide, a selective MC4R agonist, which was approved by the FDA in November 2020 for the treatment of rare, monogenic obesity disorders caused by three rare genetic disorders: pro-opiomelanocortin deficiency, proprotein subtilisin/kexin type 1 deficiency and leptin receptor deficiency, confirmed by genetic testing.

Material and methods. The paper is based on a review of papers in the PubMed network on issues related to the topic of genetically conditioned obesity and modern therapy with setmelanotide.

Analysis of literature. The articles on which the work was based concerned the subject of rare cases of gene-related obesity. The papers outline the mechanism of these diseases – mutations in the leptin-melanocortin pathway affecting POMC, LEPR and PCSK1 as well as their impact on satiety sensation. Only since 2020 when setmelanotide was approved is there a possibility of treating such disorders. Its efficacy is evidenced by the results of clinical trials, including a phase three study in which among patients with POMC deficiency 80% of patients achieved more than 10% weight reduction, while in patients with LEPR mutation such weight loss affected 45.5% of patients with a significant reduction in the sensation of hunger in both of these groups.The presented results indicate the effectiveness and safety of setmelanotide, which can completely change the lives of patients with these rare diseases.

Conclusion. Research directed at the genetic basis of obesity may become increasingly important, information about abnormalities in the genotype can be used to predict its occurrence, assess its prognosis and, importantly, to select the best and most effective treatment allowing an improvement in the patient's quality of life

Keywords. Genotype-Based Treatment, Obesity, Setmelanotide

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Clinical features of a patient with an unbalanced chromosomal rearrangement in the form of 46,XY,der(8)t(3;8)(q26.3;p23.1)

Authors: Jadwiga Inglot, Karol Bednarz, Julia Inglot, Maksymilian Kłosowicz

Supervisor: Antoni Pyrkosz

Affiliation: Student Clinical Genetics Scientific Club, Institute of Medical Sciences, Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Structural chromosome aberrations result from the breakage of one or more chromosomes and the abnormal joining of their fragments during cell division. Unbalanced chromosome aberrations lead to a loss or gain of genetic material. The incidence of chromosome aberrations among live-born children is estimated at 0.5%. Chromosome aberrations can occur spontaneously or under the influence of mutagenic agents such as ionizing radiation, ultraviolet radiation or high temperature. Duplication is the doubling of a chromosome fragment, while deletion is the loss of a chromosome fragment.

Description of the case. This report discusses a case of an 11-year-old boy, who was referred to a genetic clinic, after a multi-specialist consultation. The patient was found to have an unbalanced translocation associated with a duplication of a fragment of the long arm of chromosome 3 in the q26.3 region and a deletion of a fragment of the short arm of chromosome 8, region p23.1. The aberration is the result of a balanced translocation in the mother. The analyzed karyotype of the father is normal. Chromosome analysis using whole-genome microarray with oligonucleotide probes revealed a duplication involving 111 OMIM genes and a deletion involving 16 OMIM genes. The identified aberration, in the form of deletion and duplication, is responsible for the patient's abnormalities as delayed motor development and speech, autism, motor stereotypy and dysmorphic features. The child requires especially attentive care of parents and constant stimulation of psychomotor development under the professional care of relevant specialists.

Conclusion. Further studies to understand the genetic basis of the abnormalities and the resulting phenotypic symptoms of patients with an unbalanced chromosomal aberration in the form of der(8)t(3;8)(q26.3;p23.1), will identify more patients and allow for an improvement in the treatment regimens.

Keywords. Chromosomal Translocation, Deletion, Duplication

Gynaecology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Pregnancies in a woman with Turner syndrome (45 X0) – a huge challenges

Authors: Maja Kłopecka, Paulina Przybysz

Supervisor: Monika Grymowicz

Affiliation: Student Scientific Group of Gynecological Endocrinology, Department of Gynecological Endocrinology, Medical University of Warsaw, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Turner syndrome (TS) is sex chromosome aneuploidy that causes primary ovarian insufficiency and primary amenorrhea. Pregnancies in women with Turner syndrome are rare and high risk.

Description of the case. We report a case of a 36-year-old woman with 45X0/46 mosaicism. The primary presenting clinical sign was growth rate restriction at the age of 11 years. The woman had spontaneous first menstruation and became pregnant spontaneously at age of twenty-eight. The patient has a complicated obstetric history. Miscarriage in the first pregnancy. The second spontaneous pregnancy ended in the birth of a daughter. The third spontaneous pregnancy resulted in the birth of a son. At 35, the woman was in her fourth pregnancy which ended in intrauterine fetal death. The woman was diagnosed with hypothyroidism and irritable bowel syndrome and tested positive for MTHFR polymorphism. The patient was referred to the infertility clinic and underwent ovulation induction with letrozole after which she become pregnant. She was diagnosed with GDM and started insulin treatment. Despite the mother's obstetric history and TS, the pregnancy progressed normally until 37 weeks. Then, due to decreased fetal HR, oxytocin was used to induce labor resulting in vaginal delivery of a son at 37 gestational weeks.

Conclusion. Only 10% of patients with TS achieve spontaneous menarche with higher rates for girls with mosaic karyotypes. Because TS is characterized by a variety of symptoms each pregnancy may present different complications. Numerous comorbidities in such patients may contribute to pregnancy complications. Close monitoring during pregnancy is essential.

Keywords. Ovulation Induction, Pregnancy Complications, Turner Syndrome

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Intramural fibroids in the lower part of the uterine body in a 52-year-old woman – a case report

Author: Dominika Bać

Supervisor: Aneta Wojtasik

Affiliation: Scientific Students Club "Młoda Elektroradiologia, Institute of Medical Sciences, Medical College of Rzeszow University, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. The aim of the study is to present the imaging diagnostics of a 52-year-old female patient diagnosed with intramural fibroids in the lower part of the uterine body. Ultrasound examination of a 52-year-old patient showed intramural fibroids in the lower part of the uterine body and on the left contour of the uterus.

Description of the case. No fluid was found in the vicinity of the reproductive organ, ovaries were have normal size, location and echostructure. The patient underwent surgery. Laparoscopic access showed numerous fibroids in the uterus. The largest one, about 5-6 cm in diameter, was located under the bladder and in the right parametrium. Limited access to the under bladder myoma was obtained. Guided by the course of the ureters, numerous supply vessels were located. They were dissected, coagulated and outcuted. Due to the location of the myoma, the uterus and cervix were cut off. During haemostasis control, a defect in the bladder wall (approx. 1 cm in diameter) was found in the vicinity of the left ureteral orifice. The decision was made to perform laparotomy. The abdominal cavity was opened, the severed uterus was extracted, and the fallopian tubes were removed. Cystoscopy was performed: the right ureteral orifice was visualized, the left side was not visualized - tangential damage was suspected in the course of the left ureter. After excision of the tissue from the edge of the damage, the bladder was sutured, maintaining its tightness. A drain was inserted into the abdominal cavity in the vicinity of the bladder injury. One day later, The patient underwent a computed tomography examination of the abdomen and pelvis with the use of a contrast medium. The examination was performed in spiral acquisition with 2.5 mm slices thickness in the native phase and three-phase with 2.5 mm slices thickness after contrast enhancement (arterial, venous and parenchymal phase). Hypodense fluid is visible perirenal in the left retroperitoneal space (thickness about 13 mm), below the kidney, fluid tank (about 48x55 mm in axial and 100 mm in coronal) - most likely urine. From the level between the pelvis and the ureters, there is an area of heterogeneous density (in axial 28x28 mm) – it is probably the urine with contrast getting away beyond the pelvis. In the liver, the presence of two cysts (in axial 35x44 mm and 13 mm) was detected, the organ is not enlarged, without other focal changes. Four days later, an surgery was held to remove the dren. A week after the procedure, the patient had got cystography examination to assess the post-operative condition. X-ray photos were also taken in Anterior-Posterior and oblique projections on both sides using a contrasting agent. The urinary bladder were smooth-walled, the leakage to the peritoneal cavity was not visible, the ureters have not been contrasted. On the background of the bladder, a bright round spot with a diameter approx. 3 cm – Foley catheter balloon.

Conclusion. The examination that allowed the presence of fibroids to identify was the ultrasound. Thanks to computed tomography and cystography, it was then possible to control any possibly damage.

Keywords. Computer Tomography, Contrast Agent, Intramural Fibroids

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Biomarkers for the prediction of pre-eclampsia in early pregnancy

Author: Lorna Muscat Baron

Supervisor: Byron Baron

Affiliation: Centre for Molecular Medicine and Biobanking, University of Malta, Msida, Malta

Type of the paper: Review paper

Introduction and aim. Pre-eclampsia is one of the major hypertensive pregnancy complications, affecting up to 10% of all pregnancies. Diagnosis is characterized by hypertension and proteinuria, often presenting late in pregnancy, with significant limitations in treatment, which can lead to significant morbidity and mortality in both mother and fetus. Moreover, there is as yet no known preventive measures for pre-eclampsia. There is significant need to identify non-invasive, sensitive and specific biomarkers from blood or urine for the screening of pregnant women in the pre-symptomatic phase for both the diagnosis and prognosis of pre-eclampsia.

Material and methods. Over the years, various DNA and protein molecules have been considered as predictive markers for pre-eclampsia, each with varying degrees of predictive ability.

Analysis of literature. Many biomarkers are currently being investigated for their potential use as diagnostic and even prognostic early indicators of pre-eclampsia. There are several types of biomarkers which have potential, such as endothelial biomarkers such as soluble Fms-Like Tyrosine kinase 1 (sFLT1) and Placental Growth Factor (PlGF), DNA based biomarkers, Fetal related biomarkers such as Pregnancy Associated Plasma Protein A and Endocrine function based biomarkers such as Adiponectin. Several of these biomarkers have shown promising results in early trimesters, however, there is still limited evidence for application within the patient setting.

Conclusion. There is need for such biomarkers for better molecular monitoring, earlier detection, diagnosis and improvement of prognosis.

Keywords. Biomarkers, Pre-eclampsia, Prediction

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Breast cancer and the quality of women's sexual life

Authors: Gabriela Sołga, Janina Bażan

Supervisor: Anna Kremska, Barbara Zych

Affiliation: Student Scientific Club of Midwives, Institute of Health Sciences, Medical College of The University of Rzeszow, University of Rzeszow, Rzeszow, Poland

Type of the paper: Research paper

Introduction and aim. Breast cancer is the most common malignant tumor. Cancer is a disease that affects the entire family. The hierarchy of realized requirements changes. Mastectomy often makes a woman feel less attractive about her body. Struggles with the illness push sex into the background. The aim of the study was to assess the quality of sexual life in women with breast cancer.

Material and methods. The study used the diagnostic survey method, where the main technique is a questionnaire. The questionnaire consisted of 27 questions. The survey was conducted among 150 female respondents aged 25 to 60 and more. The respondents were mainly women associated in the "Amazonki" clubs in the south-eastern part of the Świętokrzyskie Vivodeship. Some of the research was also conducted in online groups. Research materials were collected from December 2021 to March 2022.

Results. In the group of women examined, the disorder was found to affect their emotional and sexual relationships. 55% respondents stated that these sexual relationships haven't changed. Sexual life is important despite the disease and about 58%, saying they are satisfied with their sex life. The findings showed that the type of surgery and the time elapsed after mastectomy had no significant effect on sexual satisfaction. Most of them – 80.9% belong to the "Amazonki" club or other support groups that empower them to fight disease and become socially active.

Conclusion. There is need for such biomarkers for better molecular monitoring, earlier detection, Breast cancer reduces a woman's quality of life. The support of the husband and family has a huge impact on the treatment process and overcoming the disease. More than half of the respondents say that the emotional relationship with their husband has strengthened, they are more sincere and open, and they are satisfied with their sex life. Women after mastectomy do not use the advice of a sexologist.

Keywords. Breast Cancer, Mastectomy, Sexual life

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Pregnancy after hip replacement in woman with idiopathic osteoporosis

Authors: Wiktoria Garbacz, Aleksandra Ziółkewicz

Supervisor: Anna Semczuk-Sikora

Affiliation: Students' Scientific Group at the Department of Obstetrics and Pathology of Pregnancy, Medical University of Lublin

Type of the paper: Clinical case

Introduction and aim. Idiopathic osteoporosis complicated by clinically significant fractures are uncommon in premenopausal women. This problem may be aggravated by pregnancy which is physiologically associated with loss of bone mineral content.

Description of the case. We present the case of a 37-year-old multiparous woman diagnosed with idiopathic osteoporosis. In 2021 she underwent hip replacement surgery for a pathological fracture of the neck of the right femur without subsequent complications. During pregnancy, progressive right hip pain was observed which was associated with disturbances of calcium- phosphate homeostasis. In addition, at 26th week of pregnancy, cervical insufficiency was diagnosed. Vitamin D treatment as well as calcium and phosphate supplementation ameliorated skeletal symptoms. Pessarotherapy allowed continuation of pregnancy and delivery at term.

Conclusion. Pregnancy in a patient with idiopathic osteoporosis after hip replacement requires specific attention and management due to specific risk factors and complications.

Keywords. Hip Transplantation, Osteoporosis, Pregnancy

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Congenital first degree heart block in fetus

Autors: Maria Jasiewicz[1], Daria Warzocha[1]

Supervisors: Dorota Darmochwał-Kolarz2, Grzegorz Dworak2

Affiliation: [1] Students Scientific Club, department of Gynaecology and Obstetrics of Rzeszow University, Institute of Medical Sciences, Medical College of The University of Rzeszow, University of Rzeszow, Poland
[2] Gynaecology and Obstetrics Department, Clinical Provincial Hospital No. 2 in Rzeszow, Poland

Introduction and aim. Congenital heart block in fetus may occur when pregnant woman suffers from an autoimmune disease. The placenta transfers maternal antibodies specific for Ro and La autoantigens. The heart of fetus, which is anatomically correct, does not work in the proper way. The electrical conduction system of the heart is being inflamed, therefore it leads to electric signal detainment. This disorder is rare, and in every case it may be divergent and
conduct to various manifestations.
Description of the case. We present the course of medical diagnosis of a woman who is 29 years old, in her second pregnancy. Before gestation she didn't have a previous history of an rheumatic illness. Her laboratory results showed a high level of antibodies Ro and La, she had typical symptoms for an autoimmune disease. The fetus was diagnosed with bradycardia and first degree heart block at the 28th week of pregnancy.
Conclusion. There is a popular opinion that all autoimmune diseases are always becoming muted during pregnancy. This case report is the exception to this rule. A characteristic manifestation of this autoimmune disease led to the correct diagnosis and proper therapy.
Keywords. Autoimmune, Fetus, Heart Block

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Hydrops fetalis in 36-weeks fetus

Autor: Daria Warzocha[1]

Supervisors: Dorota Darmochwał- Kolarz2, Grzegorz Dworak2

Affiliations: [1] Students Scientific Club, department of Gynaecology and Obstetrics of Rzeszow University, Institute of Medical Sciences, Medical College of The University of Rzeszow, University of Rzeszow, Poland
[2] Gynaecology and Obstetrics Department, Clinical Provincial Hospital No. 2 in Rzeszow

Introduction and aim. Generalized fetal edema is described as the accumulation of excessive fluid in the soft tissues and at least two body cavities of the fetus. According to the etiology, it divides into two groups: immune and non-immune. Immune hydrops fetalis is caused by RhD
alloimmunization in pregnancy. Non-immune fetal hydrops can have heterogeneous
pathogenesis.
Description of the case. The presentation will introduce the case of a 33-year-old healthy woman in her fourth pregnancy. G4,P1. The pregnant woman has blood type 0 Rh-. The patient is hospitalized at GA-36 for a suspected fetal malformation. The ultrasound examination describes an abnormal image of the brain with visible multiple porencephalic cavities, which may be in consonance with the condition after CNS hemorrhage or fetal CNS ischemia. Generalized fetal edema was also noted. The other organs are normal structured. The fetal heart rate is 135 beats/min, while the CTG showed a recording of silent oscillation.
Conclusion. In described case, considering the patient's obstetric past, it is inclined toward the diagnosis of fetal immune edema due to platelet conflict. Nowadays, this is an extremely rare occurrence.
Keywords. Fetal Edema, Hydrops Fetalis, Palliative Neonatal Care, Prenatal Diagnosis

Hematology and oncology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Melatonin in cancer treatment

Authors: Kinga Dyndał, Karolina Czerkiewicz, Paweł Cybula

Supervisor: Magdalena Sowa-Kućma, Patrycja Pańczyszyn-Trzewik

Affiliation: Students Science Club "NEURON", Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Melatonin, a neurohormone involved in the regulation of the sleep-wake cycle, is produced in the human body, mainly in the pineal gland. An increasing number of evidence, suggests that this amine may be an essential new target (adjuvant) in cancer treatment. The oncostatic and anticancer properties of melatonin have been demonstrated in various types of cancer. The tumor suppressive function of melatonin is exerted through different interactions with cell surface receptors such as MT1 and MT2 melatonin receptors.
Material and methods. A literature review was performed by analyzing randomized controlled trials (RCTs) and systematic reviews from PubMed/MEDLINE and Embase published in the last five years. For the literature search, we used the following keywords: *melatonin in cancer, *novel cancer therapy, and *hormonal therapy.

Analysis of literature. Studies have shown that melatonin may induce anti-tumor effects through multiple mechanisms, including inhibition of tumor growth and angiogenesis, induction of apoptosis, inhibition of cell proliferation, modulation of the immune response, and augmentation of the therapeutic effects of conventional anticancer therapies. In addition, melatonin decreased some of the side effects caused by radiotherapy and chemotherapy, such as asthenia, thrombocytopenia, leukopenia, and nausea.
Conclusion. Melatonin may improve sleep and quality of life in cancer patients, relieve anxiety in most patients, and reduce the risk of developing depressive symptoms. Melatonin has also shown great potential as a safe and effective complementary therapy for cancer treatment with minimal side effects and low toxicity.
Keywords. Anticancer, Cancer Therapy, Hormonal Therapy, Melatonin

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Primary central nervous system lymphoma – a fulminant course in a 47-year-old patient

Authors: Martyna Orzechowska, Adrian Potocki

Supervisor: Małgorzata Popiel

Affiliation: Institute of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Primary central nervous system lymphoma is a rare, clinically aggressive tumour of the lymphatic system localising 80-90% to the cerebral hemispheres. The rest are located in the spinal cord, cranial nerves or eyeballs. More than 90% of PCNSL cases originate from B lymphocytes. The incidence of the tumour has increased and it develops not only in immunocompromised, but also in immunocompetent individuals.

Description of the case. A 47-year-old female patient presented to the Department of Neurology with sudden speech, behaviour and orientation disturbances preceded by severe headaches. The investigations performed indicated a multifocal brain injury of unknown aetiology, most likely inflammatory. After one month, the patient's condition deteriorated despite treatment and she was readmitted to the neurology department. Brain MRI and spectroscopy performed at the beginning of her hospitalisation revealed progression of previous lesions, however, the perfusion result did not indicate a neoplastic process. The investigations suggested acute haemorrhagic encephalomyelitis. Overnight, the woman's neurological condition worsened and there was a significant progression of poor general condition - inertia and increased muscle tone in the left limbs were demonstrated and the patient needed oxygen therapy and catheterisation. 2 weeks after the start of hospitalisation, lesions present on MRI raised the suspicion of lymphoma/glioma. A biopsy was recommended, which revealed PCNSL, an intravascular large B-cell lymphoma.

Conclusion. Primary CNS lymphoma is associated with a poor prognosis. Its correct diagnosis is associated with major diagnostic problems and therapeutic difficulties. The course of PCNSL is usually aggressive and the results of treatment are unsatisfactory.

Keywords. Diagnostic Difficulties, Magnetic Resonance, Primary Central Nervous System Lymphoma

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Nanomedicines targeting lung cancer

Author: Barbara Tomaszek

Affiliation: Medical College of The Rzeszow University, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Lung cancer is a major public health concern around the world and is responsible for a significant number of deaths. Most lung cancers are detected in advanced stages due to a lack of early-stage diagnosis, limiting the available therapeutic options. Unfortunately, conventional lung cancer treatments are frequently linked with side effects because they are not target-specific and can also harm neighboring healthy body cells. Nanotechnology has the potential to significantly add to the development of differentiated products and the improvement of patient outcomes. Clinical research has shown that nanomedicines enhance the pharmacokinetics and biodistribution of therapeutic agents while lowering their systemic toxicity. The objective of this review was to provide a summary of the current research on nanomedicines that have been clinically approved for the treatment of lung cancer.
Material and methods. In February 2023, a PubMed literature search was conducted. The phrase "nanomedicines in lung cancer" was entered into the PubMed search engine. Articles published within the last five years were taken into account. To determine eligibility, the abstract of each study was reviewed. Finally, the full texts of selected articles were obtained and reviewed.
Analysis of literature. The analysis of the literature revealed that nanomedicines offer significant advantages in lung cancer treatment, including improved pharmacokinetics, enhanced drug targeting to tumor tissues, and reduced systemic toxicity. However, further research is warranted to fully realize the potential of nanomedicines and optimize their clinical application. This analysis provides valuable insights into the current state of knowledge and highlights the need for continued exploration in this promising field of research.
Conclusion. In summary, nanomedicine precisely targets tumor tissue and delivers drugs in a controlled and efficient manner. This is a novel strategy to overcome the existing limitations in the treatment of lung cancer. Further research is needed in this field as it is a promising area of lung cancer treatment.
Keywords. Lung Cancer, Nanomedicine, Targeted Drug Delivery

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Microsatellite instability in endometrial cancer - immunohistochemical evaluation of the expression of MLH1, PMS2, MSH2 and MSH6/MMR proteins

Authors: Aleksandra Jeńć, Aleksandra Roztoczyńska

Supervisor: Ewa Kaznowska, Anna Jędruszczak-Głazowska[1]

Affiliation: Students Scientific Club of Pathomorphology, Medical College of Rzeszow University, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Endometrial cancer (EC) is the most common malignancy developing in the uterus. In 80% of cases, this cancer occurs in postmenopausal women, and only 5% of cases are recorded before the age of 40. This cancer is currently the fourth most common female cancer in the world and accounts for 7% of cancers in women. The risk factors for its occurrence are age, Caucasian race, positive family history, nulliparity, early first and late last menstruation, occurrence of anovulatory cycles, obesity. A number of these risk factors are related to high levels of endogenous estrogens. Both endogenous and exogenous estrogens stimulate endometrial proliferation, preventing cell secretion. Long-term stimulation of the glandular epithelium causes its growth, and in the final phase it can lead to the development of cancer. The basis for the diagnosis of endometrial cancer is histopathological examination.

Material and methods. During the preparation of the presentation 4 databases (PubMed, Google Scholar, Sciencedirect, Medscape) were searched for studies science publications from October 2018 to June 2022 in English. The search terms were: „endometrial cancer", „microsatellite instability in endometrial cancer" in the title or abstract or as keywords. A total of 36 references, excluding duplicates, were identified.

Analysis of literature. Studies indicate that microsatellite instability (MSI) is important for the development of various cancers, including endometrial cancer. MSI is the result of changes in mismatch repair (MMR) protein genes and is found in 15-43% of sporadic endometrial cancers. Mutations mainly concern conservative domains and are deletions, insertions, transitions and transversions. Immunohistochemical evaluation of MMR protein expression is performed from postoperative material in parallel with histopathological examination. Four monoclonal antibodies are used: anti-MLH1, anti-PMS2, anti-MSH2 and anti-MSH6. Numerous studies have shown that impairment of the MMR system is correlated with increased expansion of the PD-1 and PD-L1 proteins.

Conclusion. Disturbances in the expression of proteins in this system may therefore serve as predictive biomarkers giving a chance for the use of modern anti-PD1 therapy

Keywords. Endometrial Cancer, Microsatellite Instability

Immunology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Platelets and their role in the immune system

Authors: Natalia Świst, Katarzyna Gołda

Supervisor: Waldemar J. Grzegorzewski

Affiliation: Institute of Biology and Biotechnology, College of Natural Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Research paper

Introduction and aim. In the literature, blood is described as a body fluid that circulates in a closed vascular system that makes up about 10% of the body weight. The morphotic elements of blood are suspended in this fluid, which is why we can define blood as liquid tissue. Blood in the organization helped to play a role, performing a transport, hemodynamic and protective-defensive function. Its main components are red blood cells, white blood cells and platelets. Erythrocytes due to the ability to connect to the source, participate in the delivery from the lungs to the source. Leukocytes include a group of blood cells that include monocytes, lymphocytes and granulocytes that participate in the body's reactions. Platelets are referred to in the literature as thrombocytes, as non-nucleated blood components. The main component of blood samples is participation in hemostatic processes in the composition. They play one key role in the blood clotting process. At some point, when the continuity of the straight line is interrupted, platelets pass to the subendothelial matrix, the formation of a platelet plug, a clot is formed. Until the beginning of the twentieth, blood functions are provided only for hemostatic activities. Recent scientific research that blood cells are involved in non-hemostatic processes. Including the immune system. Collecting information on the role of blood in an independent team, enabling review work.

Material and methods. Literature search from 1989 up to 2022 has been conducted on PubMed, Google Scholar databases and the Practical Medicine for Physicians. For the final analysis, 10 research papers and 9 review papers were used. Following keywords were used to search articles: platelets, inflammation, immune system, hemostasis. The articles were from the years 1989-2022.

Results. Platelets are one of the main morphotic elements of blood, when it comes to size, they are the smallest of all components of peripheral blood, but they are very reactive. They participate in the processes of coagulation and maintaining hemostasis in the body. The characteristic properties of platelets are the presence of dense granules δ and α, their compactness during hemostasis or inflammation are released into the body. Platelets, in addition to active participation in hemostasis processes, take part in immune processes. Platelets have been shown to be regulators of immune processes through the presence of TLRs that trigger the initiation of an immune system response. In addition to the regulatory properties, platelets are involved in the innate immunity and inflammation of the body. Platelets with the participation of endothelial cells lead to the recruitment of leukocytes to the site of inflammation. Platelets participate in the recognition of a foreign pathogen that is in the body, the mechanisms that lead to this are presented in the paper. In addition to the function of platelets in the immune system,
the topic of autoimmune diseases, where platelets play a role, is discussed. The work deals with the subject of the influence of platelets on the immune system and their role in immune processes. Through the progress of scientific research, platelets have been shown to play a significant role in immune mechanisms. The work is a review of literature dealing with topics related to the immune system and platelets and aims to explain the mechanisms that lead to the active participation of platelets in the immune system.

Conclusion. Platelets are involved in the immune system, it has been shown at the same time that platelets perform regulatory functions in the immune system through the CD154 molecule and additionally participate in inflammation. Where are the first cells that are responsible for fighting in the body's non-specific immune response. In addition, TLR receptors that are found on the surface of platelets play a key role in recognizing a threat and initiating an immune response. Through these receptors, platelets recognize pathogens in the body. Scientists continue to study the non-haemostatic functions of platelets and discover their significant role in the body, which is not only based on blood coagulation processes, but to a large extent in the body's immune defense.

Keywords. Disease, Immune System, Platelets

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Acute Graft-v-host disease following allogeneic hematopoietic stem cell transplantation in patient with acute lymphoblastic leukemia

Author: Julia Stańczyk

Supervisor: Milena Małecka-Giełdowska

Affiliation: Students' Scientific Group of Laboratory Medicine, Medical University of Warsaw, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Acute Graft-v-host disease (GvHD) after allogeneic hematopoietic stem cell transplantation (allo-HSCT) is a complication caused by the donor's T cells in the graft attacking the recipient's cells by an excessive immune response. One of its complications is transplant-associated thrombotic microangiopathy (TA-TMA), a disorder leading to multiorgan endothelial damage. Acute lymphoblastic leukemia (ALL) is caused by the excessive proliferation of lymphoid cells.

Description of the case. The first complete blood count (CBC) showed a normal white blood cell count WBC 6.62x10^3/µl with lymphopenia LYMPH 0.71x10^3/µl and elevated number of immature granulocytes IG 0.37x10^3/µl. The patient had low number of erythrocytes RBC 2.66x10^6/µl, concentration of hemoglobin HGB 7.8 g/dL and hematocrit HCT 23%. Red cell distribution width was high RDW-CV 17.7%. Mean corpuscular volume, mean corpuscular hemoglobin and mean corpuscular hemoglobin concentration were all inside the reference range MCV 86.5 fL, MCH 29.3 pg, MCHC 33.9 g/dL. The test also showed thrombocytopenia PLT 45x10^3/µl with a high immature platelet fraction IPF% 9.3%. Tests showed high creatinine concentration 3.44mg/dL, low estimated glomerular filtration rate eGFR 22 ml/min/1.73m^2 and high urea concentration 225 mg/dL. Hypercreatininemia and uremia in blood can indicate acute kidney injury.

Conclusion. Lymphopenia and thrombocytopenia, present in cases of developed aGvHD, were detected. Anemia and renal failure shown by the high creatinine and urea concentration and low eGFR also appear in TA-TMA. §Diagnosis of ALL along with GvHD and TA-TMA after allo-HSCT proved to be a challenge for treatment, leading to the patient's fast health regression.

Keywords. Acute Lymphoblastic Leukemia, Graft-V-Host Disease, Hematopoietic Stem Cell Transplantation

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Immune thrombocytopenic purpura linked with lymphoma therapy

Authors Ilona Zembrzuska-Kaska

Supervisor: Milena Małecka-Giełdowska, Olga Ciepiela

Affiliation: Students' Scientific Group of Laboratory Medicine, Medical University of Warsaw, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Immune thrombocytopenic purpura (ITP) is an autoimmune disease in which platelets are coated with autoantibodies on cell surface antigens, which leads to platelets' destruction and impaired platelet production, followed by splenic sequestration.

Description of the case. 49-year-old male was admitted to the hospital in November 2022 with slight fever, chest pain, dyspnoea and sore throat treated with amoxycilin. In years 2001, the patient was diagnosed with Hodgkin's lymphoma treated with radiotherapy. In 2006, he was diagnosed with T-cell non-Hodgkin's lymphoma and underwent chemotherapy according to the CHOEP scheme. Biochemical tests showed ongoing inflammation CRP 36.5 mg/l, ESR 99 mm/1h, myocardial insufficiency NT-proBNP 2794 pg/ml. Liver parameters are significantly elevated GGTP 90 U/l, ALP 129 U/l, total bilirubin 4,69 mg/dl, indirect bilirubin 1,22 mg/dl, and direct bilirubin 3.74 mg/dl and haptoglobin level is decreased <7.25 mg/dl, which may indicate liver damage. Hematological parameters indicated the presence of pancytopenia, anaemia, and increased level of reticulocytes which was followed by blood smear examination. The blood smear showed monocytosis 11%, atypical lymphocytes 2%, anisopoikilocytosis. The patient showed symptoms of a hemorrhagic diathesis. Platelet count showed a downward trend until they reached a critical value $<1x10^3$/ul on the day of admission to the hospital. The BTA test was positive.

Conclusion. The patient was admitted to the hospital with symptoms of inflammation and hemorrhagic diathesis that indicated secondary ITP. In this case ITP could be linked with therapy the patient underwent to treat lymphoma in 2001–2006.

Keywords. Autoimmune, Chemotherapy, Immune Thrombocytopenic Purpura, Immune-Related Adverse Events, Lymphoma

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: A case of severe juvenile idiopathic arthritis in an adult

Author: Emilia Saj

Supervisor: Bogdan Kolarz

Affiliation: Institute of Clinical Medicine, Medical Faculty, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Still's disease is a rare systemic inflammatory disease that is mediated by autoimmune processes. It's equivalent to juvenile idiopathic arthritis. The etiology of the disease is unknown.

Description of the case. A 24-year-old patient was admitted to the Department of Rheumatology with suspicion of Still's disease. From 5 days before the admission, fever, sore throat, pains and swelling of the joints, a salmon-colored rash appeared. In laboratory tests, elevated CRP, leukocytosis with neutrophilia, anemia were observed, ferritin levels were above normal. Abdominal ultrasonography revealed hepatosplenomegaly. During the stay, recurring daily fevers in the evening were observed, with joint pain and itchy salmon-colored skin. Ultrasound of the lymph nodes was performed, revealing generalized lymphadenopathy. From the beginning of the stay, antibiotic therapy and metiprednisolone infusions were used, observing a temporary resolution of fever and inflammatory parameters. The patient refused treatment with methotrexate, so cyclosporine was started. On the 10th day of stay recurrence of fever, increase in inflammatory parameters and ferritin were observed. Due to the unclear picture of the disease, a decision to start with prednisone was made. Gradual normalization of inflammatory parameters and improvement of the general condition were observed, but the fever persisted and the level of ferritin increased. Bone marrow puncture was performed. Quite numerous hemophagocytes were observed. Treatment with dexamethasone was initiated and the use of cyclosporine was resumed. General condition improved. Due to the observed steroid dependence, biological therapy was planned, which was postponed due to the positive result of the IGRA test so anti-mycobacterial prophylaxis was started. Then treatment with anakinra was started, resulting in remission of disease.

Conclusion. Summing up, the patient was diagnosed with a drug-resistant form of Still's disease with a dangerous complication macrophage activation syndrome. However, the diagnosis of the disease is often problematic, which is mainly due to the lack of specific diagnostic markers.

Keywords. Drug-resistant, Macrophage Activation Syndrome, Still's Disease

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Still's disease treatment process – case study

Authors: Justyna Bogdan, Benedykt Baljon

Supervisor: Bogdan Kolarz

Affiliation: Institute of Clinical Medicine, Medical Faculty, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Still's disease most often begins before the age of 16. Its symptoms may recur or occur for the first time in adults. The clinical picture is not characteristic. There are four main symptoms of the disease: fever >39°C, arthralgia or arthritis, and a salmon-colored rash. In chronic treatment, disease-modifying drugs and biological drugs are administered. Aim of this paper is to present case of 26 years old. patient with Still's disease. Aim of this paper is to present treatment process of patient with Still's disease.

Description of the case. Between June 2014 and August 2022, a 26-year-old patient with diagnosed Still's disease was under treatment at the Rheumatology Department of Provincial Hospital No. 2 in Rzeszów. During that time his disease had high and low activity. Treatment included glucocorticosteroids, Methotrexate, Cyclosporine, Tocilizumab, Infliximab, Etanercept, Anakinra and Canakinumab. The first therapy with Tocilizumab was discontinued due to an increase in bilirubin level. Methotrexate and Cyclosporine were effective, unfortunately after 6 months secondary inefficacy occurred, and administration of them was stopped. The use of Infliximab and Etanercept didn't show any improvement in the activity of the patient's disease. During the second therapy of tocilizumab, no significant increase in bilirubin level was observed, although disease activity was low.

Conclusion. In the acute phase of Still's disease, treatment is symptomatic. In chronic therapy, a number of biological drugs of varying effectiveness are used, often depending on the individual response of the patient. Treatment with canakinumab showed the best results, although was stopped due to high costs.

Keywords. Biological Treatment, Canakinumab, Still's Disease

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Fibrodysplasia ossificans progressive (FOP)- advances in diagnosis and treatment

Author: Aldona Sokołowska

Supervisor: Jacek Tabarkiewicz, Małgorzata Szczepanek

Affiliation: Student Scientific Association at Department of Human Immunology, Medical College of University of Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Progressive ossifying myositis ossificans (FOP) is an extremely rare, genetic disease that leads to disability and premature death. It is inherited in an autosomal dominant fashion, caused by mutations in the ACVR1 gene, which encodes the activin receptor-like kinase ALK2. It is characterized by progressive heterotopic ossification (HO) of the endochondral tissue, skeletal muscles, fascia, tendons and ligaments, and congenital malformations of the big toes, leading to deformities and loss of trunk mobility, joint contractures in the limbs, and limited ability to open the mouth.
Material and methods. Suspicion of FOP is diagnosed on the basis of toe malformation and heterotopic ossification, therefore in such cases the diagnosis of FOP should be implemented, based on the presence of a heterozygous pathogenic variant in the ACVR1/ALK2 gene.
Analysis of literature. Currently, therapy focuses on the treatment of relapses with glucocorticoids and non-steroidal anti-inflammatory drugs. Taking into account the different stages in the pathogenesis of the disease, it is possible to develop a treatment based on therapy targeted at specific processes. Saracatinib, an ALK2 inhibitor, shows promising results in preclinical models due to the fact that it has shown the ability to inhibit HO and is currently in the second phase of clinical trials. Rapamycin, an immunosuppressive drug, has been shown to slow HO in animal models of FOP. Palovarotene, a Phase 3 drug, by reducing bone morphogenetic protein signaling, may reduce heterotopic bone volume in FOP patients. Garetosmab, an antibody that binds to activin A, blocks its activity, so it can prevent the formation and inhibit the growth of HO.
Conclusion. Despite many efforts, there is still no effective and specific treatment for FOP, therefore the cooperation of global centers is very important, which is of key importance in the development of targeted therapy against FOP.
Keywords. ACVR1 Gene, Progressive Ossifying Myositis Ossificans, Progressive Heterotopic Ossification

Internal diseases

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Therapy in Crohn's disease with two biologic drugs – a case report

Authors: Aleksandra Karnas, Sabina Skrzynecka, Izabella Prządo, Łukasz Karaś, Mateusz Banasik

Supervisor: Rafał Filip

Affiliation: Student Scientific Association of Gastroenterology and Hepatology, Rzeszow University, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Inflammatory bowel diseases (IBD) include Crohn's disease. The etiology has not been fully elucidated, however, one pathomechanism is an abnormal immune response. It is likely led by a complex relationship between genetic susceptibility, environmental factors and the gut microbiota. Clinical manifestations during disease exacerbations include abdominal pain, chronic diarrhea and weight loss, which can negatively affect patients' quality of life. Treatment of the disease is multidirectional, and one of the therapeutic options is biological therapy, which includes drugs, such as infliximab, adalimumab, natalizumab, certolizumab, etc. The mechanism of action of adalimumab is to block the connection between tumor necrosis factor alpha and its receptor on the cell, which reduces inflammation, while ustekinumab inhibits interleukin-12 and -23, leading to a reduction in the production of cytokines and inflammatory factors.

Description of the case. The patient began his medical history in 2009, when he was admitted to the hospital with persistent abdominal pain, fever and weight loss. During his hospitalization, he underwent repeated laboratory and imaging tests. He was subjected to such therapy, which included the administration of monoclonal antibodies: infliximab, vedolizumab, adalimumab, ustekinumab. After each of the above-mentioned drugs, no satisfactory immune response was achieved. The longest remission, which lasted about 2 years, was achieved after administration of adalimumab.

Conclusion. After the patient's clinical condition deteriorated, it was decided, with the approval of the bioethics committee, to start treatment with two biologic drugs.

Improvement in the patient's condition was observed after three months when adalimumab and ustekinumab were administered simultaneously. Both of these drugs are described in the scientific literature and used in the treatment of moderate to severe forms of CD.

Keywords. Biologic Therapy, Crohn's Disease, Inflammatory Bowel Disease

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Rhnull – a golden blood

Authors: Michał Orczyk, Martyna Orzechowska

Supervisor: Krzysztof Balawender

Affiliation: Student's Anatomical Scientific Club, Institute of Medical Sciences, Medical College of Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. The Rh blood group system consists of at least 61 independent antigens. It was first described in 1939 and has since played a key role in blood group differentiation. The classical division distinguishes Rh+ and Rh- groups, however, an atypical phenotype known as Rhnull is also present, which is associated with the formation of all-antibodies on contact with Rh antigens, which can pose a significant problem in patients who have it and require blood transfusions.
Material and methods. Four case reports and one review paper were used. The articles are from 1992-2020. PubMed and Google Scholar databases were used. Key words used in the search were blood transfusion, golden blood and Rhnull.
Analysis of literature. The Rhnull blood phenotype (also called "golden blood") is a rare blood type with a prevalence of about 1 in 6 million people. To date, at least 43 individuals belonging to 14 families with the Rhnull phenotype are known, with reports in the literature up to 2018. A mutation in the RHCE gene is most often responsible for its formation. The characteristic feature of "golden blood" is the absence of all Rh antigens on red blood cells. Previous reports indicate its role in the development of hemolytic anemia secondary to a defect in the erythrocyte cell membrane.
Conclusion. The presence of rare blood phenotypes can pose a significant problem in the process of blood transfusion in patients. Blood marriages, common in eastern countries and Africa, play an important role in the formation of the Rhnull phenotype, which is more common there compared to other regions of the world. Further genetic studies are needed to find the mutations underlying the development of Rh group incompatibility.
Keywords. Blood Transfusion, Golden Blood, Rhnull

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: No-reflow phenomenon in STEMI patients is still a challenge for cardiologists

Authors: Małgorzata Biernikowicz, Weronika Pilch

Supervisor: Paweł Kleczyński, Jacek Legutko

Affiliation: Students' Scientific Group of Modern Cardiac Therapy at the Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College John Paul II Hospital, Cracow, Poland

Type of the paper: Clinical case

Introduction and aim. No-reflow phenomenon is characterized by a failure of myocardial reperfusion after treatment of the infarct related artery despite no mechanical obstruction. This phenomenon is prevalent in up to 20-30% of patients with STEMI (ST-elevation myocardial infarction) undergoing percutaneous coronary intervention (PCI). Patients with history of no-reflow have a higher incidence of ventricular dysfunction, cardiogenic shock and malignant arrhythmias.
Description of the case. A 48-year old male was admitted to a hospital with a new-onset chest pain. Electrocardiography showed ST-elevation in II, III and aVF. He was given 300mg of aspirin, 180mg ticagrelor and 5000 IU of unfractionated heparin and transferred immediately to the cathlab. Coronary angiography revealed an severe 99% lesion in the proximal segment of the right coronary artery (RCA). After undergoing angioplasty with aspiration thrombectomy, angiographic evidence of slow epicardial flow in the RCA was observed. Therefore, administration of adenosine (intracoronary) via thrombectomy device was performed, followed by eptifibatide bolus and infusion (intracoronary and intravenous). Subsequently, 3 drug-eluting stents were implanted and then once again no-reflow occurred. Treatment with adenosine and eptifibatide was repeated. Eventually, TIMI 3 flow was achieved. Approximately 2 hours post-operatively, the patient experienced an episode of ventricular fibrillation, was defibrillated 6 times and treated pharmacologically with amiodarone, MgSO4, lidocaine and metoprolol. Finally, he was discharged home in very good clinical condition.
Conclusion. As of today, there is no treatment proven to be highly successful in all patients with no-reflow. Nevertheless, combining both pharmacological and nonpharmacological treatments may be a potential therapy solution to this phenomenon.
Keywords. No-reflow, PCI, STEMI

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Fatal ischemic complications of procedures performed in mitral part of coronary sulcus can be avoided?

Authors: Jakub Batko, Daniel Rams, Wojciech Olejek

Supervisor: Krzysztof Bartuś, Agata Krawczyk Ożóg

Affiliation: SSG of Minimally Invasive and Experimental Cardiac Surgery, CAROL - Cardiothoracic Anatomy Research Operative Lab, Jagiellonian University Medical College, Cracow, Poland

Type of the paper: Research paper

Introduction and aim. Mitral part of coronary sulcus is a region rich of arterial and venal vasculature, with the left circumflex artery and great cardiac vein being dominant vessels. Multiple procedures are performed there, including mitral isthmus arrythmia ablation, mitral valve and mitral annulus repair and reconstruction. This situation creates risk of vascular damage, leading to life-threatening complications. The aim of this study was to evaluate topography and relations of vessels within mitral part of coronary sulcus and to evaluate regions with increased risk of vessels damage.

Material and methods. The mitral valve, left coronary artery with its branches, coronary sinus with its supplying veins were segmented and visualized from 105 (age: 63±10, 45% females) angio-CT scans. Five points were located on each of three parts of posterior leaflet of mitral valve. Distances between great cardiac vein, left coronary artery and mitral valve were measured.

Results. The intersection between great cardiac vein and left circumflex artery was observed in 97% of patients, most commonly in the border of P1 and P2 zone (26.8% cases). In 79.4% of intersections, left circumflex artery was located closer to the mitral annulus than great cardiac vein. Distance between vessels was 2.6±1.1 mm. Distance to the mitral annulus was 6.7±2 mm. In P1/P2 border point, in 18.8% of cases, marginal branches were observed. In 5.7% cases, great cardiac vein supplying branches were observed in this location.

Conclusions. The procedures performed within mitral part of coronary sulcus should be done with great caution, due to potential fatal complications. Ablations performed through great cardiac vein may cause the coronary artery damage, due to close anatomical relation.

Keywords. Coronary Sulcus, Left Coronary Artery, Left Circumflex Artery, Mitral Regurgitation, Mitral Valve Replacement, Mitral Valve Reconstruction

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Case of 56-years old men with rare hematological disease

Authors: Konrad Wróbel, Justyna Bogdan, Monika Błądek, Benedykt Baljon

Supervisor: Małgorzata Rodzoń-Norwicz

Affiliation: Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Thrombotic thrombocytopenic purpura (TTP) is a rare disease classified as thrombotic microangiopathy. During its course, antibodies to the ADAMTS-13 metalloproteinase are produced, which results in blood clots appearing in small blood vessels. The main symptoms include fever, headache, visual and speech disorders, as well as ecchymosis and epistaxis. In most cases, the untreated disease leads to death.

Description of the case. A 56-year-old man, who had not been treated chronically, was admitted to the Department of Internal Diseases in a very severe general condition, with clinical and biochemical symptoms of acute kidney damage and neurological symptoms in the form of myoclonus of the face, neck, and trunk. Immediately before admission, the patient was hospitalized due to prostatitis in the Urology Department, where, despite the treatment, the general condition of the patient gradually deteriorated. In the tests performed on admission to the Clinic, apart from signs of acute kidney damage, thrombocytopenia, haemolytic anemia, and increased inflammatory parameters were found. Moreover, the peripheral blood smear showed the presence of schistocytes.

Conclusions. The diagnosis of thrombotic thrombocytopenic purpura was made based on the history, clinical picture, and performed tests. The prompt implementation of appropriate treatment allowed for a significant improvement in the general condition and discharge of the patient in good general condition for further outpatient treatment.

Keywords. Hematology, Nephrology, Rare Disease, TTP

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: A long and difficult way to determine the cause of recurrent mouth sores and ulcers in a teenager

Author: Emilia Saj

Supervisor: Bogdan Kolarz

Affiliation: Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Behcet's disease is a form of systemic inflammation of arteries and veins, accompanied by skin and mucosal changes, changes in internal organs and the nervous system.

Description of the case. A 18-year-old patient was admitted to the Department of Rheumatology to continue the treatment of drug-resistant Behcet's disease. The first symptoms appeared at the age of 3 – laryngitis, bronchitis, pneumonia, angina, afta on the lips. From the age of 11 recurrent ulceration of the oral cavity, external genitalia, palate, epiglottis, anal fissure, terminal ileum intensified. IVIG and Encorton were used, resulting in clinical improvement, but lowering the steroid dose was associated with exacerbations of the disease. At the age of 16 patient was hospitalized due to another exacerbation – aphthae, dissemination of acne skin lesions, fever, cyclosporine and methylprednisolone were introduced. After 2 months decreased dose of methyloprednisolone resulted in the recurrence of symptoms - in the vagina, acne lesions on the forehead, pustular lesions on the lower limbs, bruises on the lower legs, hemangioma on the thigh, foot, cluster of punctate erythematous lesions, joint hypermobility and Cushingoid lesions were transfused with IVIG and Rituximab, observing a lower severity of lesions for 3 months. Unfortunately, due to the appearance of a very large number of painful aphthae in the mouth, the dose of Encorton was increased, colhicin and mycophenolate mofetil were introduced. After 2 weeks, MMF was discontinued due to itchy rashes and Apremilast with Encorton were started. Due to the good effect of Apremilast treatment, continuation of the use of this drug was planned along with a slow reduction of Encorton doses.

Conclusions. In our latitude, Behcet's disease is a rare systemic vasculitis and difficult diagnostic, therapeutic problem. In the case of the patient, the ineffectiveness of a large number of drugs and steroid dependence were observed, and the diagnosis took 13 years.

Keywords. Behcet's Disease, Drug-resistant, Mouth Sores

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: A review of recent findings in the dietary treatment of prediabetes, and type 2 diabetes with a focus on low carbohydrate intake

Authors: Krystian Andryszko, Karolina Krowiak, Anita Krowiak

Supervisor: Mariusz Dabrowski

Affiliation: Students Scientific Club of Diabetology, Institute of Medical Sciences, Medical. Collage of Rzeszow University, University of Rzeszow, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. This research paper examines the advantages and disadvantages of a low-carbohydrate diet, specifically the ketogenic or Atkins diet, in treating prediabetic states and type 2 diabetes.

Material and methods. We carried out a systematic review by searching both English and Polish literature databases up to December 31, 2022. The following search words were used: diabetes mellitus, prediabetic state, ketogenic diet, low carbohydrate diet and treatment. Articles focusing on clinical aspects were selected.

Analysis of literature. Studies show that a ketogenic diet reduces abdominal obesity, improves insulin resistance, and accelerates weight loss more efficiently than other diets with a caloric deficit, without adverse effects on liver and kidney health. Additionally, adherence to the diet allows for the cessation of hyperglycemic biguanides and a significant reduction in insulin dependence. However, the ketogenic diet has unwanted effects, specifically increasing total cholesterol and low-density lipoprotein levels, especially in patients with lipoproteinemia, allele mutations, and dysbetalipoproteinemia. These effects can lead to palmar xanthomas and a greater risk of atherosclerosis, myocardial infarctions, and strokes. Therefore, a cautious approach to implementing the ketogenic diet includes quarterly medical visits, preliminary genetic testing, and the use of statins or plant-derived felisterols to control lipoprotein levels. Contrastingly to the Mediterranean diet, which is rich in omega-3 fats and B12, the ketogenic diet shows similar outcomes. For this reason, switching from the Mediterranean to the keto diet is contraindicated.

Conclusions. This research suggests that a low-carbohydrate diet can be beneficial in treating prediabetic states and type 2 diabetes but must be managed with caution, especially in patients with lipoproteinemia and hereditary diseases. Although the ketogenic diet seems better than rich carbohydrate diets, its long-term effects beyond 12 months remain unknown and require further investigation.

Keywords. Carbohydrates, Dietary Patterns, Insulin Resistance, Low Carbohydrate Diet, Ketogenic Diet, Obesity, Type 2 Diabetes

Neurology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The relationship between sleep disturbances and mental health – literature review and survey research

Authors: Karolina Czerkiewicz, Kinga Dyndał, Paweł Cybula

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Sleep is a complex physiological process important for body homeostasis. Sleep and sleep deprivation have been shown to have a significant impact on mental health and psychoneuroimmunology. Sleep deprivation also can lead to an increased susceptibility to infections and other illnesses. Moreover, sleep is crucial for the maintenance of emotional, cognitive, and behavioral functions.

Material and methods. A systematic search of the literature (clinical trials and reviews) published in the last five years was performed using PubMed/MEDLINE and Embase. Survey research (n= 555: 404 women and 151 men in the age range 15-30, 23 questions in total) was also conducted by the authors of this study.

Analysis of literature. Literature data indicate a decline in immune function caused by sleep deprivation. In addition, a number of mental health problems such as depression and anxiety were caused by sleep disorders. What's more, there is a strong link between the glymphatic system and brain detoxification during sleep. As many as 47% of our respondents noticed a decrease in immunity during periods of sleep deprivation. Immunity is one of the 4 most frequently mentioned factors by respondents that can be affected by lack of sleep.

Conclusion. Sleep and sleep deprivation affect mental health and immune responses. Adequate sleep is essential for maintaining optimal health, and addressing sleep problems may help prevent or manage mental health disorders and immune-related diseases.

Keywords. immunity, mental health, psychoneuroimmunology, sleep, sleep deprivation

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The role of neurotrophins in the pathogenesis and pharmacology of mental disorders

Authors: Anna Antonik

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Neurotrophins (NTFs) are polypeptide growth factors that regulate the outgrowth, differentiation, neurogenesis, and apoptotic death of neurons in the central and peripheral nervous systems. NTFs also control the function of several other cell populations such as lymphoid, epithelial, oligoglia, and mast cells. Physiological responses to neurotrophins are mediated by their binding to two types of receptors: the Trk (tropomyosin receptor kinase) family of RTKs (receptor tyrosine kinases) and , the p75 neurotrophin receptor (p75NTR). Neurotrophins such as: nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF) play a significant role in neuronal plasticity and network connectivity in the developing brain. The aim of the presentation is to discuss the latest research on the potential diagnostic and therapeutic significance of selected neurotrophins in the context of mental disorders.

Material and methods. Notably, the role of BDNF and regulation of TrkB receptor expression in the pathophysiology and pharmacological treatment of depressive disorders have been proven. Furthermore, there is strong clinical evidence that the BDNF signaling pathway is involved in depression recovery both pharmacologically and psychologically.

Analysis of literature. On the other hand, many studies have suggested that the primary molecular mechanism underlying antidepressant activity may be associated with increasing neurotrophin levels.

Conclusion. Consequently, the neurotrophins and their receptors are promising therapeutic targets, and their modulation may have applications in new pharmacological strategies for psychiatric disorders.

Keywords. Brain-drived, Mental disorder, Nerve growth factor, Neurothrophic factor, Neurotrophins

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Role of mitochondria dysfunction in depressive disorder – a clinical overview

Authors: Antonina Pieluszczak

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. While depressive disorder (DD) is a leading cause of disability affecting almost 4% of worldwide population, its pathophysiology is still not fully understood, in part because of lack of specific biologic markers. Although depression is not a classic mitochondrial disease, latest human and animal studies indicates the link between mitochondrial dysfunction and depression. The aim of submitted work is to present potential role of mitochondrial dysfunction combined with neuroinflammation in pathogenesis of depressive disorder.

Material and methods. A literature search was conducted using the PubMed databases for relevant studies with the keywords "mitochondria" "depressive disorder" "depression" "mitochondrial dysfunction". Search terms were used in various combinations, articles written in a language other than English and Polish were not considered.

Analysis of literature. Studies were screened for relevance based on their abstracts.

Conclusion. The review highlights the potential importance of mitochondria dysfunction, oxidative stress and inflammation in depression. The specific biological mechanisms underlying depressive disorder have yet to be elucidated, but it seems that reversing the early stages of mitochondrial dysfunction could provide a new target for therapeutic intervention.

Keywords. depressive disorder, inflammation, mitochondria, mitochondrial dysfunction, oxidative stress

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Diagnostic problems in identifying the etiology of symptoms in a thirty-eight-year-old female

Authors: Aleksandra Fryncel

Supervisor: Stanisław Słyk

Affiliations: Medical University of Warsaw, Faculty of Medical Sciences, Department of Neurology, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Sight deterioration caused by the defect in the oculomotor nerve is common amongst neurological patients, however, the etiology varies - both cerebral strokes and diabetes or hypertension can cause it. Similarly, headaches are non-specific to one disease. Differential diagnosis is obligatory when treating patients with these symptoms successfully.
Description of the case. A thirty-eight-old female was admitted to the hospital because of sudden problems with vision and cephalgia. On history taking, the patient admitted to being three months after her third delivery, neither suffering from any chronic diseases nor taking drugs permanently. Problems with vision were caused by right oculomotor nerve palsy and then were successfully treated with steroids. The results of Magnetic Resonance Imaging in T2 and FLAIR sequences revealed some non-characteristic hyperintensities in the subdural white matter of both cerebral hemispheres and a lesion in the left lobe of the pituitary gland. It is also worth mentioning the diagnosis of COVID-19, confirmed by antigen test during the stay at the hospital. After a careful diagnostic process, arteriovenous malformations were finally claimed. Arteriovenous malformations are mainly congenital abnormalities of vessels, characterized by the lack of development of the capillaries between arteries and veins. In most cases, they do not cause any symptoms. However, in some patients, mainly after the rapture, hemorrhagic strokes or seizures can be the first presentation.
Conclusion. The case represents the value of properly undergoing differential diagnosis. The patient's symptoms accompanied by laboratory and imaging test results allowed to diagnose arteriovenous malformations, however excluding more common medical conditions was essential. This case also reminds about the importance of being cautious in history taking and lastly making accurate decisions about the treatment even without knowledge of the accurate etiology of the disease.
Keywords. arteriovenous malformations, difficult differential diagnosis, neurology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Synuclein Alpha in Parkinson's disease

Authors: Wiktor Marek

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim.
Parkinson's disease (PD) is a neurodegenerative condition with motor (e.g. tremor, rigidity, balance disorders, etc.) and non-motor (e.g. cognitive dysfunction, sensory disturbances, etc.) symptoms. According to the WHO, disability due to PD is growing much faster than for other neurological disorders. The incidence has doubled in the last 25 years. In 2019, there were nearly 8.5 million Parkinson's patients worldwide. Although the mechanism of PD is not fully understood, the relationship between alpha-synuclein accumulation in central nervous system and the pathogenesis of this disease (as well as other synucleinopathies) has been strongly confirmed. The aim of this study will be to discuss the influence of alphaSyn on microglia and thus inducing an inflammatory response, as well as the recent discoveries regarding anti-alpha Syn antibodies, such as BIIB054 and PRX002.
Material and methods. Review paper based on scientific articles published in different medical database.
Analysis of literature. alphaSyn is found in neuronal cell bodies, synapses or glial cells. Their damage may contribute to release of alphaSyn which then is accumulated and invokes the activation of NLRP3 inflammasomes in microglia. NLRP3 inflammasome promotes activation of caspase-1, which in turn mediates maturation and release of proinflammatory cytokines, including interleukin-1 beta and Il-18. Surprisingly, the studies show that alpha Syn-antibody complexes enhances Il-1 beta secration rather than suppresses which closes ways of treatment.
Conclusion. These findings set new ways to diagnose PD and are critical to the development of new treatments for the disease. The study will present both clinical and preclinical findings, which may represent promising strategies for the treatment of PD.
Keywords. Anti-alpha Syn antibodies, Inflammatory, Microglia, Parkinson's disease

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Esketamine as a novel drug for the treatment of depression - clinical safety and efficacy profile

Authors: Maciej Kozłowski

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. According to the World Health Organization (WHO), depression is a leading cause of disability worldwide, affecting people of all ages. It is estimated that approximately 5% of the global adult population manifests symptoms of one type of depressive disorders (DDs), of which major depressive disorder (MDD) is the most common. Moreover, DDs are a risk factor for annual suicides (suicide ideation and/or attempts are reported in up to 60% of depressed patients). This study aimed to discuss the clinical safety and efficacy of esketamine as a novel fast-acting antidepressant.

Material and methods. Review paper based on scientific articles published in different medical database.

Analysis of literature. Pharmacological treatment of depression is mainly based on drugs that modulate monoaminergic neurotransmission, such as selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs). However, these antidepressants require long administration times to achieve equivalent therapeutic effects with severe side effects.

Conclusion. As approved by the Food and Drug Administration (FDA) in 2019, esketamine (SPRAVATO®, a non-selective and non-competitive antagonist of the N-methyl-D-aspartate (NMDA) receptor) is a novel drug recommended for pharmacotherapy for treatment-resistant depression (TRD). In addition, regulation of glutamate receptor function (ionotropic and metabotropic) is a promising molecular target for antidepressant strategies.

Keywords. Antidepressants, Depression, Esketamine, Glutamete, NMDA receptors

Neurosciences

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The role of aquaporin 4 in the pathogenesis and therapy of Alzheimer's disease

Authors: Martyna Sarzyńska, Kinga Polityńska, Sylwia Lepek

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Aquaporin 4 (AQP4) is a major water channel in the central nervous system (CNS). Its expression occurs mainly in astrocytes, although it is also found in ependymocytes lining the ventricles and retina. The main roles played by AQP4 are the uptake of cerebrospinal fluid, participation in the migration of astrocytes to sites of injury and in the removal of toxic protein aggregates. It has been suggested that AQP4 may play an important role in AD.

Material and methods. This paper contains a literature review of articles published on Pubmed, Google Scholar scientific databases on the topics of Alzheimer's disease and aquaporin 4.

Analysis of literature. Recent studies have shown that AQP4 is involved in clearing the brain of accumulating β-amyloid – a diagnostic marker for Alzheimer's disease and a major component of so-called "senile deposits". In addition, AQP4 may affect the transport of potassium and calcium ions, which may play a critical role in the pathogenesis of AD. AQP4 also plays important roles in brain plasticity. Moreover, AQP4 knockout is involved in neuroinflammation and impairs the course of AD. Moreover, a correlation has been shown between age, sleep deprivation and AQP4 dysfunction and increased AD risk.

Conclusion. Research is underway to develop specific therapeutic agents that would inhibit or enhance AQP4 which is a promising therapeutic target in AD patients. The purpose of this study is to outline the role of AQP4 in the pathogenesis of AD and major depressive disorders, identify risk factors, prevention of these conditions, and hope for new therapies.

Keywords. Aquaporin 4, Alzheimer's disease, β-amyloid

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: How sleep affects various aspects of life? The ways to improve sleep quality

Authors: Paweł Cybula, Kinga Dyndał, Karolina Czerkiewicz

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Sleep is a functional state of the CNS, which appears cyclically in the circadian rhythm. The amount and quality of sleep has a strong impact on mental health, cognitive function (like learning or concentration) and libido. This study aims to show what is the knowledge about the importance of sleep among young people and the impact of sleep deprivation on various aspects of their lives. What's more, we want to show how to improve sleep quality.

Material and methods. A literature review was performed by analyzing randomized controlled trials and systematic reviews from PubMed/MEDLINE published in the last five years. For the literature search, following keywords: Sleep quality*, mental health* and libido* were used. Regardless of this, the authors conducted a survey (23 questions) in 555 people (including 404 women and 151 men) aged 15-30.

Analysis of literature. Literature review has shown decreased amount of sleep leads to increase susceptibility to irritability, lowered mood, cognitive functions and libido. Also 88% of our respondents noticed an increase in irritability with reduced sleep. Respondents rated their mood higher on days when they slept more, 44% of respondents indicated a decrease in libido with a reduced amount of sleep (34% of people had no opinion). Survey research also shown that 99% of respondents believe that sleep has a significant impact on health.

Conclusion. Sleep has a significant impact on various aspects of life. The awareness of young people about the importance of sleep is at a high level, however, this knowledge is not always practical. Therefore, young people should be made aware of the importance of sleep hygiene.

Keywords. cognitive functions, libido, mental health, sleep, sleep quality

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Changes in the mental health and education of Ukrainian students amidst wartime

Authors: Anatolii Miahkokhlib, Anastasia Zezekalo, Sogebi Mofiyinfoluwa Oluyemisi, Odulate Olawale Oluwatise, Veronika Mamontova

Supervisor: Tetiana Mamontova

Affiliations: Physiology Department, Poltava State Medical University, Poltava, Ukraine

Type of the paper: Research paper

Introduction and aim. Since the beginning of war in Ukraine, millions of people fled the country, exposed to the horrors of war that ruined their lives. But, mental health and changes in quality of life (QL) among young Ukrainians were not studied yet.

The aim of this study was to access impact of war on depression status and QL among Ukrainian students.

Material and methods. A survey-based cross-sectional study was performed among 95 Ukrainian students, who studied at the universities from September to October 2022. Depression was assessed using Patient Health Questionnaire (PHQ-9), QL – Short Form Health Survey (SF-36).

Results. 93% of respondents continue their education at the Ukrainian universities at 2022-23 academic year, while the rest were unable to return to the education. Currently, the main hosting countries for students are the EU countries. 19% of respondents were forced to leave their home and become an internally displaced person. SF-36 survey showed that the main changes associated with psychological status are: role limitations due to emotional problems – 42.8±4.25%, vitality – 46.2±2.2%, mental health – 52.9±2.2%. PHQ-9 showed that mild depression was detected in 32,9% persons, moderate depression – 24.3% persons, severe – 14.3% and extremely severe – 14,3% persons.

Conclusion. The war negatively changed lifestyle of Ukrainian student via forced relocation and disability to continue education in universities. Among students were detected severe and extremely severe depression, low level of QL due to changes in mental health during war in Ukraine.

Keywords. Depression, Students, Ukraine, Quality of life, War

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The Microbiota-Gut-Brain Axis – Role in the Pathomechanism and Pharmacotherapy of Depressive Disorders

Authors: Klaudia Wojciechowska, Michał Broszkiewicz

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliations: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Depressive disorders are a serious mental disorder, the incidence of which is constantly increasing, and thus the socio-economic cost of the disease. Research conducted since the 1960s on depression has not provided either comprehensive information on the mechanisms of the disease or provided highly effective and safe antidepressants. Recent evidence links the dysfunction of the bidirectional communication pathway between the gut microbiome and the central nervous system (known as the microbiota-gut-brain axis) to depressive disorders. Alterations in the composition and function of the intestinal microflora are observed in patients with depression. The aim of this study is to review the current knowledge on the role of the microbiota-gut-brain axis in the pathomechanism of depressive disorders and to discuss potential therapeutic implications. We will explore the use of probiotics, prebiotics, and other nutritional interventions, as well as the development of psychobiotics and other novel pharmacological agents targeting the gut microbiota, for the treatment of depressive disorders.

Material and methods. Literature search: A comprehensive literature search was conducted using electronic databases such as PubMed, Embase, and Cochrane Library. The search was conducted using keywords such as "microbiota-gut-brain axis", "depressive disorders", "probiotics", "prebiotics", "psychobiotics" and "pharmacological agents targeting the gut microbiota". Study selection: Studies were included in this review if they investigated the association between the microbiota-gut-brain axis and depressive disorders. Only articles published in English and peer-reviewed were included. Data extraction: Data were extracted from the included studies, including study design, sample size, age range of participants, diagnostic criteria for depressive disorders, methods for assessing gut microbiota, and results.

Analysis of literature. The results of the studies were analyzed and synthesized to provide an overview of the current knowledge on the role of the microbiota-gut-brain axis in the pathomechanism of depressive disorders.

Results. The findings of the studies were discussed in the context of potential therapeutic implications. The use of probiotics, prebiotics, and other nutritional interventions, as well as the development of psychobiotics and other novel pharmacological agents targeting the gut microbiota, were explored for the treatment of depressive disorders

Conclusion. The war negatively changed lifestyle of Ukrainian student via forced relocation and disability to continue education in universities. Among students were detected severe and extremely severe depression, low level of QL due to changes in mental health during war in Ukraine.

Keywords. Depressive disorders, Gut microbiota, Microbiota-gut-brain axis, Pharmacotherapy, probiotic

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Young – Onset Parkinson's Disease – Case Report

Authors: Katarzyna Koszarska, Aleksandra Kotlińska

Supervisor: Krzysztof Balawender

Affiliations: Student Anatomical Club of the University of Rzeszow, College of Medical Sciences, University of Rzeszow

Type of the paper: Clinical case

Introduction and aim. Parkinson's disease is one of the most common neurodegenerative diseases of the central nervous system, mainly affecting the elderly. Symptoms usually appear around the age of 60, before the age of 50 it is rare, while beyond this age the risk of the disease increases by 9% with each decade. The clinical picture is characterized by bradykinesia, rigidity, tremors, postural instability, gait disturbance, and extra-articular symptoms such as anxiety, depression, psychosis, sleep disturbance, salivation, dysphagia.

Description of the case. The case report includes a 46-year-old female patient referred to the Neurology Department with suspected Wilson's disease. An ophthalmologic examination prior to hospitalization revealed the presence of a Kayser-Fleischer ring. The woman had been complaining of motor deterioration, fluctuating tremors of the right upper and lower limbs for about 2 years. Physical examination also revealed unsteady increased tension in the right upper limb. Genetic testing and expanded laboratory diagnostics excluded Wilson's disease. An MRI of the head was performed, which detected areas of nonspecific demyelination in periventricular and subcortical locations. Further diagnostics included a DaTSCAN imaging, which confirmed Young – Onset Parkinson's Disease (YOPD).

Conclusion. The differential diagnosis should consider dementia with Lewy bodies, Multiple System Atrophy (MSA), Wilson's Disease (WD), Progressive Supranuclear Palsy (PSP), Corticobasal Degeneration (CBD), spontaneous tremor and secondary Parkinsonian syndromes. The presented case demonstrates the need to carefully analyze the various symptoms presented by the patient regardless of age.

Keywords. DaTSCAN, YOPD, Parkinson's disease, Wilson's disease

Pediatrics

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Ethical challenges in a case with mosaicism

Authors: Milena Wątek, Kinga Zaczyk

Supervisor: Dorota Pawlik

Affiliation: Students Scientific Association of Neonatal Pathology, Jagiellonian University Collegium Medicum, Cracow, Poland

Type of the paper: Clinical case

Introduction and aim. Mosaicism is the presence of two or more cell lineages with different genotypes in a single individual. Mosaic monosomy 7 might cause congenital bone marrow disorders. Ring chromosome 7 is a rare anomaly associated with mental retardation, facial asymmetry, hypertelorism, microcephaly and skin lesions. The features of monosomy 15 include intrauterine growth restriction, congenital heart defects, multiorgan malformations and craniofacial dysmorphism.

Description of the case. This study reports a case of a male neonate prenatally diagnosed with mosaicism. He was born at 38 weeks of gestation via cesarean section, GIVPIII. Postnatally, the neonate was diagnosed with HLHS, tethered spinal cord syndrome and cavum veli interposti. Microcephaly, facial dysmorphism, hypertelorism, epicanthus and pseudohypospadias were also present. Evaluation of the karyotype revealed the presence of three cell lineages – 64% with monosomy of 7. chromosome, 24% with a ring chromosome 7 and 12% with trisomy of 15. Because of the heart abnormalities, prostaglandin infusion was administered. On the 8. day of life the neonate deteriorated rapidly and was diagnosed with staphylococcal sepsis, then treated accordingly to the antibiogram. Due to many birth abnormalities, the neonate was excluded from cardiac surgery because of the bad prognosis. On the 24. day of life Prostin was discontinued. Finally, the infant was transferred to a home hospice.

Conclusion. Mosaicism results in various phenotypes. Therefore, each case should be considered individually by a panel of experts. This case was particularly ethically challenging due to its poor outcome.

Keywords. Congenital Defects, Dysmorphism, Mosaicism, Neonate

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Mechanical thrombectomy in pediatric ischemic stroke – a case report

Authors: Kinga Polityńska, Sylwia Lepak

Supervisor: Marcin Wiącek

Affiliation: Student's Neurological Scientific Club, Institute of Medical Sciences, College of Medical Sciences, University of Rzeszow, Rzeszow, Poland

Type of the paper: Clinical case

Introduction and aim. Childhood stroke affects 2-8 per 100,000 children each year. It can occur at any age, including newborns, infants, and prenatally. Despite the possible serious consequences of untreated pediatric stroke, there are still no clear guidelines for the management of this disease entity. We describe a case of ischemic stroke in a child treated by mechanical thrombectomy.

Description of the case. A 14-year-old previously healthy patient was admitted to the Department of Pediatric Neurology because of sudden onset of drooping of the left corner of the mouth and weakness of the left limbs, which had occurred 5 hours earlier. An angio-CT showed occlusion of the internal carotid artery and right middle cerebral artery. The patient was qualified for treatment by mechanical thrombectomy. During the procedure, a dissection of the internal carotid artery in the extracranial section was diagnosed – a stent was implanted in this place. Reperfusion of the occluded arteries was achieved. An improvement of neurological condition was observed, with left limb paresis resolving in the following days. The patient was transferred to the Rehabilitation Clinic with further improvement.

Conclusion. Although mechanical thrombectomy is the standard treatment of ischemic stroke among adults, there are no guidelines for treating this condition in childhood to date. The use of reperfusion treatment may lead to reduction of disability and mortality rates in this group of patients as well. However, more data are needed to confirm this assumption.

Keywords. Acute Ischemic Stroke, Mechanical Thrombectomy, Pediatric Stroke

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Difficulties in diagnosis and treatment of invasive aspergillosis in extremely low birth weight premature infant

Authors: Emilia Dybała, Anna Grabowska

Supervisor: Beata Borek-Dzięcioł

Affiliation: Student Scientific Association ProNeo at the Department of Neonatology and Rare Diseases of the Warsaw Medical University, Warsaw, Poland

Type of the paper: Clinical case

Introduction and aim. Invasive aspergillosis is a rare fungal infection in neonates. *Aspergillus* spp. are moulds that are commonly found in the environment. However, they can cause infections among immunocompromised patients such as premature newborns. Authors discuss obstacles of diagnosis and treatment of aspergillosis in a paediatric group.

Description of the case. Authors of the paper described the case of a premature and small for gestational age (SGA) neonate born after 24 weeks of gestation with extremely low body weight. Patient was admitted to our department, because of perforation of the small intestine. During the stay patient developed many skin lesions of unknown aetiology. The diagnostic actions were undertaken and the newborn was given empiric antibiotic therapy with antifungal treatment. The serum galactomannan was positive and *Aspergillus fumigatus* was isolated from skin lesion swabs. Treatment with liposomal amphotericin B was started, subsequently it was replaced by voriconazole. Treatment did not cause any significant side effects and was successful. It was the first such case in our Department.

Conclusion. Diagnosis and treatment of IA poses significant difficulties. Well-established diagnosis and treatment procedure does not exist. Drugs indicated in treatment of invasive aspergillosis in neonates are liposomal amphotericin B, amphotericin B lipid complex and voriconazole.

Keywords. Antifungal Treatment, Aspergillosis, Extreme Prematurity, Fungal Infection, Neonate

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Life-saving actions in extremely preterm infants on the verge of survival: A retrospective study – 2004–2022

Authors: Julia Kuszewska, Oliwia Bolek, Dominika Paw, Marta Szymska

Supervisor: Joanna Puskarz-Gąsowska

Affiliation: Department of Neonatology and Neonatal Intensive Care, Medical University of Warsaw, Warsaw, Poland

Type of the paper: Research paper

Introduction and aim. An extremely preterm infant is defined as born at or before 28 weeks of pregnancy. Prematurity is a significant cause of infant morbidity and mortality. It is a group of newborns with high disease incidence and risk of future developmental disorders occurrence. Globally, prematurity is the leading cause of death in children under the age of 5 years. In many countries including Poland, the minimal age for undertaking resuscitation in a delivery room is 22–24 weeks of pregnancy. The paper is an attempt to present the statistics of extremely preterm childbirth, undertaking resuscitation and survival rate among newborns born at 22+0/7 weeks' to 23+6/7 weeks' gestational age in the Department of Neonatology and Neonatal Intensive Care, the Medical University of Warsaw through the years 2004-2022.

Material and methods. A retrospective study of 167 infants born at 22+0/7 weeks' to 23+6/7 weeks' gestational age, birth weight of 230 g to 1060 g in the Department of Neonatology and Neonatal Intensive Care between 2004–2022.

Results. 71.2% (119) newborns dead, 28.7% (48) newborns survived, including 30 (62.5%) girls and 18 (37.5%) boys. Among the whole group, 41 (24.5%) preemies were in palliative care from the beginning, meaning that resuscitation was performed on 126 newborns. The procedure was successful in 38% of cases, however, children who survived, developed significant impairments connected with prematurity: 21 (43.75%) intraventricular hemorrhage – 3 (14.3%) of them were III/IV grade; 15 (31.25%) retinopathy of prematurity – 7 (46.7%) of which were treated with laser therapy and 3 (20%) with ranibizumab; 5 necrotizing enterocolitis and 18 (37.5%) bronchopulmonary dysplasia.

Conclusion. Extremely premature infants with incredibly low birth weight remain at high risk for death. Rates of survival for infants born on the verge of life are still very low. Survivability has not improved through the years, which is a result of both resuscitation guidelines and limits of the therapeutic options for such immature organisms. This report could be useful in explaining to the parents our decision-making in obstetric and neonatology departments. We plan to further analyze these children's development.

Keywords. Guidelines, Infants, Resuscitation, Survivability

Pharmacology and addiction

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Affective disorders in children and adolescent – diagnostic challenges, clinical safety and efficacy profile of standard pharmacotherapy

Author: Małgorzata Gierlicka

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliation: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. According to WHO 23 million children and adolescent were diagnosed with depression in 2019. What's more, the Institute of Metrics and Health Assessment indicates that 86,000 of young people suffer from bipolar disorder. Generally, in recent years there has been noticeable increase in the number of minors diagnosed with affective disorders. These people experience depressed mood, loss of interest, and anhedonia. Moreover, there is a strong relationship between affective disorders and suicidal behavior. Due to the low specificity of the occurring symptoms and the high frequency of co-occurrence of other mental illnesses, affective disorders are difficult to unequivocally diagnose.

Material and methods. We will focus on the most up-to-date research and clinical results.

Analysis of literature. As previous research on potential treatments for affective disorders focused on adult patients, potential treatments for minors still require validation studies. Nowadays, treatment recommendations include application of psychopharmacotherapy combined with psychosocial interventions (cognitive-behavioral and interpersonal therapies are recognized as the most effective). Of the antidepressants, fluoxetine and escitalopram are the most commonly used in the therapy of adolescent depression. Recent studies show that atypical antipsychotics, such as risperidone, may be the most effective in treatment of bipolar disorder, though they carry a risk of causing more metabolic disorders in young people.

Conclusion. The aim of this study is to present the issues of diagnosing affective disorders in children and adolescents, taking into account the specificity and selectivity of the observed symptoms. In addition, a discussion of potential treatment methods, with emphasis on their effectiveness and safety will be presented.

Keywords. Affective Disorder, Borderline Disorder, Depression

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Effects of marijuana on the kidneys

Authors: Weronika Buczek, Mikołaj Wiśniewski, Jolanta Wiśniewska, Anna Oleszczuk

Supervisor: Agnieszka Grzebalska
Affiliation: Student Scientific Circle at the Department and Clinic of Nephrology of the Medical University in Lublin, Lublin, Poland

Type of the paper: Review paper

Introduction and aim. The use of cannabis for both medicinal and recreational purposes has been gaining popularity for many years. Liberalization of regulations leads to greater availability and use of cannabinoids. The aim of this study is to show how the marijuana effects the kidneys in patients with different diseases.
Material and methods. We reviewed the latest literature available in the PubMed and Google Scholar databases.
Analysis of literature. There are two types of receptors in the kidneys, CB1 and CB2, which are activated by cannabis components. Their activation by CBD can lead to both positive and deleterious effects. Endocannabinoides such as anandamide reduce glomerular filtration and increase renal blood flow. Activation of the endocannabinoid system can lead to increased urine and sodium excretion. CB1 receptor overexpression is associated with increased protein excretion. Animal models have shown a decrease in proteinuria after administration of a selective CB1 receptor antagonist, while CB2 receptor activation reduces albuminuria. In chronic kidney disease, an association between CB1 receptor antagonism and CB2 receptor activation has been found to improve kidney function. Selective CB1 and CB2 receptor agonists reduce renal tubular damage in acute kidney injury. Blockade of the CB1 receptor or activation of the CB2 receptor has been shown to protect against tubular damage by reducing oxidative stress and kidney inflammation.
Conclusion. Due to the increased use of cannabinoids, it is necessary to conduct further in-depth studies on their effects on the human body, with particular emphasis on the kidneys.
Keywords. Kidneys, Marijuana, Nephrology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The effect of aspirin intake on serum sFLT1 levels in women at high risk of preeclampsia in pregnancy.

Authors: Lorna Muscat Baron[1],

Supervisor: Byron Baron, Yves Muscat Baron[2]

Affiliations: [1] Centre for Molecular Medicine and Biobanking, University of Malta, Msida, Malta
[2] Department of Obstetrics and Gynaecology, Mater Dei Hospital, Msida, Malta

Type of the paper: Research paper

Introduction and aim. The objective was to determine the change in serum levels of endothelial factors sFLT1 and PlGF when administering low-dose aspirin in a cohort of pregnant women with high-risk pregnancies.
Material and methods. Participants were chosen from 200 women with 49 fulfilling all selection criteria. ELISA was then used to measure serum levels of sFLT1 and PlGF. SPSS was then used to analyse the statistical significance of biomarker levels in sera in comparison to normotensive women not administered aspirin.
Results. Participants with high-risk pregnancies showed no significant difference in the serum levels of sFLT1 present in their sera in comparison to normotensive women when administered aspirin. However, the mean PlGF levels were shown to be significantly different between the high-risk cohort and normotensive cohort in the first trimester.
Conclusion. These results indicate clinical evidence of the effect of aspirin on serum sFLT1 but not PlGF levels, in keeping with in vitro studies. The decrease of typically high serum sFLT1 in high-risk participants to normalised levels may explain the protective mechanism of aspirin in pregnancy.
Keywords. Aspirin, Pregnancy, sFLT1

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Sex differences in antiplatelet therapy – a review

Authors: Jakub Michal Zimodro[1], Yolande Appelman[2]

Supervisor: Aleksandra Gasecka[1]

Affiliations: [1] 1st Chair and Department of Cardiology, Medical University of Warsaw, Poland
[2] Department of Cardiology, Amsterdam Cardiovascular Sciences, Amsterdam UMC, VU University, Amsterdam, Netherlands

Type of the paper: Review paper

Introduction and aim. Antiplatelet therapy constitutes a crucial part of cardiovascular disease (CVD) prevention. Although CVDs were long associated with men, we now know they critically affect women. Nevertheless, there is insufficient and inconsistent data on the effect of monotherapy with aspirin or P2Y12 inhibitor and of dual antiplatelet therapy on females. This review was conducted to summarize the current knowledge and to assess whether sex-specific antiplatelet therapy is required.

Material and methods. A literature search was performed using PubMed and Mendeley. Evaluation of abstracts from databases was followed by detailed analysis of 60 papers. It was discussed i) how sex affects platelet biology and response to antiplatelet agents, ii) how sex and gender differences translate into clinical challenges and iii) how women's cardiological care might be improved.

Analysis of literature. Evidence from multiple trials suggest that women and men exhibit heterogenous baseline platelet reactivity and respond to antiplatelet therapy in a different way, which is reflected by laboratory results and clinical outcomes. Sex disparities in diagnostic process, medicine prescription, therapy course and clinical outcomes have been reported, suggesting that women suffering from CVD may not receive equitable care.

Conclusion. Further investigations with appropriate representation of women are required to understand the complex nature of sex-specific platelet response. As far as guidelines recommend the same treatment strategies in both sexes, there is a need to advocate equality in management of females and males with CVD.

Keywords. Antiplatelet Therapy, Cardiovascular Disease, Sex Differences, Women

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Monoclonal antibody as the new future in the treatment of episodic and chronic migraine

Authors: Bernadetta Jakubowska, Izabela Kiebała

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliation: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Migraine is a chronic disease resulting from a neurovascular dysfunction. The main symptoms include unilateral severe headache, paresthesias of the extremities, drowsiness, nausea, and general weakness. The headaches are usually pulsating in nature, of moderate severity, and frequency of attacks is conditioned individually. Migraine affects about 8% of people worldwide (three times more often in women). Currently, the upward trend in the incidence of migraine is observed in adolescents. This condition strongly affects people's quality of life and their ability to participate in work, family and social events.

Material and methods: The etiology of migraine is very complex and not fully understood. The main risk factors include both genetic (familial) and environmental (diet, stres) components.

Analysis of literature. Management usually consists of controlling symptoms through non-steroidal anti-inflammatory drugs, ergotamine derivatives, and triptans. Preventive therapy can significantly reduce persistent headaches, prevent further progression. It has been established that an important, causal role in the onset of migraine attacks is played by a neuropeptide released in the trigeminovascular system with a potent vasodilator effect, referred to as calcitonin gene-rekated peptide (CGRP). Erenumab strongly and specifically competes with CGRP for binding to the receptor and inhibits CGRP activity at the receptor. Erenumab is a fully human (100%) anti-CGRP monoclonal antibody approved in 2022 in the US and EU for the prophylactic treatment of migraine in adults in episodic and chronic migraine. Topiramate reduces the occurrence of migraine attacks.

Conclusion. The purpose of this study will be to discuss the diagnosis and new pharmacotherapy of migraine using erenumab and topiramate.

Keywords. Diagnosis, Migraine, Monoclonal Antibodies, Treatment

PhD

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Perception of pathologists in Poland about artificial intelligence and machine learning in medical diagnosis – a cross-sectional study

Authors: Alhassan Ali Ahmed, Elżbieta Kaczmarek, Martin Witt

Supervisor: Elżbieta Kaczmarek

Affiliation: Department of Bioinformatics and Computational Biology – Poznan University of Medical Sciences, Poznan, Poland

Type of the paper: Research paper

Introduction and aim. In the past vicenium, several artificial intelligence and machine learning models have been developed to assist in medical diagnosis, final decision, and designing treatment protocols. The number of active pathologists in Poland is low, which prolongs the diagnosis and treatment journey for the patient. Hence, applying artificial intelligence and machine learning may aid in this process. Therefore, our study aims to investigate the knowledge of pathologists in Poland about using artificial intelligence and machine learning methods in the clinical field. To our knowledge, no similar study has been conducted.

Material and methods. We conducted a cross-sectional study targeting pathologists in Poland from June to July 2022. The questionnaire included self-reported information on artificial intelligence or machine learning knowledge, experience, specialization, personal thoughts, and level of agreement with different aspects of artificial intelligence and machine learning in medical diagnosis. Data were analyzed using Statistics v.26, PQStat Software v.1.8.2.238, and RStudio 351.

Results. Overall, 68 pathologists in Poland participated in our study. Their average age and years of experience were 38.92±8.88 and 12.78±9.48 years, respectively. Approximately 42% used artificial intelligence or machine learning methods , which showed a significant difference in the knowledge gap between those who never used it (OR=17.9, 95%CI=3.57-89.79, p<0.001). Also, users of artificial intelligence had higher odds of reporting satisfaction with the speed of artificial intelligence in the medical diagnosis process (OR=4.66, 95%CI=1.05-20.78, p=0.043). Finally, significant differences (p=0.003) were observed in determining the liability for legal issues used by artificial intelligence methods.

Conclusion. Most pathologists in this study did not use artificial intelligence models, highlighting the importance of increasing awareness and educational programs about applying artificial intelligence in medical diagnosis.

Keywords. Artificial Intelligence, Cancer, Histopathology, Machine Learning, Medical diagnosis, Pathology

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: SOX10 expression in mammary gland carcinomas and adenomas in female dogs

Authors: Joanna Bubak[1], Rafał Ciaputa[1], Izabela Janus[1], Kacper Żebrowski[1], Aleksandra Piotrowska[1]

Supervisor: Marcin Nowak[2], Piotr Dzięgiel[2]

Affiliations: [1] Department of Pathology, Wrocław University of Environmental and Life Sciences, Wroclaw, Poland
[2] Department of Histology and Embryology, Wroclaw Medical University, Wroclaw, Poland

Type of the paper: Research paper

Introduction and aim. Canine mammary cancer (CMC) is one of the most common malignancy in female dogs. Although there are many cell markers useful in the diagnosis of cancer in veterinary medicine, the expression of SOX 10 has not yet been well characterized. In human oncology, SOX10 expression is positively correlated with negative prognostic factors for breast cancer. Studies indicate similar mechanisms in the process of oncogenesis in humans and dogs. The aim of our work is to confirm that SOX 10 can be a new cellular marker in the diagnosis of mammary carcinomas in bitches.

Material and methods. The study was carried out on 53 samples of canine mammary carcinoma, 14 samples of adenoma and 10 samples of normal glandular tissue. The material was stained with hematoxylin and eosin (H&E) to confirm the histological type and histological grade (Grading) according to the Elston and Ellis classification Immunohistochemistry of SOX10 expression was performed. The percentage of cells showing positive expression was assessed according to the following scale: 0% of cells 0 points, 1-10% of cells 1 point, 11-50% 2 points, 51-80% 3 points, 81-100% 4 points.

Results. Statistical analysis showed significantly higher expression in simple carcinoma compared to normal tissue (p=0.008) and in cancer compared to normal tissue (p=0.008) and significantly lower protein expression in benign tumors compared to G2 tumors (p=0.004).

Conclusion. The obtained results may suggest a significant role of SOX10 in the progression of carcinogenesis in mammary tumors in bitches, similarly to the case of triple-negative breast cancer in females.

Keywords. Canine mammary cancer, Immunohistochemistry, SOX10, Tumour

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Mucosal IgE production in local allergic rhinitis, a potential diagnostic criterion, and an implementation in allergen immunotherapy

Author: Mohamad Mahdi Mortada

Supervisor: Marcin Maciej Kurowski

Affiliation: Department of Immunology and Allergy, Central Teaching Hospital of the Medical University of Lodz, Lodz, Poland

Type of the paper: Review paper

Introduction and aim. Local allergic rhinitis (LAR) patients are diagnosed based on the presence of clinical symptoms such as rhinorrhea, sneezing, and nasal itching with negative skin prick testing and negative serum-specific immunoglobulin E (sIgE) assessment for the specific allergen. Our paper aims to provide insight into the pathogenesis of LAR, the local production of IgE in the nasal mucosa, and challenges associated with the investigation of this phenomenon. The current state of knowledge and future research perspectives on the management of LAR patients are presented.

Material and methods. This review included literature searched using Medline, Embase, and PubMed. A total of 53 articles were identified initially and after applying the exclusion criteria 38 articles (32 original and 6 reviews) were selected for the analysis of literature.

Analysis of literature. Based on the assessed studies, not only patients with allergic rhinitis (AR) show the presence of nasal IgE for the specific allergen (Mites, pollen, and molds), but also those who are classified in the non-allergic rhinitis (NAR) and LAR groups. The results support the hypothesis stating that NAR/LAR patients may have local production of IgE at the level of nasal mucosa following local inflammation due to exposure to specific allergens.

Conclusion. The possibility to assess the local synthesis of sIgE and other mediators can help in adding allergen immunotherapy (AIT) to the management protocol of LAR patients and may provide new insights into phenotypical and endotypical classification of AR.

Keywords. Local Allergic Rhinitis, Local sIgE, Nasal Mucosa

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The triple network, kinaesthesia and temporal experience – an approach to the disturbance of bodily subjectivity in schizophrenia

Author: Camilo Sanchez

Supervisor: Marcin Moskalewicz

Affiliation: Department of Humanities and Social Sciences, Doctoral School, Poznan University of Medical Sciences, Poznan, Poland

Type of the paper: Review paper

Introduction and aim. Recent functional connectivity studies showed that increased synchrony between the right anterior insula and the default mode network is associated with psychosis. This association is proposed to be correlated with the disrupted dynamics between the pre-reflective and reflective temporal experience in psychotic patients. The aim of the research is to assess the proposed association through the research question: How is the relation between the dynamics, of the right anterior insula, the Default Mode (DMN), Central Executive (CEN) and Salience (SAL) networks, and the dynamic between the implicit pre reflexive and explicit reflexive temporal experience, in schizophrenia patients? The hypothesis is, there is a reciprocal constitutive relation between the functional dynamics of these large-scale brain networks and these temporal, bodily experiences, which is out of synchrony in schizophrenia patients.

Material and methods. Sample of 44 patients (n=44, schizophrenia undifferentiated (F20.3 ICD-11, 295.9 DSM-V)), 1-year diagnosis (Max.) & 44 healthy controls, paired by age & sex. Includes a Phenomenologically informed interview and an fMRI scan (breath & heart rate monitoring during the trials). The first trial consists of a resting state fMRI (whole-body MR unit with an eight-channel head coil), and the imaging sequences will be conducted under darkness. The second trial will be the same but the participant will be asked to keep their eyes open while watching the screen, where a digital clock will be presented for 10 minutes.

Analysis of literature. A study evidenced that the Ultra High-Risk subjects had greater periods of synchrony between the right anterior insula and the DMN and lost the competitive dynamics between the synchronic activity of the SAL and DMN, and the CEN and insular activity (along with DMN deactivation). Another study suggests that the latter impairment in the triple network dynamics may be associated with the loss of contact with reality suffered by psychotic patients, along with a morbidly excessive awareness of the individual realm; the latter could be associated with the greater synchronic pattern between the right anterior insula and the DMN.

Conclusion. It is concluded that DMN activity is associated with the temporal experience. A solid support is offered to the claim that the main temporal disturbance experienced by schizophrenia patients, is associated with disturbed dynamics of the triple network activity.

Keywords. Functional Connectivity, Large Scale Brain Networks, Phenomenological Psychopathology, Schizophrenia, Temporal Experience

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The altered expression of GDF11 – TGF-β family member - during intestinal inflammation and colitis-associated colorectal cancer

Authors: Weronika Machelak, Emilia Januszkiewicz, Mikołaj Mierzejewski

Supervisor: Marta Zielińska

Affiliation: Department of Biochemistry, Faculty of Medicine, Medical University of Lodz, Lodz, Poland

Type of the paper: Research paper

Introduction and aim. Growth differentiation factor 11 (GDF11) is a novel member of TGF-β superfamily. Its role is confirmed in embryogenesis, rejuvenation, and aging. GDF11 is involved in inflammatory response as it inhibits the release of pro-inflammatory cytokines and NLRP3 inflammasome activation. Moreover, GDF11 has clinicopathological significance in colorectal cancer and is proposed as a possible prognostic factor. The aim of our study is to assess the activity of GDF11 during development of colitis and colorectal cancer in mice.

Material and methods. Male C57BL/6 mice were used in our experiments. Colitis was induced by dextran sodium sulfate (DSS) addition into drinking water. Single injection of azoxymethane (AOM) and repeated cycles of DSS were used to induce colitis-associated colorectal cancer. At different time points mice were sacrificed. Human and mouse colorectal cancer cell lines were used in our project to verify GDF11 expression. MC-38 cells were stimulated with the cytokines for 24 hours. We isolated RNA and protein to perform real-time RT-PCR and Western Blot. Statistical analysis was performed using GraphPad Software.

Results. We found that GDF11 expression at mRNA level is increased in the mouse colon during aging. GDF11 expression is elevated during the experimental colitis and during the period of recovery. GDF11 expression is changed at initial stage of colorectal cancer in mice. Its expression also differs among different human cell lines. LPS induced an increase of GDF11 expression.

Conclusion. We confirmed that GDF11 is crucial at all stages of development of experimental colitis and colitis-associated colorectal cancer.

Keywords. Colitis, GDF11, Inflammation

Poster session I

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Chlorellosis in humans and animals

Authors: Julia Florek, Mateusz Bartoszek

Supervisor: Grzegorz Kucaba

Affiliations: Student's Science Club of Medical Simulation, Rzeszow University, Rzeszow, Poland

Type of the paper: Poster – review paper

Introduction and aim. Prototheca is the only alga regarded as pathogenic. Much less frequently, infections can be also caused by Chlorella, which is a widely-known dietary supplement. Unlike Prothoteca algae, Chlorella contains chlorophyll and can be used in the production of biofuel as well as electric and thermal energy. The purpose of this review is to analyze cases of chlorella infection.

Material and methods. The literature review was performed by analyzing research and review articles from the Pubmed and ScienceDirect databases published over the last 50 years.

Analysis of literature. The first case of infection caused by Chlorella was reported in a lamb in 1973 and from then on infections in other species of mammals (mostly herbivorous), reptiles and fish have been observed.

So far, two cases of chlorellosis in humans have been confirmed, the last one in 2014 in Australia. Both infections were a result of a mechanical trauma in freshwater. In 2014 the patient developed aggressive Chlorella infection with necrosis of adipose tissue through bursa and into the paratenon of patellar tendon where it was necessary to perform debridement and bursectomy. It seems that in both cases negative pressure wound therapy brought about successful results.

Conclusion. The studies on algae will open up perspectives for better prevention and treatment of infections caused by non-typical organisms such as Chlorella.

Keywords: Algae, Chlorellosis, Infections

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Total antioxidant capacity of urine in patients with urogenital cancers

Authors: Agnieszka Mokrzyńska, Patrycja Olech

Supervisor: Sabina Galiniak

Affiliations: Department of Biology, Institute of Biology and Biotechnology, College of Natural Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Poster – research paper

Introduction and aim. Oxidative stress is defined as an imbalanced state of the production of reactive oxygen species and antioxidant capacity that causes oxidative damage to biomolecules, leads to cell injury and finally death. Oxidative stress mediates the development and progression of several cancer diseases, including urogenital cancers. The aim of our study was to determine total antioxidant capacity (TAC) of urine of patients with bladder, prostate or kidney cancer.

Material and methods. 65 bladder cancer, 31 prostate cancer, 27 kidney cancer and 80 healthy volunteers as a control group were included. We determined the urine TAC with two methods (FRAP and ABTS*).

Results. There was no statistical difference in the urine TAC measured using the ABTS* between the study groups. The TAC of the urine of the patients with bladder or prostate cancer measured with FRAP method was similar to healthy controls. However, the urine TAC of kidney cancer patients was significantly lower than in the control group (419±128 vs 562±137 μmol TE/mmol creatinine, $p<0.001$).

Conclusion. The results of our study indicate that the urine TAC of patients with urogenital cancers, except kidney cancer, is similar to that of healthy controls. Therefore, the urine TAC may not be useful for assessing the health status of patients.

Keywords. Biomarkers, Bladder cancer, Prostate cancer, Kidney cancer

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Total antioxidant capacity of urine in patients with urolithiasis

Authors: Patrycja Olech, Agnieszka Mokrzyńska

Supervisor: Mateusz Mołoń

Affiliations: Department of Biology, Institute of Biology and Biotechnology, College of Natural Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Poster – research paper

Introduction and aim. In recent years, research has focused on the clarifying the pathogenesis of urolithiasis, which affects more than 10% of the population of developed countries. Previous reports have presented that the development of urinary stone disease are associated with elevated oxidative stress. The aim of our study was to determine total antioxidant capacity of urine of patients with urolithiasis.

Material and methods. 119 participants with urolithiasis and 80 healthy volunteers as a control group were included. We determined the urine total antioxidant capacity (TAC) by using two methods (FRAP and ABTS*).

Results. The TAC of the urine of the patients with urolithiasis was significantly decreased when measured using the FRAP method (532±269 vs 562±137 μmol TE/mmol creatinine, $p<0.01$) and ABTS* (762±259 vs 863±220 μmol TE/mmol creatinine, $p<0.001$) compared with healthy controls.

Conclusion. The results indicate a clearly reduced TAC in the urine of patients with urolithiasis. Determination of TAC could in the future be used in the assessment of the health status of patients.

Keywords. Biomarkers, Oxidative stress, Urolithiasis

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Oxidative stress in patients with benign prostatic hyperplasia

Authors: Zofia Kobylińska

Supervisor: Sabina Galiniak

Affiliations: Department of Biology, Institute of Biology and Biotechnology, College of Natural Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Poster – research paper

Introduction and aim. Benign prostate hyperplasia is the common health problem in ageing male. Reactive oxygen species are produced more with advancement of age leads to oxidative stress. Oxidative stress may lead to compensatory cellular proliferation with resulting prostate tissue damage and hyperplastic growth. The purpose of our study was to determine markers of levels of the oxidative stress in urine of patients with benign prostate hyperplasia.

Material and methods. 54 men with benign prostate hyperplasia and 65 healthy men as a control group were included. We determined the urine levels of advanced oxidation protein products (AOPP) and malondialdehyde (MDA).

Results. In our study, we noted a statistically elevated level of AOPP, one of the most frequently estimated markers of protein oxidative modification in urine of patients with benign prostate hyperplasia (25.6±14.8 vs 15±8.6 μmol/mmol creatinine, $p<0.001$). Moreover, the concentration of MDA in the urine was significantly increased in men with benign prostate hyperplasia compared to controls (1.18±0.55 vs 0.84±0.18 μmol/mmol creatinine, $p<0.001$).

Conclusion. Our study showed the evidence of association of oxidative stress in patients with benign prostate hyperplasia.

Keywords. biomarkers, oxidative stress, prostate

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Isolation, breeding and characteristic of cells taken from the pulp of the tooth use in regeneration medicine

Authors: Dawid Jeżewski, Nicole Nowak, Joanna Bubak

Supervisor: Tomasz Gębarowski

Affiliations: Refectio Students' Scientific Society, Department of Biostructure and Animal Physiology, Wroclaw University of Environmental and Life Sciences, Wroclaw, Poland

Type of the paper: Poster – research paper

Introduction and aim. Regenerative medicine includes various types of therapy, including transplantation of cells derived from embryonic stem cells, induced pluripotent stem cells, mobilization of endogenous stem cells, tissue engineering using natural scaffolds or organoids made from adult stem cells and pluripotent cells. The aim of the work will be to multiply stem cells located in the pulp, which can then be used in regenerative processes in the body.

Material and methods. Isolation of cell line was conducted by collecting the material, and then via mechanical fragmentation of the material, cleaning the collected dental pulp. The next step was transferring the material to the test tubes with the medium NutriStem F Basal Medium with FBS in concentration 20% that is stored in the incubator in a humidified atmosphere of 95% air and 5% CO2 for 3 h at 37 °C.

Results. In this research dental pulp stem cell line was established, by harvesting tissue samples from human volunteers and conducting isolation and cell culture.

Conclusion. Established dental pupl stem cell line gives many possibilities in regenerative medicine, because it can be used in the regeneration of bone defects, corneal regeneration and neurodegenerative diseases.

Keywords. cell culture, dental pupl, regenerative medicine

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Prevention methods of white spot lesions in orthodontic patients with fixed orthodontic appliances: a systematic literature review

Authors: Smilte Paldauskaitė, Roberta Lekavičiūtė

Supervisor: Kristina Lopatienė

Affiliations: Department of Orthodontics, Lithuania University of Health Sciences, Kaunas, Lithuania

Type of the paper: Poster – review paper

Introduction and aim. White spot lesion (WSL) is a frequently unwanted side-effect of orthodontic treatment with fixed appliances. WSL develops as a result of demineralization caused by plaque buildup on teeth. During orthodontic treatment, WSL can be avoided with a multifactorial approach. To analyze the prevention methods of white spot lesions in patients with fixed orthodontic appliances.

Material and methods. Data was retrieved according to PRISMA criteria. Search with keywords "White spot lesion", "fixed orthodontic appliances" was performed up to February 23 in PubMed, Google Scholar, ScienceDirect. Of the 987 results, only those which identified methods of WSL prevention in patients with fixed orthodontic appliances were collected. 28 articles were assessed for eligibility, 9 of them were included in this review. Inclusion criteria: studies published less than 5 years ago, written in English, randomized clinical trials. Exclusion criteria: systematic reviews, case reports, in vitro studies. The quality of each study was evaluated using the Appraisal tool for cross – sectional studies and was analyzed by two authors.

Analysis of literature. In 7 studies, 357 patients with fixed orthodontic appliances were included. It was found that CO2 laser exposure affected WSLs on incisal, mesial, distal regions ($p<0.05$). It was not statistically effective in the gingival sites ($p>0.05$). Nano silver mouthwash prevented WSLs more effectively than fluoride and chlorhexidine. Significant difference was in the gingival, mesial, incisal surfaces ($p<0.05$), but it was not significant in distal surface ($p>0.05$). DIAGNOdent (DD) measurements showed significant difference between fluoride releasing primer, which caused less demineralizations (1.3%) than conventional (3.9%). Two studies showed that fluoride varnish reduced formation of WSLs. Control groups had higher incidence of WSLs, however, it was not statistically significant ($p>0.05$). Fluoride coating around bonded brackets caused higher enamel mineralization than uncoated teeth, significant difference between DD values was found ($p\leq0.05$). One study proved that after using hydroxyapatite toothpaste, SAI values were significantly reduced compared to fluoride toothpaste ($p<0.05$).

Conclusion. CO2 laser, nano silver mouthwash, fluoride releasing primer, fluoride varnish, fluoride coating and hydroxyapatite toothpaste can prevent WSLs during orthodontic treatment with fixed appliances. However, different prevention methods can affect different areas of the tooth.

Keywords. Enamel demineralization, Fixed orthodontic appliances, White spot lesion

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Climate Change, Energy Consumption, and Conflict: Implications for Public Health and Sustainable Development

Authors: Magnus Heimbucher

Affiliations: Institute of Medical Sciences, Medical Collage of Rzeszow University, Rzeszow University

Type of the paper: Poster - review paper

Introduction and aim. The aim of this research poster is to explore the interconnections between climate change, energy consumption, and their impacts on public health. It seeks to raise awareness of the challenges and consequences these factors have on global health and discuss potential mitigation strategies.

Material and methods. The poster is based on two primary research papers, one focusing on the relationship between climate change, conflict, and health, and the other examining the connection between economic growth and energy consumption in the context of sustainable development. I have extracted key information from these articles, analyzed the relevant data, and combined the findings to create a comprehensive overview.

Analysis of literature. The literature analysis involves comparing and contrasting the findings from the selected studies, highlighting the causal pathways linking climate change with conflict and health risks, and examining the economic growth-energy consumption relationship from the perspective of sustainable development.

Conclusion. The research poster concludes that climate change and energy consumption have significant and far-reaching impacts on public health. Greater understanding of these connections is crucial for mitigating climate change, promoting sustainable development, and addressing the health risks associated with resource scarcity and conflict.

Keywords. Conflict, Climate change, Energy consumption, Public health

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Endovascular treatment of popliteal and shin artery occlusion – case study

Authors: Gabriela Sołga, Julia samczyk, Natalia Szawara

Supervisor: Sylwester Stachyra, Aleksandra Pusz-Sapa

Affiliations: Students Scientific Club Mloda Radiologia, Medical Collage of Rzeszow University, Rzeszow University

Type of the paper: Poster – clinical case

Introduction and aim. The aim of the study is to present a case of a patient with short-distance claudication and pain in the lower limb, treated with the endovascular method using the technique of balloon angioplasty.

Description of the case. A 60-year-old patient was referred to the emergency room with suspected acute ischemia of the left lower limb. The history noted: a claudication distance of 50 m, severe pain in the limb and a weak pulse in the foot. A Doppler ultrasound examination of the abdominal aorta and arteries of the lower limbs was performed. Obstruction of the popliteal and posterior tibial arteries along the entire length and numerous stenoses of the peroneal artery were found. The performed angio-CT of the lower limbs confirmed the changes depicted in USG. The patient was referred to the vascular surgery department. Using the Seldinger method, the common femoral artery was punctured under ultrasound guidance and the introducer was inserted. The guidewire was used to pass into the area of popliteal artery occlusion. A diagnostic catheter was placed over the guidewire. Arteriography was performed, which confirmed the changes found in previous examinations. After overcoming the obstruction with a guidewire and a 4x100mm balloon catheter, angioplasty of the popliteal artery was performed. Follow-up arteriography showed numerous stenoses at the angioplasty site. It was decided to place a self-expanding stent measuring 5x100mm. After another balloon angioplasty, arteriography was performed, which showed optimal flow in the artery. Then, using a 3x150mm balloon catheter, balloon angioplasty of the posterior tibial artery and the fibular artery was performed. Control arteriography of the lower leg arteries showed a good haemodynamic effect. Endovascular equipment was removed. The vascular access site was pressed for 20 minutes and then bandaged. The patient left the hospital on the 2nd day after the procedure.

Conclusion. Balloon angioplasty made it possible to open the completely occluded popliteal and posterior tibial arteries, and to widen the severely narrowed peroneal artery. This allowed to improve the blood supply to the foot and significantly increase the distance of intermittent claudication.

Keywords. Balloon angioplasty, Electroradiology, Endovascular treatment

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Expression of prodynorphin and kappa opioid receptors in experimental colorectal cancer

Authors: Mikołaj Mierzejewski, Emilia Januszkiewicz, Weronika Machelak

Supervisor: Marta Zielinska

Affiliations: Department of Biochemistry, Faculty of Medicine, Medical University of Lodz, Lodz, Poland

Type of the paper: Poster - research paper

Introduction and aim. Opioids have pain-relieving and anti-inflammatory properties, as demonstrated in animal models of colitis and abdominal pain. Kappa opioid receptors (KOP) are not well characterized, but KOP ligands influence the progression or inhibition of cancer growth. In this study we focused on the level of expression of prodynorphin and kappa opioid receptors in experimental colorectal cancer.

Material and methods. The effects of U50488H, a selective KOP agonist, and Nor-binaltorphimine (nor-BNI), a selective KOP antagonist, were tested in in vitro and in vivo models. Colitis-associated colorectal cancer was induced in mice using azoxymethane and dextran sodium sulfate, and U50488H was injected intraperitoneally twice a week at the dose of 1 mg/kg. MC-38 cell line was used to verify the impact of KOP ligands on the cell viability. Gene and protein expression was assessed using real time RT-PCR and western blot.

Results. U50488H decreased cell viability after 24 hours in MC-38 cells. Nor-Bni had no effect on the cell viability, but counteracted U50488H. The mixture of U50488H and Nor-Bni had a worse effect than U50488H alone. In vivo, the colonic length did not differ between AOM/DSS and U50488H-treated groups. In mice trated with AOM/DSS we observed a thicker submucosal and muscle layer with increased immune cell infiltration as compared to U50488H-treated mice.

Conclusion. U50488H shown the ability to influence the development of the colonic cancer in mice.

Keywords. Cancer, Colorectal, KOP, Nor-binaltorphimine, U50488,

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Comparison of treatments for alopecia areata based on clinical trials

Authors: Aleksandra Roztoczyńska, Aleksandra Jeńć

Supervisor: Marta Zielinska

Affiliations: Student Scientific Society of Dermatology, Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszów

Type of the paper: Poster - review paper

Introduction and aim. Alopecia areata is an autoimmune skin disease. It is characterized by the occurrence of transient or permanent alopecia foci, within which there are no inflammatory changes. About 20% have a positive family history, and symptoms can occur at any time in life. Progression of the disease can lead to complete hair loss of the scalp, eyebrows, eyelashes, pubic hair and other body hair. In the outpatient therapy of alopecia areata minoxidil, cygnoline or corticosteroid are routinely used. Corticosteroids can be used intralesionally, locally or systemically, but studies show that the route of administration does not affect the effectiveness of therapy. Additionally, after finishing the treatment, defluvinium showes again.

Material and methods. In order to achieve the aim, the most important Four databases (PubMed, Google Scholar, Sciencedirect, Medscape) were systematically searched for studies published from January 2016 to March 2023 in English.The search terms were "alopecia areata JAK-STAT inhibitors", "baricitinib" "tofacytynib" "laser therapy" in the title or abstract or as keywords. A total of 54 references, excluding duplicates, were identified.

Analysis of literature. JAK-2-STAT inhibitors stands as the most extensively researched group of drugs. There have been many clinical studies of JAK inhibitor efficacy in treating AA, most of which used oral medications and a few studies using topical formulations. The oral formulations had dramatic outcomes with hair regrowth in about 67–75% of patients in several.

Furthermore, ongoing research is being conducted regarding the potential application of topical acid dibutyl ester, non-ablative fractional laser at a wavelength of 1565nm, and the stimulation of TREg lymphocytes for the management of alopecia areata.

Conclusion. Determining the most optimal treatment for alopecia areata (AA) presents a considerable challenge. Among the various categories of drugs extensively investigated for this condition, the JAK-STAT inhibitors have garnered significant attention.

Keywords. Alopecia areata, JAK-STAT inhibitors, Therapy

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Modifiable risk factors for pancreatic cancer and hepatitis B.

Authors: Aldona Sokołowska, Maria Przygoda

Supervisor: Dorota Bartusik- Aebisher

Affiliations: Student Scientific Association at Department of Biochemy "UR Cell", Medical Faculty of University of Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Pancreatic cancer was the twelfth most common form of cancer and the fourth most common form of cancer in the United States in 2015. Pancreatic cancer is usually diagnosed at an advanced stage, with only 20% of patients eligible for surgery at the time of diagnosis, and thus a survival rate of around 5%. Pancreatic ductal adenocarcinoma is the most common type of pancreatic cancer.

Material and methods. The etiology of pancreatic cancer is unclear, however, risk factors that increase the inflammation of this type of cancer, such as smoking, diabetes, obesity, high alcohol consumption or pancreatitis, have been taken into account, which is why it is so important to further study etiological factors and identify people at risk of the disease.

Analysis of literature. Hepatitis B infections are a major global problem affecting at least 2 billion people worldwide. The carcinogenic mechanisms of HBV infection can be explained by the incorporation of viral DNA fragments into the genome of host cells, which leads to the expression of HBx virus proteins, and this may lead to potentially oncogenic mutations. Not only active hepatitis B, but also a history of HBV infection can lead to the development of pancreatic cancer. The detection of silent replication of the virus and the expression of the protoncogenic HBx protein in the neoplastic tissue suggest the involvement of HBV infection in the development of pancreatic ductal adenocarcinoma.

Conclusion. The results of meta-analyses indicate that HBV infection may increase the risk of pancreatic cancer in most cases.

Keywords. Hepatitis B, Pancreatic cancer, Pancreatic ductal adenocarcinoma

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Atypical manifestation of hypopituitarism

Authors: Julia Inglot, Maksymilian Kłosowicz, Jadwiga Inglot, Karol Bednarz

Supervisor: Mariusz Partyka

Affiliations: Student Scientific Club of Endocrinology and Nuclear Medicine, Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszów

Type of the paper: Poster - clinical case

Introduction and aim. Adenomas are the most commonly diagnosed types of pituitary tumors. Due to the infiltration of surrounding tissues, they are divided into invasive and non-invasive adenomas. Symptoms may be due to pathological endocrine function, which depends on the type of hormone secreted, or the "mass effect" of the tumor, such as visual field defect or hypopituitarism. Diagnosis is made using functional tests and Magnetic Resonance (MR) imaging. The treatment of choice is surgery.

Description of the case. A 69-year-old man with a history of hypertension and prostatic hypertrophy was admitted to the hospital because of an increasing fatigue for 2 days. Physical examination revealed fever, lethargy and impaired verbal contact. Laboratory tests performed on admission showed elevated TSH levels, and hyponatremia. Urinalysis revealed high level of leukocytes and bacterias, what confirmed an urinary tract infection. Next step, determination of the concentrations of other hormones in venous blood showed decreased levels of ACTH, FSH and LH, FT3 and FT4, cortisol and testosterone. Based on the results, a diagnosis of hypopituitarism was made, and a MRI confirmed 38x30x43 mm pituitary macroadenoma as the cause of the disorder. Substitution treatment was started, after which the patient's condition improved. After receiving medical recommendations the patient was discharged home. He remains in contact with neurosurgeon to set date for surgery.

Conclusion. The presented case of the patient shows an atypical clinical picture of a pituitary macroadenoma. Initially, laboratory test results finding primary hypothyroidism with secondary TSH elevation suggested that pituitary secretory activity of other axes was preserved. However, concomitant hyponatremia and urinary tract infection prompted the physician to deepen the diagnosis. Further tests revealed a number of pathologies in the concentrations of peripherally secreted hormones. On this basis, an atypical pituitary adenoma was found. Hypopituitarism, which was the result, induced secondary insufficiency of peripheral endocrine organs and primary hypothyroidism.

Keywords. Autoimmune thyroiditis, Hashimoto's disease, Hypopituitarism, Pituitary macroadenoma.

Poster session II

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Activation of Kappa Opioid Receptors in therapy of inflammatory bowel disease

Authors: Emilia Januszkiewicz, Mikołaj Mierzejewski, Weronika Machelak

Supervisor: Marta Zielińska

Affiliations: Department of Biochemistry, Faculty of medicine, Medical University of Łódź, Poland

Type of the paper: Poster - research paper

Introduction and aim. There is no safe and efficient treatment of the chronic intestinal inflammation. Kappa Opioid Receptors (KOP) are found not only in the central nervous system, but also in the gastrointestinal tract. Studies showed that KOP agonist can reduce inflammation in numerous experimental inflammatory models. The aim of the study was to assess if activation of KOP will give anti-inflammatory action in the experimental model of colitis.

Material and methods. Dextran Sulfate Sodium was given to mice for 7 days, following 14 days of water, this cycle was repeated twice. We used a selective KOP agonist, U50488, at the dose of 1mg/kg injected intraperitoneally every second day. Following morphological grading, colonic tissues were isolated for molecular analysis. In vitro tests were performed using the RAW 264.7 macrophage cell line, and lipopolysaccharide (LPS) was used to mimic inflammation. The Griess test and MTT assay were used to evaluated how U50488 affects the cytotoxicity and viability of the cells.

Results. Anti-inflammatory properties of U50488 were observed by overall improvement in macroscopic scoring, and improvement in microscopic scoring. Moreover, RT-PCR results show changes in NOS2, IL-1B and Il-6 expression, that indicate anti-inflammatory potential of KOP agonist. Results obtained in vitro confirmed that U50488 affected cell survival and decreased NO release, indicating that it has anti-inflammatory effects.

Conclusion. Activation of KOP with U50488 may become novel approach in treatment of chronic colitis.

Keywords: Colitis, Inflammation, KOP, U50488

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Clinical applications of metabolomics

Authors: Aleksandra Burbelka

Affiliations: Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszow

Type of the paper: Poster - review paper

Introduction and aim. One of the most dynamically developing scientific field is the detection of physicochemical properties of metabolites of the human body. Researchers currently focus on metabolome analysis due to the possibility of targeted therapies for various conditions where changes in metabolism concern not only the levels of single metabolites but quantitative relationships between the levels of small molecule compounds making up a whole metabolic profile. The aim of this research was to summarize the latest findings in the field of metabolomics and its applications in clinical medicine.

Material and methods. The review was performed according to the up to date literature. Thorough analysis of the scientific data from PubMed database has been conducted.

Analysis of literature. One groundbreaking study determined the metabolic profile of patients qualified for transcatheter aortic valve implantation (TAVI). Acute kidney injury (AKI) is a fairly common complication after TAVI and is associated with a significant increase in mortality. It has been proved that in an elderly population undergoing TAVI, metabolite profiling improves the prediction of AKI and may allow for its prevention by physicians. Metabolomics has also allowed for early detection of biochemical changes associated with the risk of type 2 diabetes. Amino acids such as isoleucine, leucine and valine turned out to be predictive markers of this condition. In multiple myeloma (MM), metabolomics is used to detect biomarkers that confirm the presence of MM and to assess disease progression. Carnitine and acetylcarnitine seem to be significant biomarkers - their concentration in the blood correlates with the stage of neoplastic disease. Increase in carnitine concentration can lead to increase in lipid oxidation in particularly metabolically active myeloma cells. This finding led to the insight that people suffering MM should avoid carnitine supplementation (dairy products, meat). It has been suggested that research into metabolism may also extend human life. So far, specific lipid compounds such as phosphatidylcholine and sphingomyelin have been identified as novel biomarkers of longevity.

Conclusion. Metabolomics is an important tool which may provide valuable data used in diagnosis and monitoring of therapy in nearly every field of medicine. However, due to the complexity of human metabolism further studies and research are necessary.

Keywords: Acute kidney injury, Metabolomics, Multiple myeloma, Transcatheter aortic valve implantation, Type 2 diabetes,

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Multidrug-resistant bacteria - current state and prospects for the future

Authors: Łukasz Zarębski, Aleksandra Burbelka

Affiliations: Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszow

Type of the paper: Poster - review paper

Introduction and aim. Bacterial infections are raising serious concern across the globe. The effectiveness of the conventional antibiotics is decreasing due to global emergence of multi-drug-resistant (MDR) bacterial pathogens. Researchers currently focus on searching for the next generation of safe and effective antibiotics compounds including antimicrobial peptides, phage therapy, phytochemicals, metal-based antimicrobial compounds, lipopolysaccharide and efflux pump inhibitors to control the infections caused by MDR pathogens. The aim of this work was to summarize the latest research in the field of new therapies against MDR pathogens.

Material and methods. The review was performed according-to the up to date literature. Thorough analysis of the scientific data from PubMed database has been conducted.

Analysis of literature. There are few novel therapeutic options. First of them are antimicrobial peptides. They have been demonstrated to kill Gram negative and Gram positive bacteria, enveloped viruses, fungi and even transformed or cancerous cells. Unlike the majority of conventional antibiotics it appears that antimicrobial peptides frequently destabilize biological membranes, can form transmembrane channels and may also have the ability to enhance immunity by functioning as immunomodulators. Second promising therapeutic option are bacteriophages, which are viruses that act as pathogens against bacteria, infecting and replicating inside them. They show the ability of attacking and killing only specific bacterial cells. Next promising alternative to traditional antibiotics are nanoparticles. They have been studied extensively for their antimicrobial properties in order to fight MDR bacteria. Several characteristics in particular make nanoparticles strong candidates as a traditional antibiotic drug alternative. Firstly, they have a high surface area to volume ratio, which increases contact area with target organisms. Secondly, they may be synthesized from polymers, lipids, and metals. Last but not least, a multitude of chemical structures, such as fullerenes and metal oxides, allow for a diverse set of chemical and biological functionalities.

Conclusion. Antibiotic resistance is an alarming phenomenon. New classes of antibiotics with different actions against MDR pathogens need to be developed urgently. However, until it is successfully brought into existence, following the principles of rational antibiotic therapy is crucial.

Keywords: Antibiotics, Bacterial infections, Multi-drug-resistant bacteria

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The role of monoclonal antibodies in melanoma immunotherapy.

Authors: Aleksandra Roztoczyńska, Aleksandra Jeńć

Supervisor: Ewa Kaznowska, Anna Jędruszczak-Głazowska

Affiliations: Students' Circle of Pathomorphology, College of Medical Sciences, University of Rzeszów, Rzeszów, Poland

Type of the paper: Poster - review paper

Introduction and aim. Melanoma is a malignant neoplasm of melanocytic origin, the development of which largely depends on the influence of UV radiation. Its development is preceded by the appearance of a melanocytic (dysplastic) nevus. Treatment of patients with metastases to distant organs remains the greatest challenge, as the results of treatment in patients with stage IV melanoma are still unsatisfactory. The progress in systemic therapy of generalized melanoma is based on two mechanisms: molecularly targeted treatment and non-specific melanoma immunotherapy, which is characterized by a unique action - instead of inducing the destruction of tumor cells, it strengthens or stimulates the anti-tumor response of the patient's immune system. Immunotherapy uses ipilimumab and Nivolumab that uses the natural ability of the immune system to eliminate primary cancer cells. It inhibits the binding of the cytotoxic T-4 antigen to its ligands, thereby enhancing T-cell response and tumor resistance. The aim of the study was a presentation of the role of monoclonal antibodies in the treatment of melanoma.

Material and methods. During the preparation of the presentation 4 databases (PubMed, Google Scholar, Sciencedirect, Medscape) were searched for studies science publications from march 2019 to March 2023 in English. The search terms were: „ipilimumab in melanoma" „ monoclonal antibodies in melanoma treatment" "nivolumab in melanoma" in the title or abstract or as keywords. A total of 660 references, excluding duplicates, were identified.

Analysis of literature. Studies show that nivolumab in combination with ipilimumab reduced the risk of death by 45%, compared to ipilimumab monotherapy. The two-year overall survival rate was 64% for nivolumab in combination with ipilimumab, 59% for nivolumab monotherapy, and 45% for ipilimumab monotherapy.

Conclusion. Monoclonal antibodies against various immune checkpoints have revolutionized the treatment of metastatic and inoperable melanoma. The combination of two monoclonal antibodies, e.g. ipilimumab with nivolumab, is much more effective than the use of these antibodies in monotherapy.

Keywords: Immunotherapy, Melanoma, Monoclonal Antibodies

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Chemobrain after anticancer treatment - when the necessary treatment has unpleasant consequences

Authors: Błądek Monika, Drygała Karolina, Barszcz Gabriela

Supervisor: Dorota Bartusik-Aebisher

Affiliations: Student Scientific Association of Biochemists URCell, College of Medical Sciences, University of Rzeszów

Type of the paper: Poster - review paper

Introduction and aim. Over the last few decades, there has been tremendous progress in the treatment of cancer. Unfortunately, anti-cancer therapies, although necessary and increasingly effective, still carry many side effects. One of these effects is the chemobrain – cognitive disorders resulting from strong chemotherapy. The aim of this paper is to review available knowledge of chemobrain.

Material and methods. The paper reviews articles available in the PubMed medical database, searched with the phrases "chemobrain", "chemobrain cancer" from the years 2015-2023 which are reviews, systematic reviews or meta-analyses. 41 results were obtained, of which 13 articles were used for the final analysis after the selection of papers strictly related to the issue of chemobrain.

Analysis of literature. The occurrence of chemobrain is associated with impaired cognitive abilities, problems with concentration, and memory loss. It may occur only during treatment or persist even after its completion. According to the data, chemobrain occurs much more often as a complication of traditional chemotherapy than in the case of immunotherapy. The mechanism of chemobrain formation is not known. A combination of oxygen radical production and cytokine dysregulation is suspected as an inducer of this complication. Chemobrain treatment strategies remain under development. At the moment, non-pharmacological methods are used in the treatment, such as regular physical exercise, mental exercise, or a diet including omega-3 fatty acids. Pharmacological treatment is still under development and research.

Conclusion. Chemobrain is a medical complication that can have a serious psychological impact on patients undergoing anti-cancer therapy, so further research is needed to better understand the mechanism of this phenomenon, which will allow the development of new treatments and possible ways to prevent the occurrence of chemobrain.

Keywords: Anti-cancer treatment, Chemobrain, Cognitive disorders

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: The regenerative potential of mesenchymal stem cells in the treatment of central nervous system diseases"

Authors: Oliwia Krawczyk, Marcelina Kozicka

Supervisor: Jacek Tabarkiewicz

Affiliations: Student Scientific Association at Department of Human Immunology, Institute of Medical Sciences, Medical College of Rzeszów University, University of Rzeszów, Rzeszów, Poland

Type of the paper: Poster - review paper

Introduction and aim. Mesenchymal stem cells (MSCs) have been identified in almost all tissue of the human body. It has been demonstrated that they are capable of immunomodulation, self-renewal, and differentiation. As a result, they have been used in cell therapy, regenerative medicine, and tissue engineering.
Material and methods. Review of the current literature was conducted using PubMed, ScienceDirect and Google Scholar.
Analysis of literature. A wide variety of immunomodulatory and neurotrophic factors are produced and released by MSCs. There is growing evidence that they are effective at repairing damaged tissues within the nervous system. The growth factors released by MSCs, such as IGF and VEGF, are likely to limit the apoptosis of neurons and increase the proliferation of progenitor cells. Additionally, they are more frequently used in regenerative medicine because of their adaptive potential.
Conclusion. Mesenchymal stem cells affect neuroprotection and neuroregeneration through their immunomodulatory properties. Cellular interactions and trophic factor release make them valuable tools in clinical therapy. It is believed that MSCs may show therapeutic potential in the treatment of neurodegenerative and inflammatory diseases of the nervous system, as well as structural damage to the nervous system.
Keywords: MSCs, Neuroprotection, Neuroregeneration, Nervous system, Regenerative medicine

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Bisphosphonates in rheumatic diseases

Authors: Patryk Brzezicki

Supervisor: Jacek Tabarkiewicz

Affiliations: Student Scientific Association at Department of Human Immunology, Institute of Medical Sciences, Medical College of Rzeszów University, University of Rzeszów, Rzeszów, Poland

Type of the paper: Poster - review paper

Introduction and aim. Treatment with bisphosphonates (BPs) has many advantages, low risk of side effects, and relatively low cost of treatment. In addition, bisphosphonates can be used in patients of all ages, which is especially important in the case of older people, in whom osteoporosis is a common condition. Bisphosphonates are a group of drugs used to treat rheumatic diseases, including osteoporosis, Paget's disease, as well as autoimmune diseases, such as systemic lupus erythematosus or arthritis. The mechanism of action of bisphosphonates is to inhibit the activity of osteoclasts, cells responsible for bone resorption, which leads to inhibition of bone loss and a reduction in the risk of fractures.

Material and methods. Review of the current literature was conducted using PubMed, ScienceDirect and Google Scholar.

Analysis of literature. Zoledronate modulates the cytotoxic T-lymphocyte antigen-4 (CTLA-4). The function of CTLA-4 is to attenuate the ongoing immune response. Treatment of rheumatoid arthritis, the addition of zoledronate to the therapy resulted in a reduction in the formation of new erosions in the joints of the hand and wrist. In the early therapy of spondyloarthropathies, BPs may be useful, as they reduce the level of proinflammatory cytokines and inhibit the activity of macrophages and osteoblasts. In addition, clinical symptoms will decrease, spine pain decreased or reductions of inflammatory changes in the spine in AS. SAPHO treatment with BPs showed a good response, although their effect was mainly based on anti-resorptive properties, they were shown to exert anti-inflammatory effects by modulating the activity of IL-1β, IL-6 and TNF-α.

Conclusion. In conclusion is important to remember about the appropriate dose and duration of treatment, especially in patients with autoimmune diseases, as it may be necessary to use higher doses than recommended, what is associated with a higher risk of side effects such as allergic reactions, problems with the digestive tract or electrolyte disturbances and increased risk of hip fracture in patients using bisphosphonates for long periods of time.

Keywords: Bisphosphonates, Rheumatoid arthritis, Rheumatic diseases, spondyloarthropathies

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: You only look as good as your microbiome - how microbiome affects skin condition

Authors: Drygała Karolina, Błądek Monika, Barszcz Gabriela

Supervisor: Dorota Bartusik-Aebisher

Affiliations: Student Scientific Association of Biochemists URCell, College of Medical Sciences, University of Rzeszów

Type of the paper: Poster - review paper

Introduction and aim. Acne is a chronic inflammatory skin disease affecting the pilosebaceous units. The pathogenesis of acne is complex, including hormonal, metabolic and genetic factors. Additionaly both the skin and gut microbiome play a crucial part in this condition. The aim of this paper is to review available knowledge of connection between gut and skin microbiota in regards to acne vulgaris.

Material and methods. A literature review of paper available in medical databases such as PubMed.

Analysis of literature. Most of the available research on the skin microbiome focuses on the epidermal layer due to its importance in dermatological conditions. Although studies show different relative ratio of cutaneous bacteria, Cutibacterium and Corynebacterium make up the majority of the bacteria population on the skin. Cutibacterium is an anaerobic Gram-positive bacili that is necessary to maintain skin homeostasis. However, under favorable conditions, when certain phylotypes are present, it can become pathogenic and lead to the development of acne. Recent studies have demonstrated changes in the gut microbiota in patients with acne. For instance, increased amounts of Proteobacteria and Bacteroides and decreased levels of the types of bacteria Actinobacteria, Bifidobacterium, Butyricicoccus were observed in patients suffering from this condition.

Conclusion. Observed changes in patients' microbiota are a prominent issue since research has shown a relationship between the gut microbiota and skin homeostasis, referred to as the gut-skin axis. The precise mechanism underlying the gut-skin microbial interactions has yet to be fully understood, but the endocrine and immune systems are likely involved.

Keywords: Acne vulgaris, Microbiome, Skin Condition

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Histolopathological changes in hypertrophic cardiomyopathy

Authors: Maksymilian Kłosowicz, Julia Inglot, Jadwiga Inglot, Karol Bednarz

Supervisor: Agata Wawrzyniak
Affiliation: Students' Scientific Club of Histology, Institute of Medical Sciences, Medical Collage of Rzeszow University, University of Rzeszow

Type of the paper: Poster - review paper

Introduction and aim. Cardiomiopathies are a group of conditions characterized by structural and functional changes of the heart muscle. Currently, we can identify four types of cardiomyopathy: dilated cardiomyopathy, restrictive cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy and hypertrophic cardiomyopathy (HCM). HCM is a disease which in up to 60% is caused by genetic mutation in genes coding components of the sarcomere of the cardiac muscle. Penetrance of the gene is incomplete, which provides to wide spectrum of clinical symptoms and variety of the severity of the disease. The aim of this study is to summarize current knowledge about the epidemiology, clinical symptoms and the latest therapeutic possibilities of hypertrophic cardiomyopathy.
Material and methods. In this research paper, analyzed medical database such as PudMed, Google Scholar, Frontiers and Science Direct. To a final analysis, more than 15 articles were used. All articles have been published in the last 6 years. Clinical cases, research papers and systematic review paper were used. The following words were used: cardiomyopathies hypertrophic cardiomyopathy, histopatology.
Results. Histopathological changes include fibrosis, small vessels abnormalities and disorders in arrangement and volume of mycoytes. Nuclear changes were also observed. Also, intercellular junctions showed diffuse disturbances. Intercellular junctions are responsible for the conduction of an electrical impulse within the heart muscle. Abnormalities in their arrangement can cause life-threatening arrhythmias. Vessel abnormalities can cause ischemic changes which provides to myocyte death. These places can be replaced by increased fibrosis and fiber deposition which can cause macroscopic and microscopic lesions in heart.
Conclusion. Histological image of hypertrophic cardiomyopathy is highly non-specific. Similar changes can be also observed in other diseases. The most common pathology is the presence of diffuse general hypertrophy of myocytes and disorders in their arrangement. Additionally, fibrosis and small vessel abnormalities can be observed.
Keywords. Cardiology, Genetic, Histopathology, Hypertrophic cardiomyopathy

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Cytisine - the drug for the treatment of nicotine addiction. New research perspectives

Authors: Karolina Maternia-Dudzik[1], Jagoda Maternia[2], M. Skotnicki[3], M. Pyda[4,5], Piotr Tutka[2,6],

Supervisor: Anna Czerniecka-Kubicka

Affiliations: [1] Department of Microbiology, Medical College of Rzeszow University, The University of Rzeszow, 35-310, Rzeszow, Poland
[2] Department of Experimental and Clinical Pharmacology, Medical College of Rzeszow University, The University of Rzeszow, 35-310, Rzeszow, Poland
[3] Chair and Department of Pharmaceutical Technology, Poznan University of Medical Sciences, 60-780 Poznan, Poland
[4] Department of Chemistry, Rzeszow University of Technology, 35-959, Rzeszow, Poland
[5] Department of Biophysics, Poznan University of Medical Sciences, 60-780, Poznan, Poland;
[6] National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW, Australia

Type of the paper: Poster - research paper

Introduction and aim. Cytisine has the shortest treatment duration of the currently approved smoking cessation medications. However, the current dosing regimen is unlikely to be optimal and requires modification to potentially improve poor patient compliance. Therefore, there is a need for new dosage forms of cytisine that would reduce the number of doses administered per day while maintaining the same therapeutic effect. However, studies have shown that new polymorphic forms of cytisine may appear during the technological process.
Material and methods. To avoid this phenomenon and maintain a stable form of cytisine, carrier made of poly(lactic acid) was proposed, which are the cytisine-polymer system for a new prolonged-release dosage form. The characterisation of cytisine and its blends with poly(lactic acid) was performed using elemental analysis, thermogravimetry, differential scanning calorimetry (DSC), and powder X-ray diffractometry (PXRD)
Analysis of literature. DSC and PXRD analyses confirmed the presence of the solid-solid transition linking with a polymorphism phenomenon of cytisine. Based on the thermogravimetric analysis the stability of cytysine and its blend were determined
Conclusion. Also, a preliminary thermal analysis cytisine and poly(lactic acid) blends as a new candidate for drug delivery system was presented.
Keywords: Cytisine, Polymeric systems, Polymorphism, Poly(-lactic acid), Thermal analysis, X-ray diffractometry,

Surgery

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Guillain-Barre´ syndrome following craniotomy for glioblastoma multiforme: a rapid systematic review

Authors: Andrea Cuschieri

Affiliation: Faculty of Medicine and Surgery, University of Malta, Valletta, Malta

Type of the paper: Review paper

Introduction and aim. Literature documenting the occurrence and management of Gullain-Barre' syndrome GBS in glioblastoma multiforme patients following craniotomy is scarce. This study aims to systematically review relevant literature while outlining demographic factors, onset, and management of GBS following craniotomy for Glioblastoma multiforme (GBM).

Material and methods. A systematic literature review was conducted in four major databases, following the PRISMA 2020 guidelines. Two cases of GBS following GBM resection were identified. An additional study discussing GBM leptomeningeal dissemination presenting as GBS was also included.

Analysis of literature. Patients presented with symptoms unrelated to their tumour location consisting of proximal weakness in the lower extremities, distal paraesthesia and symmetrical areflexic paraparesis without loss of sensitivity. Lumbar puncture demonstrated albuminocytological dissociation, elevated CSF proteins. Cytopathology was unremarkable and gram stains and cultures were negative. Routine blood chemistry was also unremarkable. Decreased motor conduction velocities with prolongation and distal latency coupled with decreased motor recruitment without denervation in limb muscles was noted. Cerebrospinal MRI did not evidence tumour mass or leptomeningeal abnormalities. Plasmapheresis treatments significantly improved motor function and parasthesia, while a regiment of immunoglobulins resulted in a full recovery within two weeks. It is worth noting that leptomeningeal dissemination may present as GBS, as documented by Cooke et al. who started their patient empirically on intravenous immunoglobulin for suspected GBS, despite subsequent tests evidencing a diagnosis of fulminating leptomeningeal dissemination, since early treatment is crucial for full resolution of GBS.

Conclusion. Despite being a rare occurrence, GBS should be considered in the differential for GBM who develop generalized acute-subacute progressive weakness which is inconsistent with their tumour location, particularly patients on immunosuppressive regiments. CSF cytological studies by lumbar puncture and cerebrospinal MRI with contrast are key in differentiating GBS from leptomeningeal dissemination in post-resection GBM patients. If CSF cytology and imaging investigations remain inconclusive, electrophysiological studies are not only warranted but necessary. Moreover, if GBS is suspected, the administration of appropriate treatments should be considered prior to establishing a firm diagnosis, as early intervention increases the chances of complete resolution.

Keywords. Glioblastoma Multiforme, Gullain Barre' Syndrome, Neurosurgery

Wydawnictwo UR 2023
ISSN 2544-1361 (online)

http://www.ejcem.ur.edu.pl/en/
European Journal of Clinical and Experimental Medicine
Eur J Clin Exp Med 2023

Title of presented paper: Evaluation of clinical efficacy of electroconvulsive therapy in mental disorders

Authors: Izabela Kiebała, Bernadetta Jakubowska

Supervisor: Patrycja Pańczyszyn-Trzewik, Magdalena Sowa-Kućma

Affiliation: Student Scientific Circle of Physiology "NEURON", Institute of Medical Sciences, College of Medical Sciences, Rzeszow University, Rzeszow, Poland

Type of the paper: Review paper

Introduction and aim. Electroconvulsive therapy (ECT) is an effective and safe neuromodulatory treatment for refractory, severe and sometimes life-threatening depressive episodes. It involves passing an electrical charge through the brain to induce a generalized seizure, under controlled conditions, using brief general anesthesia along with a muscle relaxant and continuous oxygenation. The practice of ECT has evolved considerably over the past years.

Material and methods. Contemporary randomized controlled trials have focused on reducing side effects while maintaining the effectiveness of therapy. This method has unique advantages over antidepressant pharmacotherapy, including rapid improvement of depressive symptoms and a high remission rates in patients with treatment-resistant depression. The use of ECT is considered when two or more attempts at pharmacological treatment have failed.

Analysis of literature. Although the method can rapidly improve depressive symptoms, recurrence of depression after ECT can remain high. It is estimated that approximately 80% of patients relapse into depression after discontinuing ECT in the absence of any continuing treatment. Such follow-up or maintenance treatment may include continuing ECT or supplement ECT with adequate pharmacotherapy. Although this therapy has been in use for nearly ninety years, its mechanistic basis is largely unknown, and despite ECT's effectiveness, it is not always used as a treatment option for major depressive disorder or treatment-resistant depression.

Conclusion. The aim of this study will be to discuss electroconvulsive therapy, taking into account the cellular basis, assessing its effectiveness and safety in the context of mood disorders treatment.

Keywords. Depression, Electroconvulsive Therapy, Treatment Resistance Depression