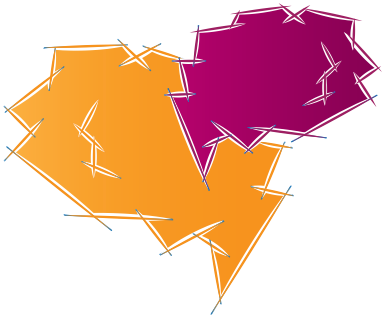
Abstract Book / 6th Student Congress of Neuroscience, NeuRi 2016



NEURI 2016

Abstract Book

6TH STUDENT CONGRESS OF NEUROSCIENCE, RIJEKA / RAB, APRIL 22ND - 24TH, 2016

neuRI

STUDENT CONGRESS
OF NEUROSCIENCE

Abstract Book

6th Student Congress of Neuroscience
April 22nd – 24th, 2016
Rijeka/Rab

IMPRESSUM

PUBLISHED AND ORGANIZED BY
FOSS MedRi

CO-ORGANIZED BY
University of Rijeka, Faculty of Medicine
Rab Psychiatric Hospital

FOR PUBLISHER
Luka Fotak

EDITORS IN-CHIEF
Ema Ormanec
Luka Fotak

ENGLISH TRANSLATION
Emina Horvat Velić

LANGUAGE EDITORS
Tena Piljušić
Emilija Borčić

PRINT
Printex, Čakovec

COPIES
350

Printing of this Abstract book was made possible by the financial support of the University of Rijeka Student Union and the Foundation of the Croatian Academy of Sciences and Arts. The translations, opinions, findings, conclusions and recommendations presented in this Abstract Book do not necessarily reflect those of the Editing Board or the Sponsors and are exclusively the responsibility of the Authors.

ISBN: 978-953-7957-45-2
UDK: 612.8(063)(048.4)*616.89(063)(048.4)
CIP entry is available at the University Library of Rijeka in their Computer Catalog under number 130915047

CONTENTS

ORGANIZING COMMITTEE

PRESIDENT OF NEURI 2016:	Luka Fotak
HONORARY PRESIDENT:	Igor Salopek
VICEPRESIDENT OF THE ORGANIZING COMMITTEE NEURI 2016:	Christina Isabell Jukić
GENERAL SECRETARY OF NEURI 2016:	Emina Horvat Velić
SCIENTIFIC LOGISTICS COORDINATORS:	Tena Piljušić
	Emilija Borčić
	Ivan Franin
	Maja Mrak
SCIENTIFIC COMMITTEE COORDINATOR:	Josip Aničić
ABSTRACT BOOK EDITOR:	Ema Ormanec
PARTICIPANTS COORDINATOR:	Kristina Kampić
PROMOTIONAL AND PR COORDINATOR:	Christina Isabell Jukić
RESOURCES COORDINATOR:	Maša Lovrović
TEHNICAL SUPPORT COORDINATOR:	Ivana Babić
DIETARY COORDINATOR:	Iva Dumančić

SCIENTIFIC COMMITTEE

Prof Gordana Župan, MD, PhD, President
Ass Prof Goran Arbanas, MD, PhD
Ass Prof Ksenija Baždarić, PhD
Damir Ćaćić, MD
Petra Dolenec, MSc
Prof Tanja Frančišković, MD, PhD
Prof Srećko Gajović, MD, PhD
Ass Prof Mirjana Graovac, MD, PhD
Rajna Knez, MD, PhD
Sanja Kovačić, MD, PhD
Prof Daniela Malnar, MD, PhD
Prof Amir Muzur, MD, PhD
Daniela Petrić, MD, PhD
Ass Prof Kristina Pilipović, MD, PhD
Ivana Radovčić, MD
Prof Gordana Rubeša, MD, PhD
Ass Prof Vesna Šendula-Jengić, MD, PhD
Martina Šendula-Pavelić, Prof
Ass Prof Ingrid Škarpa-Prpić, MD, PhD
Prof Mladenka Tkalčić, PhD
Prof Ivanka Živčić-Bećirević, MD, PhD

HONORARY BOARD

Prof Pero Lučin, MD, PhD
Prof Nevenka Ožanić, PhD
Prof Bojan Polić, MD, PhD
Prof Tomislav Rukavina, MD, PhD
Prof Brigita Tićac, MD, PhD

WELCOME NOTE

Dear Colleagues,

I am honored I can welcome you on behalf of the Organizing, Scientific and Honorary Board of NeuRi – Student Congress of Neuroscience!

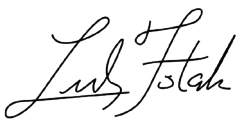
In today's time we are devoting our efforts to curing diseases and conditions affecting population whose life expectancy is growing longer, but also those affecting all age groups – both neurological and psychiatric alike. We are witnessing new discoveries and rapid advancements in science, toppling of long-held dogmas, and answers to old questions only open up new ones. Proofs of importance of investing in research are international collaborations like the Blue Brain Project, and the BRAIN Initiative – projects whose goals some have called too ambitious and unreachable – but exactly big ambitions lead to big discoveries, and they are proof that one must never stop being curious and should question everything, including the very foundations of some ideas. Research methods and techniques considered almost impossible several decades ago are now at our disposal, and it is up to us to utilize them and boldly step into the future in which only one thing is certain – we can expect the unexpected.

NeuRi has established itself as a Student Congress that attracts more and more neuroscience enthusiasts each year, and I am certain that you will also give your contribution to the wide array of fields in neuroscience, thus connecting basic knowledge with clinical practice – all with the common goal of unraveling the secrets of the most puzzling organ in the human body – the brain.

We have prepared three days of scientific and social program at the Faculty of Medicine, University of Rijeka, as well as well as in the city of Rijeka – often called "the City that flows", and the Kvarner paradise – the island of Rab, with wonderful hosts at the Rab Psychiatric Hospital.

Dear students, dozens of your colleagues, as well as many scientists and teachers will prepare the best atmosphere for a student scientific congress, which you will, we promise, remember for a lifetime.

Welcome to Rijeka and Rab at NeuRi 2016!



Luka Fotak
President of NeuRi 2016
Rijeka, April 22nd 2016

Participants of the 1st Student Congress of Neuroscience – NeuRi 2011;
Faculty of Medicine, Rijeka

Participants of the 2nd Student Congress of Neuroscience – NeuRi 2012;
Rab Psychiatric Hospital

Participants of the 3rd Student Congress of Neuroscience – NeuRi 2013;
Faculty of Medicine, Rijeka

Participants of the 4th Student Congress of Neuroscience – NeuRi 2014;
Faculty of Medicine, Rijeka

Participants of the 5th Student Congress of Neuroscience – NeuRi 2015;
Faculty of Medicine, Rijeka

Programme

Friday, April 22nd 2016
FACULTY OF MEDICINE, RIJEKA

14:00 – 15:45	REGISTRATION (GREAT HALL)
16:00 – 16:30	OPENING CEREMONY NEURI 2016 (AUDITORIUM 2) CHAIRPERSONS: Gordana Župan, Igor Salopek, Luka Fotak, Christina Isabell Jukić, Emina Horvat Velić
16:30 – 16:45	GROUP PHOTO OF ALL PARTICIPANTS (In front of the Faculty)
16:45 – 17:45	PLENARY LECTURE (AUDITORIUM 2) **Fran Borovečki**: Poly-omics in research of neurodegenerative diseases CHAIRPERSONS: Srećko Gajović, Kristina Pilipović, Emina Horvat Velić, Tena Piljušić
17:45 – 18:00	COFFEE BREAK/REGISTRATION (GREAT HALL)
18:00 – 19:00	PLENARY LECTURE (AUDITORIUM 2) **Igor Salopek**: All faces of depression CHAIRPERSONS: Mladenka Tkalčić, Ivanka Živčić-Bečirević, Maja Mrak, Ema Ormanec
19:15 – 21:00	DINNER (GREAT HALL)
22:00	WELCOME PARTY (MODESTO)

Saturday, April 23rd 2016
PSYCHIATRIC HOSPITAL RAB

7:00	DEPARTURE BY BUS TO RAB (BUS STATION RIJEKA)
10:00 – 11:00	PLENARY LECTURE (CONGRESS HALL) **Vesna Šendula-Jengić**: The Wolf of Wall Street or Hannibal Lecter? CHAIRPERSONS: Goran Arbanas, Christina Isabell Jukić, Maša Lovrović
11:00 – 11:15	COFFEE BREAK
11:15 – 12:30	STUDENT SESSION I (CONGRESS HALL) CHAIRPERSONS: Tatjana Ružić, Ivana Babić, Ivan Franin **1. Ismir Kukić, Katarina Badak, Eldina Mahmuzić, Sanela Hadžić, Barbara Dumančić, Marko Galić, Almedina Terzić**: All the beauty of alternative medicine in the region of Ex-Yugoslavia **2. Emina Horvat Velić**: Mechanism of action of neurotoxins **3. Luka Turkalj**: Neurogenesis in the adult human brain: A brief historical review **4. Aleksandra Krstić**: Syntactic processing deficits of patients with aphasia **5. Adnan Salihović, Irma Ramić, Nina Saračević, Emir Bećirović**: Negatively affect of artificial light on sleep duration and next-day alertness among young adults **6. Ajša Hajdarević, Amina Ćosić, Kenan Gežo, Aida Kulo, Jasna Kusturica**: The frequency of substance use for improving cognitive and affective abilities within the student population
12:30 – 13:30	LUNCH AND SIGHTSEEING
13:30 – 14:45	STUDENT SESSION II (CONGRESS HALL) CHAIRPERSONS: Sanja Katalinić, Emilija Borčić, Kristina Kampić **1. Malik Ejubović, Nedim Begić, Emina Ejubović**: Psychiatric and legal assumptions for the qualification of a manslaughter – case report **2. Ismeta Redžić, Nejra Gondžetović, Mevlida Avdagić**: Types and frequency of disorders in adolescents in Sarajevo (period 2011-2015) **3. Mihaela Ivošević, Ozana Mikulić, Pavla Paić-Karega**: The autistic brain **4. Sara Smojver, Jasmina Frey-Škrinjar**: Deficits of central coherence and studying in children with ASD

5. Zala Slabe: Sexually Selective Cognition
6. Matija Fenrich, Aleksandar Katić: Relationship between outness and substance abuse susceptibility among Croatian MSM population

15:00 – 16:00 RAB SIGHTSEEING

16:00 – 18:00 RETURN TO RIJEKA

21:00 NEURI PARTY (INSOMNIA)

Sunday, April 24th 2016
FACULTY OF MEDICINE, RIJEKA

07:30 – 08:30 BREAKFAST/REGISTRATION (GREAT HALL)

08:30 – 10:30 POSTER SESSION (GREAT HALL)
CHAIRPERSONS: Ingrid Škarpa-Prpić, Ivana Radovčić, Emilija Borčić

1. Karla Matić: Can we "read minds" with functional MRI?
2. Tomislav Radošević: Event-related potentials in neurolinguistics of sign languages
3. Ana Filošević, Ira Ćoso, Rozi Andretić Waldowski: Characterizing short and long-term behavioral sensitization in Drosophila
4. Ines Kovačić: Real Life Sleeping Beauties: case series on Kleine-Levin Syndrome
5. Ivan Kraljević, Alen Juginović: Difference between subjective and objective evaluation of sleep quality
6. Sanja Sever: Physiological correlates of occupational stress in computer workers: body mass index, active smoking behaviour, alcohol consumption and daily exercise routine
7. Petra Prunk, Ana Štublar: Translation and cultural adaptation of a Slovenian version of ECAS (Edinburgh Cognitive and Behavioural ALS Screen) – presentation and preliminary results
8. Ana Spasovska, Martin Angjelov, Amira Eminovikj, Sabina Rustemovska: The impact of psychological violence during childhood on mental development in adolescents
9. Benjamin Baščaušević, Adna Čelik, Jasmina Dalač: Traumatic brain injuries during the siege of Sarajevo (1992-1995)
10. Lucija Ivanda, Ana Matušan, Josipa Milas: Impact of arousal on information processing speed
11. Tomislav Felbabić, Nadja Novak: Efficiency of amantadine in the treatment of parkinsonism plus
12. Sara Mičič, Tjaša Omerzu, Aja Lovrec, Karin Bakračević Vukman, Marina Horvat: Cognitive Reserve in Elderly and Related Changes in Cognitive Functioning
13. Sentilija Delalić: Parent reported quality of life in children with cerebral palsy vs. physician assessment

14. Patricija Jakopović, Nikolina Tušek, Marija Slaviček, David Bonifačić, Lidija Tuškan-Mohar, Ines Torić: Impact of olfactory dysfunction on psychological state and quality of life in patients with Alzheimer disease

15. Ivana Horvat, Jelena Frančišković, Stjepan Jelica: The experience of neurofeedback therapy for children with developmental disabilities

16. Ivana Antal, Marko Bagić, Anamarija Jazbec,Lea Smirčić Duvnjak, Spomenka Ljubić: Patients with decreased renal function showed an increased risk for stroke

17. Kenan Gežo, Alija Gežo, Adis Šahinović, Semir Zeković, Anid Gežo: Diagnostics and treatment of Syndroma Vertiginosum in ambulatory care conditions

18. Haris Huseinagić, Marin Lakić, Kenan Mulalić: Endovascular treatment of spinal dural AV fistula

19. Nedim Maltez, Affan Aljić, Sandra Vegar-Zubović, Edin Prelević, Deniz Bulja, Muris Bećirćić: Evaluation and treatment of basilar tip aneurysm

20. Affan Aljić, Sabina Kurbegović, Nedim Maltez, Abdulah Hasanagić, Eldin Burazerović: Primitive neuroectodermal tumor – patient case report

21. Martin Angjelov, Ana Spasovska, Sabina Rustemovska, Amira Eminovikj: Video-EEG presentation of myoclonic seizures in juvenile myoclonic epilepsy

22. Nikolina Bosančić, Goran Bokan, Andrej Kečenović: Multifactorial trismus

23. Nikolina Golec, Margareta Golubić, Nina Barišić: Atypical presentation of Guillain-Barre syndrome

24. Diana Didović, Nikolina Friščić, Helena Gmaz, Nina Barišić, Marina Grubić: Myasthenia gravis and adjustment disorder - a case report

25. Sabina Rustemovska, Martin Angjelov, Tansu Omer, Ana Spasovska: Adrenomyeloneuropathy - a case report

26. Tomislav Heraga, Ines Lakoš Jukić, Mario Habek: Erythromelalgia as a manifestation of autonomic nervous system involvement in multiple sclerosis

27. Mara Boban, Ivana Bonacin, Željko Vučičević: The syndrome of inappropriate antidiuretic hormone secretion and tetraplegia in patients with acute intermittent porphyria

28. Silvija Pušeljić, Mirna Rozić, Dora Savanović, Nives Šalek, Anja Tomić: Neurological presentation of accelerated bone growth syndrome (Marshall - Smith syndrome)

29. Marko Galić, Barbara Dumančić: Clinical presentation of Neuro-Behçet Disease

30. Jovana Jevđić, Arijana Knežević, Peđa Kovačević, Mirko Stanetić, Saša Dragić, Danica Momčičević: Case report - Respiratory insufficiency caused by acute disseminated encephalomyelitis
31. Ivona Jerković, Emanuela Ilijić, Matija Sošić, Olivio Perković: Othello Syndrome

10:30 – 10:45 COFFEE BREAK/REGISTRATION (GREAT HALL)

10:45 – 12:00 STUDENT SESSION III (AUDITORIUM 1)
CHAIRPERSONS: Petra Dolenec, Kristina Kampić, Maja Mrak
1. Aleksandra Ignatoski: Neuroeconomics – introduction to the background of decision making
2. Urša Bernardič, Maël Lebreton: The role of value-normalization in preference instability
3. Dušan Vukićević, Marko Svetel, Ana Stojadinović: Theory of Mind and recognition of emotions in patients with cerebellar ataxia
4. Kruno Topolski, Paula Senković, Ana Marija Đaniš: Mirror therapy as a complementary approach in rehabilitation of patients with phantom pain
5. Matea Babić, Ivona Brajković, Maria-Helena Ružić: Does hippotherapy affect the gross motor functions in children with cerebral palsy?
6. Ivona Marić, Dolores Makovac, Lidija Tuškan-Mohar: Predictors for functional recovery of patients with acute stroke subjected to early rehabilitation
7. Svetlana Imbrišić, Marta Žutelija, David Bonifačić, Lidija Tuškan-Mohar: A piano training program can im prove upper extremity function and has positive impact on depression in stroke survivors

12:15 – 13:15 LUNCH (GREAT HALL)

13:15 – 14:30 STUDENT SESSION IV (AUDITORIUM 1)
CHAIRPERSONS: Sanja Kovačić, Ivana Babić, Iva Dumančić
1. Mirna Vladušić, Corina Ivkić: Cross – modal plasticity in the blind
2. Domen Planinc: Implications of ultrasound neuromodulation
3. Alen Juginović, Ivan Kraljević: The effect of apnea on the percentage of REM sleep stage in total sleep time
4. Anja Ašenbrener, Ingrid Škarpa-Prpić: Perception of medical staff on people with multiple sclerosis
5. Iva Skočilić, Ingrid Belad: Incidence of Brain Metastases in Patients with HER 2 – Positive Metastatic Breast Cancer

6. Vanesa Vujičić, Marta Žutelija, Jelena Radić Nišević, Igor Prpić: The use of levetiracetam as mono/polytherapy during the five-year period at the department of Pediatrics, University Hospital Centre Rijeka, Croatia
7. Haris Čampara, Sanita Maleškić: Abstract for Effects of antiepileptic drugs on the skeletal system – review article
8. Miha Majcen: Potential pharmacological modulation of human memory

14:30 – 14:45 COFFEE BREAK (GREAT HALL)

14:45 – 15:45 WORKSHOPS (AUDITORIUM 4, AUDITORIUM 5)
I. Population aging - increasing challenge of health care systems
(Sanja Kovačić)
II. Principles of scientific integrity in biomedical research
(Ksenija Baždarić)

16:00 – 16:30 CLOSING CEREMONY NEURI 2016 (AUDITORIUM 1)
CHAIRPERSONS: Luka Fotak, Christina Isabell Jukić, Maša Lovrović

Plenary Lectures

Poly-omics in research of neurodegenerative diseases

Fran Borovečki
University of Zagreb, School of Medicine, Department for Functional Genomics, Center for Translational and Clinical Research, Zagreb, Croatia
University Hospital Center Zagreb, Department of Neurology, Zagreb, Croatia

Neurodegenerative diseases are characterized by progressive nervous system dysfunction caused by the death of neurons in the brain and spinal cord. Given the prevalence, clinical hallmarks and associated costs of treatment, neurodegenerative diseases represent a significant and ever increasing public health problem. Despite extensive clinical research and dynamic developments in the field of neurology, especially regarding the development of new disease-modifying drugs and therapeutic procedures, there is still no effective medicine capable of stopping or even slowing neurodegenerative processes.

Wider application of genomic, proteomic, metabolomic and glycomic investigations, designated commonly as poly-omic, has ushered in the age of systems biology. Even though aforementioned approaches enable a significant insight into biological mechanisms involved in development of neurological diseases, integration and specific application of acquired data is necessary in order to develop novel biomarkers and therapeutic procedures. Precision or personalize medicine implies an individualized approach and encompasses targeted diagnostic procedures and specific therapy best suited for each patient. The aim of precision medicine is to integrate novel biotechnological achievements into clinical medicine in order to improve our understanding of disease pathophysiology and improve treatment of patients.

Research of neurodegenerative disorders, such as Parkinson's disease, Dementia with Lewy bodies, Alzheimer's disease or Huntigton's disease represents one of the most dynamic areas in modern neuroscience. Further progress in poly-omic technologies will enable additional insight into molecular mechanisms involved in development of aforementioned diseases, which will in turn lead to translation and integration of novel findings into modern clinical practice.

CONTACT: fran.borovecki@mef.hr

All faces of depression

Igor Salopek
General hospital Karlovac, Karlovac, Croatia
Center for destigmatisation and prevention of mental disturbances, Rijeka, Croatia

Depression is one of the most common mental diseases and, according to expert's predictions, a disease whose number of cases is expected to rise in times ahead of us. It is characterised by depressive mood, passiveness, lack of energy, disturbance in physiological function of sleep, appetite, concentration and attention, as well as pessimistic thoughts about guilt, worthlessness. It is deeply connected to plans and attempts of suicide. It manifests in different forms, for what is often called "illness with thousand faces". As such it strongly influences the life quality of the ill, their working and social functioning with consequences on the individual and its surroundings. The purpose of this work is to present modern theoretical concepts of understanding, diagnosis and treatment of depression, to make public more sensitive on mental illness stigma issue and motivate individuals and their surroundings for adequate treatment in the means of bio-psycho-social approach to the illness.

CONTACT: igor.salopek@gmail.com

The Wolf of Wall Street or Hannibal Lecter?

Vesna Šendula-Jengić
Rab Psychiatric Hospital, Rab, Croatia

There aren't many terms in the field of mental health and diseases that are as controversial as the term "psychopathy". At the beginning of the 19th century, the doctors in the field of mental health noticed that few of their patients, who at first appeared normal, seem to have problems with experiencing and behaviour. It seemed like some of them didn't possess the feeling for ethics and human rights, which is why they were called "morally corrupt" or "morally insane".

The term "psychopathy" was first used at the end of the 19th century to describe individuals with such characteristics. At the beginning of 20th century, this term was changed to "sociopathy" because the accent was on the damage those individuals can cause to society. Even today, personality theorists use the term "antisocial" or "disocial disorder" which are immanent in every valid formal classifications of mental diseases.

They are described as emotionally perverted, socially insensitive, prone to risky aspects of behaviour, criminals, bullies, serial killers, predators, immoral offenders, but also successful, charming, intelligent, dominant leaders, powerful persons, machiavelists and corporative geniuses.

In the last, fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) from 2013, "sociopathy" and "psychopathy" are listed under antisocial personality disorders. Those two disorders or two forms of one disorder share many behavioural characteristics which can be very confusing. The main characteristics they include are: breaking the law and social norms, disrespecting others rights, failure at experiencing repentance or guilt and affinity towards violence. However, besides obvious similarities there are also some differences.

One of them show tendency to experience anxiety and agitation. They are prone to emotional outbursts, including anger outbursts. Those individuals are mostly poorly educated and live on the margins of society. They can't preserve their jobs for a longer period of time nor can they stay at one place too long. For them, it is quite difficult, but not impossible, to create some kind of relationship with other people. Most of them are capable of actively associating with significant individuals or groups, although they miss respect for society's rules or society in general. Criminal activities they do are described more as random, accidental, disorganized and spontaneous rather than planned.

Second ones are cold, showing absence of anxiety and it is almost impossible to expect them to show any kind of emotional attachment or empathy, although they often display their disarming superficial charm. They are very manipulative and can easily gain other people's trust. They also know well how to imitate emotions despite the inability to actually feel them, so they represent themselves like average, normal and harmless neighbours. In most of the cases they are well educated and they find keeping their jobs easy.

Some of them are so good at manipulating others that even family members and colleagues suspect nothing about their true nature. Their criminal activities are mostly well planned. They are capable of committing even the most brutal crimes because of their ability to emotionally distance themselves from their activities.

Considering these opposite descriptions, it is not surprising that the term “psychopathy”, even nowadays, is not clearly understood and that is surely something to be concerned of. Also, it is often seen from the aspect of “mythological entity“, “moral judgment disguised in diagnosis“ and credible clinical diagnosis.

CONTACT: vesna.sendula@gmail.com

Symposia

All the beauty of alternative medicine in the region of Ex-Yugoslavia

Ismir Kukić[1], Katarina Badak[2], Eldina Mahmuzić[1], Sanela Hadžić[1], Barbara Dumančić[2], Marko Galić[2], Almedina Terzić[1]
[1]University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
[2]Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia

INTRODUCTION: Alternative medicine is a term which represents a set of therapeutic procedures, which, due to obsolescence, lack of evidence of their effectiveness or even harmful effects, they are not part of conventional medicine.

AIM: The aim of this study was to investigate the presence and usage of methods of alternative medicine in the region of Ex-Yugoslavia.

MATERIALS AND METHODS: An anonymous survey was conducted on 55 respondents. Twenty-nine of them were women and 26 were men. Average age for female respondents was 46,2, while for male was 39,75. Also, we used some data from earlier similar studies.

RESULTS: Research results have shown that older respondents, particularly women, are more favourable to this method of treatment. Younger respondents are using alternative medicine less frequently. Among the most commonly used method is the treatment with herbal preparations. Overall, the most respondents was using alternative methods to treat diseases of the musculoskeletal system, circulatory problems and problems of skin, hair and nails.

CONCLUSION: Alternative medicine, regardless of whether it makes any sense or it's completely pointless, is present in this area, especially in the elderly population.

CONTACT: ismirkukic@gmail.com

Mechanism of action of neurotoxins

Emina Horvat Velić
University of Zagreb, Faculty of Science, Department of Biology, Zagreb, Croatia

Neurotoxicity is a phenomenon caused by neurotoxins - natural or artificial chemical substances that have destructive effects on the nervous system of animals and humans. Neurotoxins are classified by different mechanisms of action and specific targeting of certain parts of the nervous system. The impact of the neurotoxins can be fatal for the organism, which primarily depends on the type and the duration of exposure. Also, neurotoxins can affect both forming and mature nerve tissue. The most famous and most dangerous neurotoxins are of animal origin, and they are used primarily as a protection against predators, or simply as a warning signal. Most of those neurotoxins affect particular ion channels, while others, such as alcohol, have various effects. In addition to animals, bacteria produce neurotoxins as well. Symptoms of poisoning by harmful products of Clostridium bacteria (tetanus toxin and botulinum toxin) lead to various malfunctions of muscular, rather than nervous, system. Furthermore, neurotoxins can be generated by the wide variety of plants, while the deadliest toxin - anatoxin-a, also known as "Very fast death factor" is produced by cyanobacteria. However, humans are also responsible for creating many fast acting and potent neurotoxins, for many different purposes. Dichlorodiphenyltrichloroethane, better known as DDT, was once commonly used as an agricultural insecticide. It proved to have hazardous effects on human body, which led to its ban in Western countries; nevertheless, traces of DDT in soil are present to this day. Another, morbidly famous, neurotoxin is sarin gas, firstly synthetized as a pesticide as well. Although firstly used as a chemical warfare during World War II, it was banned only in 1993.

CONTACT: ehvelic@stud.biol.pmf.hr

Neurogenesis in the adult human brain: A brief historical review

Luka Turkalj
University of Zagreb, School of Medicine, Zagreb, Croatia

Adult human brain had for more than a century been considered a postmitotic structure without capability to generate new neurons. However, it has recently become clear that this is not the case. The first compelling evidence of neurogenesis in adult brain came after pioneering studies by Altman in 1960s which shown proliferation of neurons in adult rodents. Almost four decades later, Eriksson and colleagues first demonstrated genesis of new neurons in adult human hippocampus. Both studies used labelling of dividing cells with radioactive nucleotide analogues which incorporate into cell's DNA during S phase of mitotic cycle. Up to date, generation of new neurons throughout human life has been established in two restricted brain areas: subventricular zone of the lateral ventricle wall and subgranular zone of the hippocampal dentate gyrus. However, it seems that neurogenesis in the human cerebral cortex is limited to developmental period. The ongoing research in the field still has to elucidate, with the help of new research techniques such as in vivo neuroimaging, the extent and functional implications of this new form of neural plasticity. This review discusses some key breakthroughs in the history of adult neurogenesis research and delineates how the central dogma of neuroscience finally collapsed.

CONTACT: luka.turkalj@student.mef.hr

Syntactic processing deficits of patients with aphasia

Aleksandra Krstić
University of Novi Sad, Faculty of Philosophy, Novi Sad, Serbia

Neurobiological observations of language show the human language as particularly interesting because its specific and localized organization has given us the keenest insight into the functional architecture of thebrain. As aphasia is one of the most widely spread language disorders, and can be viewed from the linguistic point of view, it is of great importance for this research.

This research aims to provide an insight into the syntactic processing deficits in aphasia.

The suggested method is conducting an experimental case study, tracking the differences in processing of the word order in the speech of three patients with Broca's and Wernicke's aphasia. The tests used in the research arefollowing the Rasch model (a psychometric model for analyzing categorical data, such as answers to questions on a reading assessment or questionnaire responses), and known as the SOAP (Subject-relative, Object-relative, Active, and Passive). Linguistic performance of the patients is observed through the task-oriented speech and task-across sentence–picture matching for the purposes of premedical disorder observation.

Using language as a new measure of syntactic comprehension abilities in brain-damaged populations might prevent the more aggressive methods for the pre-diagnostic and diagnostic phases of the patients treatment.

CONTACT: krstic.aleksandra018@gmail.com

Negatively affect of artificial light on sleep duration and next-day alertness among young adults

Adnan Salihović, Irma Ramić, Nina Saračević, Emir Bećirović
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

INTRODUCTION: There is evidence that artificial, emitted by electronic devices, is impacting on the duration of sleep and alertness. Darkness is a natural cue to our bodies that it's time for sleep, but we're circumventing it by staring at bright screens for hours after the sun has gone down. It is the light of these devices, who is prolonged stimulating the pineal gland to secrete melatonin who is stimulating the ascending reticular system.

AIM: Our goal is to point out the correlation between disturbances in sleep and the immediate staring on electronic screens before going asleep.

MATERIALS AND METHODS: This descriptive-statistic work includes a sample of 528 students. 489 of them are regularly staring at bright screens just before going asleep, of which 298 women and 191 men aged 18-29 years (x=23,5). All students were surveyed with an anonymous modified questionnaire based on The Pittsburgh Sleep Quality Index.

RESULTS: The survey results show that 60% of the students noticed a change in their sleep duration. 57,3% of students has a reduction in the duration of sleep. 82% of respondents feel extreme fatigue, 83% has difficulty in concentrating, 60% difficulties with preserved wakefulness during the next day. 43,55% of students takes more than 15 minutes to fall asleep (Me= 30 minutes).

CONCLUSION: Light electronic devices complicates and prolongs the process of falling asleep, followed by shortening the duration of sleep.

CONTACT: adnan_salihovic@outlook.com

The frequency of substance use for improving cognitive and affective abilities within the student population

Ajša Hajdarević, Amina Ćosić, Kenan Gežo, Aida Kulo, Jasna Kusturica
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

There is an increased popularity of drugs and substances that enhance cognitive and affective abilities (smart drug; nootropics). The aim of this cross-sectional study was to describe the frequency of their use in student population.

This study included all students (n=218) of the first year of Medical Faculty and Faculty of Economics at the University of Sarajevo who participated in the survey.

The results showed that the pre-exam anxiety was strong and very strong in 48.2% of students, and was significantly more pronounced among students of economics ($p < 0.001$). The frequency of drug use was 4.8% (benzodiazepines 1.5%; ginkgo preparations and royal jelly 2.4%; herbal sedatives 0.6%, nootropics 0.3%). In one case only, benzodiazepine therapy was recommended by the physician. Those medicines/herbal products were used significantly more by medical students (22.8% vs. 10%; $p = 0.028$), while energy drinks (24.6 vs. 45.8%; $p < 0.001$), alcohol (5.9 vs. 17.8%; $p = 0.004$), cigarettes (16.9 vs. 39.6%; $p < 0.001$) and marijuana (6% vs. 19.1%; $p = 0.003$) were consumed significantly more by students of economics. There was an increased consumption of food and caffeinated drinks with no statistically significant differences between the faculties (49.2 vs. 55.2%; $p = 0.423$). Referring to the results of other investigations, the frequency of drugs use is lower. The rates of consumption of recreational substances is high.

The reason may be lack of information on the existence and/or lower availability of drugs, including nootropics, or the better availability of recreational substances.

The results pointed to the necessity of preventive measures in terms of education about recreational substances, drugs for the neuroenhancement and methods of controlling stress in student population.

CONTACT: ajsa_hajdarevic@hotmail.com

Psychiatric and legal assumptions for the qualification of a manslaughter – case report

Malik Ejubović[1], Nedim Begić[1], Emina Ejubović[2]
[1]University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
[2]Cantonal Hospital Zenica, Zenica, Bosnia and Herzegovina

There are four forms of privileged murder: manslaughter, infanticide, mercy killing and involuntary manslaughter. Manslaughter is the killing committed by a person who is brought into the state of strong irritation, therefore, in one particular affective state, by any attack (usually physical attack), or by any insult inflicted by the victim. In the case of manslaughter, killing was carried out in the affective state or in a state of strong irritation and the perpetrator is brought into such a state by another person (victim) and the murder took place in that period of time while induced affective state took place. Affect is a short-lived intense reaction, accompanied by visible physical and expressive phenomena. Affects most often occur as a reaction to the threat to vital and social existence when life, honour or social status are threatened. Sudden intense affect can lead to change in the state of consciousness. The emergence of powerful affects that can lead to a narrowing of awareness is an important fact in forensic psychiatry, because it reduces mental capacity of the defendant.

This paper presents the case of a woman who killed her husband in a state of strong irritation and with the contribution of the victim, after being exposed to domestic verbal and physical abuse for many years. Due to the specific circumstances in which the murder was committed, and data received by a psychiatric interview and investigation, the case was classified as voluntary manslaughter. Above mentioned qualification was accepted, and the court, in accordance with it, sentenced the woman to a prison. The aim of this study was to demonstrate a typical case of voluntary manslaughter and the conditions that one offense of murder must meet in order for the murder itself to be classified as voluntary manslaughter.

CONTACT: ejubovic.malik@gmail.com

Types and frequency of disorders in adolescents in Sarajevo (period 2011-2015)

Ismeta Redžić, Nejra Gondžetović, Mevlida Avdagić
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

INTRODUCTION: Child and adolescent psychiatry is a branch of psychiatry that specializes in the study, diagnosis, treatment and prevention of mental disorders of children and adolescents. Childhood is a special phase of life with its own developmental stages, so it has a huge impact on the further functioning and personality through life.

AIM: The aim of this study was to determine the structure of psychiatric morbidity, types and prevalence of certain diagnostic entities and sociodemographic characteristics of hospitalized patients at the Department of Child and Adolescent Psychiatry of Psychiatric Clinic in Sarajevo during the period from 2011 to 2015.

MATERIALS AND METHODS: The study was conducted at the Psychiatric Clinic University Clinical Centre Sarajevo. It included 394 subjects that were hospitalized at the Department of Child and Adolescent Psychiatry of Psychiatric Clinic during the period from 2011 to 2015. Data were collected from protocols of hospitalized patients. It was a descriptive, analytical and epidemiological research.

RESULTS: The total number of hospitalized patients in the observed period were 394:232 or 58,9% were males and 162 or 41,1% were females. The most common were patients in the age group 13-18 years (45,7%). The average hospitalization duration was 44,2±21,4 days. The most common mental disorders were from the diagnostic groups F90-F98 (Behavioural and emotional disorders in childhood and adolescence) and F40-F48 (Neurotic, stress-related and somatoform disorders). Disorders from the diagnostic group F90-F98 were more prevalent in boys, while disorders from the group F40-F48 were more prevalent in girls. Disorders from both diagnostic groups were most common in patients aged 13-18 years.

CONCLUSION: Most of the hospitalized patients were boys and in the age group 13-18 years (adolescents). There are significant gender and age differences in the distribution of disorders from diagnostic groups F40-F48 and F90-F98.

CONTACT: ismeta_rdz@hotmail.com

The autistic brain

Mihaela Ivošević, Ozana Mikulić, Pavla Paić-Karega
University of Zagreb, Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia

More than seventy-five published articles and papers on the topics of brain anatomy, electrophysiology, and visual function in children with autism spectrum disorder include neurobiological findings about structural abnormalities in the amygdale, hippocampus, corpus callosum, frontal, temporal, and parietal cortex, and the cerebellum. Although, structural brain abnormalities of people with ASD are an exception, not the rule. Structural abnormalities tell a lot about the specific behaviours that are often among children with ASD.

The goal of this presentation is to show the impact of genetics on the structural brain changes, the significance and changes of mirror neurons in ASD, differences in brain volume of people with ASD, connection of Sylvian fissure and ASD, detailed brain scans and structural brain changes of Temple Grandin, neural connections in the ASD, changes in the Purkinje cells in ASD, epilepsy and ASD, the vestibular system and ASD, connection of different types of thinking and structural brain changes of people with ASD. For our presentation to be more concrete, we took an example of a famous scientist with ASD called Temple Grandin. She has published a book called “The autistic brain” which contains detailed and specific studies on her own brain that are of great significance for knowledge of ASD.

Answers that we can have today and that are of great importance for understanding ASD are answers to how does brain look like, what does the brain do, which abnormalities exist in brain affected with ASD, what does the “autistic brain“ do differently from typical brain. The same anomaly of two brains does not imply same behaviour, and different brains will often show same behaviour.

CONTACT: ivosemi@erf.hr

Deficits of central coherence and studying in children with ASD

Sara Smojver[1], Jasmina Frey-Škrinjar[1,2]
[1]University of Zagreb, Faculty of Education and Rehabilitation sciences, Rehabilitation, Zagreb, Croatia
[2]University of Zagreb, Faculty of Education and Rehabilitation sciences, Department of Inclusive Education and Rehabilitation, Zagreb, Croatia

Autism spectrum disorders are the most common developmental disorders which manifest in the first three years of life. They affect nearly every mental function and are lifelong. It is characterised by significant damage of three developmental areas: reciprocal social interaction skills, verbal and non-verbal communication skills and a presence of stereotypical behaviour, interests and activities. However, for the presentation of this work, we need to look at the deficit of social and cognitive skills such as theory of mind, executive functions, and especially central coherence.

The theory of mind as a mental construct allows us to understand the thoughts and convictions of another person and for people with autism deficits are manifested as difficulties of predicting the behaviour of others, a lack of empathy and not understanding what others know. Furthermore, executive functions present a sequence of interconnected processes required for purposeful behaviour. Those are adjustable attention shifting, inhibition of overreaction to stimulation, planned problem solving and goal anticipation. In accordance to the aforementioned, deficits executive functions in these persons are noticed in the lack of ideas of how they affect the thoughts and feelings of others, but also the lack of communicational intention and spontaneity of interaction. The last mentioned skill is central coherence, which is the urge to integrate information from surroundings in order to reach higher meaning. For people with ASD, this is not a deficit, but a simply different method of processing information, that is why they often ignore the overall context and focus on details.

To conclude, this paper will examine a different pattern of cognitive functioning, which is derived from deviation in the development of aforementioned constructs, as well as requirement of an individualized approach to specific educational needs which exist because of the aforementioned deviations in students with ASD.

CONTACT: sara031os@gmail.com

Sexually Selective Cognition

Zala Slabe
University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Department of Psychology, Koper, Slovenia

Sexually selective cognition is the central process of our life. It includes interrelated processes allowing us to establish and maintain inter-individual relationships and reproduction. Diverse psychological and neurobiological processes are involved in the process; these enable us to recognize potential partners and access their availability. Sexual cognition is a process through which an individual realizes why, when, where, and with whom he/she wants to establish/maintain sexual contact.

The process includes the ability to face with the related challenges. To fully comprehend the process of sexually selective cognition we need to consider several inter-related aspects. The preferential processing of desired qualities in individuals highly relates to the sensory system functioning and selective perception of other's qualities.

Furthermore, we need to understand the involved complexity of brain mechanisms and their activation during the sexual behaviour. In addition, in order to comprehend the selective cognition of individuals, the understanding of sexual desire and sexual arousal processes are of key importance. Also, the sexual hormones activity largely influences an individual's desire and arousal. In practice, recognizing desire and arousal phenomena are often inappropriate and inter-changed. Because sexual orientation and sexual identity vary from person to person, it is important to consider the influence of individual differences.

CONTACT: zali.slabe@gmail.com

Relationship between outness and substance abuse susceptibility among Croatian MSM population

Matija Fenrich, Aleksandar Katić
Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia

Outness is defined as a status of being openly homosexual/bisexual. While most of the contemporary studies conducted in developed liberal societies deal with psychological benefits of such status, few deals with this issue in conservative and less developed countries where support to openly gay members of the society often lacks. What is more, in such context outness may be associated with psychological harm imposed by unsupportive society.

For that reason, we conducted a survey in order to investigate potential negative effects of outness among Croatian MSM population, specifically assessing the relationship between outness and habits such as smoking, alcohol consumption and abuse of marijuana.

We assessed the data using an ordinal-polytomous questionnaire in which MSM participants (n=220) answered the total of 13 questions regarding their substance abuse habits and outness status. Statistical analysis was conducted using the SPSS. By means of Kendall's τ-B test, we found the strong positive correlation between outness and substance abuse (p=0,000). T-test revealed statistically significant difference between fully outed and non-outed (closeted) participants: outed ones tend to smoke more cigarettes (p=0,001), drink alcohol more often (p=0,001), as well as abuse marijuana (p=0,000). In addition to that, strong statistical significance is demonstrated regarding involvement in sex while influenced by various substances, such as alcohol, poppers and marijuana (p=0,000). No statistically significant difference was found when comparing non-outed to partially outed participants.

Our results revealed that outed participants tend to be more susceptible to substance abuse than partially outed or non-outed participants. It may be suggested that discrimination and stigma imposed by society make them more vulnerable and prone to substance abuse.

CONTACT: mfenrich@mefos.hr

Neuroeconomics - introduction to the background of decision making

Aleksandra Ignatoski
University of Rijeka, Faculty of Economics, Rijeka, Croatia

Decision-making used to be question reserved for psychologists and economists, but in recent time it is often explored by other scientific areas. Implementation of neuroscientific methods of research was one step forward that turned behavioral economics into new area called neuroeconomics. It is border area of psychology, economics and neuroscience focused on explaining decision making.

It is important to understand forming of neuroeconomics as an interdisciplinary research field. Goal of this paper is to explain the connection between economics, neuroscience and psychology and show how that knowledge can be used.

Experiments are usually made by using brain imaging methods as EEG, PET and fMR and studying the difference between people solving different assignments. In neuromarketing, more market-based part of neuroeconomics, one of popular techniques are eye-tracking glasses. While neuroeconomics is focused on decision-making itself, from 2003 there was an increase in works concerning neurofinance, neurolS and neuropolitics. Questions that all of these fields are trying to answer can be divided in three parts: decision making in terms of uncertainty and risk, loss aversion and intertemporal choices and decision making in social context.

Although researches are very expensive, they bring revolutionary results. Camerer et al. are doing a study that has so far shown that different parts of brain activate when negotiation is successful and when it is not. Philal et al. showed that addicts have lower amount of cortisol than most of people which correlates with making impulsive decisions. Question that is getting more research is if hormones can show us personality traits. Zak is proving that level of oxytocin affects considering others while making decisions.

Neuroeconomics are still developing, and while moral questions about it should be raised, it is already telling a lot about what we consider “human nature”.

CONTACT: aleksandra.ignatoski@gmail.com

The role of value-normalization in preference instability

Urša Bernardič[1], Maël Lebreton[2]
[1]University of Amsterdam, Institute for Interdisciplinary Studies, Amsterdam, The Netherlands
[2]University of Amsterdam, Faculty of Economics and Business & Amsterdam Brain and Cognition, Amsterdam, The Netherlands

Understanding how the brain computes value is a basic question in neuroscience. More recently, the question of normalization has attracted much attention in the neuroeconomics community.

Normalization entails neural systems adapting to background levels of stimulation to maximize coding efficiency. In value-based-decision-making, such adaptation in the brain valuation system involves context-dependency of values, hence preference instability. So far, normalization has mainly been studied within the context of multi-option choices, focusing on the effect of concomitantly available choice options on value maximization. However, it is unknown whether or not this normalization can occur also for options presented sequentially (as opposite to simultaneously).

The aim of our research is to test if temporal normalization can affect the sequential valuation of single items as commonly used in neuroeconomics paradigms. Moreover, we investigated properties of temporal value-normalization, such as whether value-normalization is domain specific or generic.

The behavior experiment paradigm includes two tasks. First task is an item value-rating task and the second task is a simple binary choice task, between items that were evaluated during the first task. Unknown to participants is that the underlying distribution of the item values will be manipulated between blocks with shifts in its mean. This manipulation will allow to directly test hypotheses about the existence of normalization mechanism by comparing 1) the value of the rating between blocks for the two categories domain and 2) the preference reversal rate of Within and Between-Blocks pairs of items for the two domains.

This property of valuation mechanisms is fundamental in theoretical decision-making and is a cornerstone of recent developments in neuroeconomics.

CONTACT: ursa.bernardic@student.uva.nl

Theory of Mind and recognition of emotions in patients with cerebellar ataxia

Dušan Vukićević[1], Marko Svetel[1], Ana Stojadinović[1], Nataša Dragašević[2]
[1]University of Belgrade, Faculty of Medicine, Belgrade, Serbia
[2]University of Belgrade, Faculty of Medicine, Department of Neurology, Belgrade, Serbia

Recently, speculations arose that the cerebellum, in addition to its motor function, has a cognitive and emotional role. Cerebellar ataxia is a group of rare diseases with a progressive degeneration of the cerebellum. If this paper proves the existence of recognition of emotion and theory of mind disorders, it would support an extended function of cerebellum.

The aim of our study is to investigate the recognition of emotions on the face and Theory of mind in patients with degenerative ataxia.

The work has involved 31 patients diagnosed with progressive ataxia, who were hospitalized in Clinic for Neurology, KCS in 2015. Symptomatic cause of ataxia was excluded in all the patients.

Mean score on emotion recognition test was 19.35 ± 4,72, compared to 26 ± 3,4 in the general population (Baron Cohen et al). More than 50% had a score below 22. The mean score on the ToM tests was 45.48 ± 15,31 (maximum score of 60/60), while the score of the control stories was 18.93 ± 1,56 (maximum score of 20/20).

Our work provides preliminary results of disturbance of emotional processing and theory of mind in patients with degenerative ataxia and is another indicator of the potential role of the cerebellum in the recognition of emotions and the understanding and recognition of others, but also their different intentions, beliefs and desires in different social natural use your system.

CONTACT: vukdusan@hotmail.com

Mirror therapy as a complementary approach in rehabilitation of patients with phantom pain

Kruno Topolski[1], Paula Senković[1], Ana Marija Đaniš[2]
[1]University of Rijeka, Faculty of Health Studies, Rijeka, Croatia
[2]University of Applied Health Sciences, Zagreb, Croatia

Mirror therapy is considered kind of virtual reality which helps to act directly on the source of pain in the brain. Mirror therapy is designed by neurologist V. S. Ramachandran, and it is clinically tested with funds of US Congress as the best treatment of war veterans with amputations.

This paper aims to investigate and determine the usefulness of mirror therapy as an alternative approach to the rehabilitation of patients with phantom pain after amputation compared to the current approach to solving this problem.

This study is based on the research from "Pub Med" and "PEDro" with a view to discover relevant information.

Medical therapy used in the treatment of phantom pain does not act as a permanent solution but it is effective only as long as the taking of drugs, which are long-term harmful to the smooth operation of the brain and mental health. Research shows that mirror therapy is designed to remodel cortical mechanisms of pain and has proven successful in the treatment of phantom pain. The brain is considering an incentive virtual reality (created by reflection) as real and results with feedback to the motor cortex of the injured limb in motion. Also, the usefulness of mirror therapy as a new method of neurorehabilitation can be observed in patients after a stroke and complex regional pain syndrome.

This approach offers a non-invasive, effective and sustainable solution which results in no damage to the general health of patients. Mirror therapy has been recognized as the best solution for eliminating phantom pain in patients after amputation with the help of re-mapping the brain and neuroplasticity.

CONTACT: kruno.topolski@gmail.com

Does hippotherapy affect the gross motor functions in children with cerebral palsy?

Matea Babić, Ivona Brajković, Maria-Helena Ružić
University of Rijeka, Faculty of Health Studies, Rijeka, Croatia

INTRODUCTION: Hippotherapy has a number of positive effects that can be achieved through the horse back movements to a frequency of 90 to 110 pulses per minute, which is equivalent to the number of pulses of the human ambulation. Three-dimensional movements towards troops across all three planes, balanced repeating of the correct movement patterns that are not taught and a body temperature of a horse with the same rhythmic movements has a positive effect on the muscle tone normalization. In the treatment the range of motion and controlled posture increases. Therefore, these improve balance and coordination that have been disturbed.

AIM: To determine does the hippotherapy improve postural control and gross motor function and to evaluate the effectiveness of hippotherapy to balance control and activity of abductor and adductor muscles.

METHODS: Research of the literature on the effectiveness of hippotherapy for children with cerebral palsy up to 18 years.

RESULTS: Hippotherapy gives best results if done for 45-60 minutes, twice a week over a period of 6-10 weeks. When treatment takes less than 20 minutes once a week the results are not relevant. The therapy success is controlled with clinical tests: Gross Motor Function Classification System-GMFCS, Gross Motor Function Measure-GMFM, Sitting Assessment Scale-SAS, Pediatric Balance Scale-PBS and Activity Scale for Kids-performance-ASKp.

CONCLUSION: The results show that hippotherapy has a positive effects on gross motor function and balance control in children with cerebral palsy with different functional levels. Therapy can reduce stereotyped postural adjustments in children. Balance control while sitting significantly improves, as an asymmetry of an adductor muscle. Horse as a stimulant leads to improvements of motor functions and better therapeutic interventions acceptance. Hippotherapy is a viable strategy to reduce the deficit and improve the performance of daily skills in children with cerebral palsy.

CONTACT: mariahelenium@gmail.com

Predictors for functional recovery of patients with acute stroke subjected to early rehabilitation

Ivona Marić[1], Dolores Makovac[1], Lidija Tuškan-Mohar[2]
[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]Clinical Hospital Centre Rijeka, Clinic for Neurology, Rijeka, Croatia

INTRODUCTION: Stroke is the leading cause of adult disability. Early rehabilitation which starts almost at the same time as the stroke occurs is fundamental for good recovery if paired with good diagnosis and therapy.

AIM: Detecting the possible factors that might affect the outcome of the functional recovery in patients with acute stroke.

METHODS: The study included 50 patients with acute stroke that were hospitalized in the Clinic for Neurology, Clinical Hospital Centre Rijeka. Demographic factors of the patients, characteristics and the stroke severity were analyzed by using National Institute of Health Stroke Scale (NHISS) and the modified Rankin Scale. Level of disability was analyzed by using Functional Independence Measure (FIM) while the patient's cognitive state was analyzed by Mini Mental Test (MMT). Comorbidities were also taken into consideration.

RESULTS: The severity of the stroke expressed by the NIHS Scale and the level of functional independence and disability expressed by the Rankin Scale and FIM are highly significant predictors of early recovery. The vascular risk factors (high blood pressure, atrial fibrillation and diabetes mellitus) have negative impact on recovery. Younger patients have better functional recovery.

CONCLUSION: Severity of the stroke, cognitive state and the initial FIM are the main predictors for functional recovery of the patients that were subjected to early rehabilitation. The treatment outcome and the further rehabilitation programme can be planned by considering the early indicators and the evaluation of the functional recovery.

CONTACT: ivona.maric@hotmail.com

A piano training program can improve upper extremity function and has positive impact on depression in stroke survivors

Svetlana Imbrišić[1], Marta Žutelija[1], David Bonifačić[2,3], Lidija Tuškan-Mohar[2,3]
[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]University of Rijeka, Faculty of Medicine, Department of Neurology, Rijeka, Croatia
[3]Clinical Hospital Centre Rijeka, Clinic for Neurology, Rijeka, Croatia

INTRODUCTION: Upper extremity motoric difficulties are common following stroke and may be seriously debilitating. Recovering mobility in the upper extremities is often more demanding than in lower extremities, which can seriously impact the process of rehabilitation. In this study music therapy was represented to stimulate progresses in motor abilities and to reduce post-stroke depression in stroke survivors.

AIM: The aim of this study was to assess the outcome of a piano training program (a mini synthesizer was used) on upper extremity function in patients with upper extremity paresis due to stroke. The other aim of the study was to examine if music therapy can have positive impact on post-stroke depression.

PATIENTS AND METHODS: We examined 10 patients with paresis of the upper extremity (left-sided or right-sided) caused by stroke. Participants engaged in a piano training comprising supervised sessions (6×30 min). Manual dexterity, movement coordination were estimated at pre-intervention and post-intervention. We examined depression with Beck's questionnaire at pre-intervention and post-intervention as well. We compared participants results to the results of 10 control subjects matching age and gender.

RESULTS: Improvements for manual dexterity and positive influence on post-stroke depression were shown at post-intervention compared to pre-intervention scores.

CONCLUSION: We observed that piano training program can result in improvements in upper extremity function in patients with upper extremity paresis caused by stroke. As well music therapy can have a positive impact on post-stroke depression.

CONTACT: ljustax@gmail.com

Cross - modal plasticity in the blind

Mirna Vladušić, Corina Ivkić
Unversity of Zagreb, Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia

Neuroplasticity is the ability of the nervous system to respond to intrinsic or extrinsic stimuli by reorganizing its structure, function and connections. Cross - modal plasticity is form of neural adaptation common when sensory deprivation occurs in case of early blindness or prelingual deafness. Studies have shown activation of areas of visual cortex in wide range of tasks (tactile discrimination, motion discrimination, localization, language processing) in the blind.

Due to importance of tactile information in rehabilitation process (reading and writing, orientation and mobility, daily living skills, social skills) we will focus on studies that involve tactile stimuli. In many studies besides using Functional magnetic resonance (fMRI) to identify activation of visual cortex during tactile tasks, Transcranial magnetic stimulation (TMS) is used to simulate focal brain injury to confirm results.

Furthermore, we will point out fast development and progress made in this field of study. Also, we will introduce new findings, practical implications and possibility of further research.

CONTACT: vladusicmirna@gmail.com

Implications of ultrasound neuromodulation

Domen Planinc
University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia

Ultrasound is a sound wave with a frequency above those heard by the human ear. Commonly used for medical imaging, ultrasound (US) has recently been shown to be capable of noninvasively stimulating brain activity as a low intensity, low frequency ultrasound (LILFU). Compared with presently established deep brain stimulation (DBS) it is much less invasive, as it does not require an operation, and compared with transcranial magnetic stimulation (TMS) it has a much higher focusing capacity and lower attenuation in brain tissue. It is also more accessible to the general population due to its low financial value as opposed to the DBS and the TMS.

The exact mechanism of action of the US is not clear, though the leading hypothesis suggests that the US mechanically manipulates the stretch-sensitive membranes, which in term affects the voltage-gated ion channels, such as sodium and calcium, thus altering neuronal activity.

The latest progress in neuromodulation is promising but other means of medical application such as BBB modulation and brain tumour ablation are also worth mentioning as the first is already in the human trial phase.

In the presentation I will review the reasons, means, spheres and significance the newly yet fast-evolving science of ultrasound neuromodulation is heading to.

CONTACT: domen.planinc@outlook.com

The effect of apnea on the percentage of REM sleep stage in total sleep time

Alen Juginović, Ivan Kraljević
University of Split, School of Medicine, Split, Croatia

INTRODUCTION: Sleep consist of REM (rapid eye movement) and non-REM sleep stages. REM stage is characterized by rapid eye movement, makes up for 20-25% of total sleep time and appears 3-5 time per night. Obstructive sleep apnea (OSA) is one of the most common breathing disorders during sleep. OSA is characterized by breathing pauses while sleeping and if they last longer than 10 seconds, they are called apneas. Apnea hypopnea index (AHI) is used to evaluate the severity of OSA. The AHI is defined by the number of apneas and hypopneas in one hour of sleep and if it is larger than 5, OSA is diagnosed.

AIM: To show whether OSA affects the percentage of REM sleep stage in total sleep time.

METHODS: The research included 174 examinees (77% men, 23% women) whose data was acquired from the Split Sleep Medicine Centre archive after the all-night polysomnographic recording in the 6 month period from January to June 2014. Based on AHI, we divided the examinees into 2 groups, examinees with OSA (N=125) and without OSA (N=49). The recording was done with Alice 5 and Alice 6 Diagnostic Sleep System (Phillips Respironics, USA). From the all-night polysomnographic recording we obtained the percentage of REM sleep stage in total sleep time and AHI.

RESULTS: The average age of examinees was 52±14 years. In the OSA group, AHI was 29,6±24,2 while in the group without OSA, AHI was 2,1±1,5. Total sleep time was not significantly different between the examinees with and without OSA (381,5±82,6 vs. 378,6±87,6, p=0,86). The average percentage of non-REM sleep in examinees who have OSA was 84,1% while in the examinees without OSA was 81,2% (p=0,0253). The average percentage of REM sleep in the examinees with OSA was 15,8% and in the examinees without OSA 18,7% (p=0,0224).

CONCLUSION: The research showed that there was significant difference in the percentage of REM sleep stage between the OSA group and group without OSA. The data showed that the percentage of REM in the OSA group was significantly lower than in the group without OSA.

CONTACT: bolognaet@yahoo.com

Perception of medical staff on people with multiple sclerosis

Anja Ašenbrener[1], Ingrid Škarpa-Prpić[2,3]
[1]University of Rijeka, Faculty of Health Studies, Rijeka, Croatia
[2]Clinical Hospital Centre Rijeka, Clinic for Neurology, Rijeka, Croatia
[3]University of Rijeka, Faculty of Medicine, Department of Neurology, Rijeka, Croatia

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system (CNS), which means that damage could be caught in cerebrum, cerebellum, brainstem and spinal cord. It can appear at any ages, but is most common in young adults. Cause of the disease is unknown and course is unpredictable. Today's findings and results of numerous studies indicates that MS is autoimmune disease whose formation has certain roles, genetic propensity and environmental factors. Due to the different clinical presentations of the disease, which depends on the type and degree of damage to myelin patients are often calling MS "the disease with a thousand faces".

Nevertheless, patients and others very often identified MS with difficult and inevitable disability and with life in wheelchair. Thereby simultaneously defining low quality of theirs life. Although most patients are aware that a results of the disease doesn't have to be that way. In forming an opinion, experiencing the disease and attitude of patient towards to disease, an important role play environment, patient's family and medical workers. That is why the aim of our study was to examine knowledge, attitude and perception of health workers, of different profiles, towards MS. The study involved doctors of various specialties, residents of various professions, nurses, medical technicians, laboratory assistants and physiotherapists, all employees of Clinical Hospital Centre Rijeka. A total of 100 respondents anonymously filled out a questionnaire which included 20 questions about MS. Those results were compared with knowledge, attitudes and perception toward disease from questionnaire with same amount of questions about 2 other diseases than could lead to difficult motor disability. Those diseases are from the group of neurodegenerative diseases- Parkinson's disease, from a group of systemic connective tissue diseases- rheumatoid arthritis and 1 from a group of serious psychiatric disease - schizophrenia.

The results obtained in our study confirm the fact that there is a certain level of knowledge of all listed diseases, but definitely insufficient and rigid when it comes to people with MS. We point out that the results confirm certain prejudice. Results emphasize the need and importance to improve knowledge about disease and those who suffer from multiple sclerosis.

CONTACT: anja.asenbrener@gmail.com

Incidence of Brain Metastases in Patients with HER 2 – Positive Metastatic Breast Cancer

Iva Skočilić[1], Ingrid Belac-Lovasić[2]
[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]Clinical Hospital Centre Rijeka, Department of Oncology, Rijeka, Croatia

INTRODUCTION: Brain metastases (BM) account for the majority of malignant intracranial tumours. Breast cancer (BC) is the second most common source of BM, affecting 15 – 30 % of BC patients. The development of BM depends primarily on the molecular subtype.

AIM: to determine the proportion of patients receiving trastuzumab who develop BM and investigate whether any clinic-pathological correlates could be drawn between the two.

MATERIALS AND METHODS: The retrospective study included 101 women with breast cancer that overexpressed HER 2 protein. All patients were treated with trastuzumab in Clinical Hospital Centre Rijeka from 2008 - 2011. We observed the relationship between hormone receptor status and both the frequency of BM and the period from the diagnosis to the date of first metastasis.

RESULTS: The median age of the patients at the time of diagnosis of BC was 57.3 (range, 30–81). All patients were HER 2 – positive, with 62% of them having hormone receptor positive disease and 38% negative. 19 patients developed metastatic disease, of whom 15 (79%) developed visceral and bone metastases while the remaining 4 (21%) developed BM. The median age of patients with BM was 48.5 (range, 30–66). It is significant that they were all hormone receptor negative. The average time from BC diagnosis to visceral and bone metastases was 31.07 months, while the median time to BM was 13.5 months (range, 6-21).

CONCLUSION: Based on the results we can conclude that younger age at diagnosis and HR negative status are correlated with the increased incidence of BM, which is in line with the relevant literature. Findings indicate that a high proportion of patients with MBC treated with trastuzumab develop BM, either due to HER 2 positive breast cancer having a predilection for the brain, or trastuzumab therapy controlling systemic disease and prolonging survival.

CONTACT: iskocilic@gmail.com

The use of levetiracetam as mono/polytherapy during the five-year period at the Department of Pediatrics, University Hospital Centre Rijeka, Croatia

Vanesa Vujičić[1], Marta Žutelija[1], Jelena Radić Ništević[2], Igor Prpić[2]
[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]Clinical Hospital Centre Rijeka, Division of Pediatric Neurology, Department of Pediatrics, Rijeka, Croatia

INTRODUCTION: Levetiracetam is established second-generation antiepileptic drug (AED), most commonly approved as monotherapy treatment of focal-onset seizures and primary generalized myoclonic and tonic-clonic seizures, and also as adjunctive treatment for refractory epilepsy. It has been shown to be effective in adults, children, infants and even premature neonates with epilepsy. Side effects include behavioural disturbances in some patients, not cognitive impairment like first-generation AED.

AIM: The aim of this study was to determine whether levetiracetam was the first-choice AED in our Epilepsy Centre and if it is used more often in monotherapy or polytherapy.

MATERIALS AND METHODS: This is a retrospective, observational study. During the period of January 2010 to December 2015, several parameters, such as epilepsy type, the frequency of prescribing levetiracetam in mono/polytherapy and side effects were evaluated.

RESULTS: A total of178 (51% girls, 48% boys) pediatric patients with epilepsy were enrolled. The age of the examinees was between 0 and 19 years (mean 12,9). Primary generalized epilepsy was diagnosed with 85 (47%) patients, while focal epilepsy was present in 93 patients (52%). Refractory epilepsy had 63 patients (35%) which is in accordance with commonly reported data in clinical trials. During this period we treated 122 (68%) patients with levetiracetam as first AED in monotherapy. In 56 (31,46%) patients levetiracetam was introduced as adjunctive treatment for refractory epilepsy, most often with valproic acid (15%) and lamotrigine (11%)in rationale polytherapy. Side effects in form of behavioural disturbances had 4 (2%) patients.

CONCLUSION: In this study, we have proved that levetiracetam is probably the best of all the newer AED, with favourable tolerability and safety profile. It is probably the AED that is most free from side effects, highly effective, broad-spectrum and mostly used as the first-line choice in monotherapy.

CONTACT: vanesa.vujicic@gmail.com

Effects of antiepileptic drugs on the skeletal system – review article

Haris Čampara, Sanita Maleškić
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

Nowadays epilepsy is one among the most common neurological disorders. It mostly affects the children and the elderly, and besides its disruptive nature to everyday life it also has some long term effects that are caused by anti-epileptic drugs (AED), or by epilepsy itself. Most commonly prescribed AEDs are carbamazepine, phenobarbital, oxycarbamazepine, valproate and clonazepam. One of these effects is reduced bone quality and bone mass density (BMD).

In this study, we analysed five different studies and compared their research outcomes regarding reduced bone quality and AED usage. Methods of analysis and synthesis were used and we found that previous studies discovered that AEDs affect the bones by inducing CYP-450 (CYP3A4 and/or CYP24A1) enzyme system. It leads to increased vitamin D metabolism and promotes its inactivation or conversion to inactive metabolites. At the same time, there is reduced vitamin D intestinal absorption, secondary hyperparathyroidism and as a result, calcium mobilization from the skeletal system. It's also shown that there is a reduction in circulating vitamin D. It has been proven that this effect is directly correlated with the AED dosage. Several studies have shown that a group of juvenile epilepsy patients suffered more from bone loss and vitamin D deficiency than older patients, especially when treated with more than one AED. This leads to bone remodeling and skeletal turnover, which causes osteoporosis and promotes its onset. However, BMD reduction was also found independently on vitamin D serum levels, showing that AEDs have more than one way of affecting skeletal system.

However, larger prospective studies should be conducted, as to further establish the connection between AEDs and loss of bone mass and density. The goal of these studies should be raising awareness and doing prevention of osteoporosis in patients treated with AEDs.

CONTACT: haris_ch94@hotmail.com

Potential pharmacological modulation of human memory

Miha Majcen
University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Koper, Slovenia

Memory related mental illnesses are among the most common whilst being extremely resistant to current treatments. In the age of great advances in neuroscience research the field of memory does not get enough attention. Nonetheless we may encounter emergence of genetic, epigenetic and other molecular mechanisms underlaying memory formation data, which allow us to study agents to be potentially used for cognitive deficit treatment in dementias and those for treating maladaptive memories causing traumas in affective disorders. Most of those experiments are still carried out on animal subjects and in many cases yield promising results. On the other hand off-label use among registered nootropics and nutraceuticals can be seen with more and more studies supporting their efficiency in human cognition and memory manipulation.

CONTACT: miha.majcen@gmail.com

Poster Session

Can we “read minds” with functional MRI?

Karla Matić
Josip Juraj Strossmayer University of Osijek, Faculty of Humanities and Social Sciences, Department of Psychology, Osijek, Croatia

With the development of technology in modern science, functional magnetic resonance imaging (fMRI) has found its way from clinical use into interdisciplinary neuropsychological research. Using the fMRI, a non-invasive method based on the Blood Oxygenation Level Dependent (BOLD) effect, researchers can identify the brain regions and sub-regions involved in specific tasks. Moreover, with multi-voxel pattern analysis (MVPA), an approach in which the data from individual voxels within one region are jointly analysed, it is possible to detect fine differences between conditions by comparison of distributed patterns of activity.

However, recent findings have shown that the researchers can not only identify the specific pattern of neural activity pertained to certain cognitive task, but also identify the processed thought merely from the pattern of voxel activation. Referred to as “thought identification”, or even “mind-reading”, this inverted-relationship paradigm has gained considerable attention in the past decade, and the research on the topic is rapidly progressing.

The present poster gives a brief overview of the most prominent research in the field of though identification from 2006, when John Dylan-Haynes reported that it is possible to accurately decode mental state solely from the brain activity and coined the term “brain reading”, until today. With artificial intelligence techniques, often referred to as machine learning, diverse authors report being able to, for example, decipher which out of 1000 images is currently being shown to the subject, predict subject’s intention to either add or subtract two shown numbers, or establish whether the subject has seen the presented stimuli before or not.

Since the presented method is highly sophisticated and inaccessible to Croatian students, the present work is purely theoretical; however, because of its possible implications in criminal law and other non-research purposes, it is of crucial relevance to understand what can and cannot be read from the brain.

CONTACT: kmatic94@gmail.com

Event-related potentials in neurolinguistics of sign languages

Tomislav Radošević
University of Zagreb, Faculty of Education and Rehabilitation Sciences, Department of speech and language pathology, Zagreb, Croatia

Sign languages are languages expressed in the visuospatial modality. They use signs and manual, as well as nonmanual grammar. Manual grammar is expressed using space, while nonmanual grammar is expressed using eye gaze, mouth shape, eyebrows, head nod/shake, upper body lean, to name a few. Sign languages are natural languages and therefore have the exact same components as spoken languages do: phonology, morphology, syntax, and semantics.

Event-related potentials (ERPs) are electrophysiological method of studying language processing in the brain. ERPs primarily tell us how and when different levels of linguistic processing unfold in time. The main ERP components are N400 for semantic processing, while left anterior negativity (LAN) and P600 indicate syntactic processing.

Participants in studies of spoken language processing are usually hearing native speakers listening or reading sentences, while in case of sign language processing participants are usually deaf native signers watching recorded sentences. Two types of sentences can be used to elicit aforementioned components: semantically incorrect sentences, and syntactically incorrect sentences.

Results from studies of American Sign Language and German Sign Language have shown that in native deaf signers semantically incorrect sentences elicited a negativity, i. e. N400 component, while morphosyntactically incorrect sentences elicited a left frontal negativity (LAN) followed by a posterior positivity (P600).

These results confirm that semantic and syntactic processing are different processes in the brain. Also they suggest similarity in language organization in the brain, regardless of modality, as these ERP components are same in oral, as well as sign languages.

CONTACT: tomislav.radosevic1@gmail.com

Characterizing short and long-term behavioral sensitization in Drosophila

Ana Filošević, Ira Ćoso, Rozi Andretić Waldowski
University of Rijeka, Department of biotechnology, Laboratory for behavioral genetics, Rijeka, Croatia

Behavioral sensitization is a form of non-associative learning in which repeated administration of a stimulus results in a progressive increase in response. Specific cellular mechanisms of both short and long-term sensitization have been described, sharing some common aspects of modulation. Short-term sensitization can be induced by a startle stimulus and lasts on the order of minutes, and long-term sensitization lasts on the order of days and can be induced by repeated administration of psychostimulants Sensitization represents a relatively simple form of neuromodulation whose understanding is relevant for understanding the process of addiction.

We are trying to develop a high-throughput method to study short and long-term sensitization in Drosophila, which would enable later genetic screening. We use wild type (wt) *Drosophila melanogaster*, of strain Canton S (CS). Short term sensitization was induced with mechanical startle stimulus lasting 10 seconds and 3 subsequent brief sensitizing stimuli after 5, 10 or 15 minutes intervals. Flies were fed regular food or supplemented with 0,5 mg/mL methamphetamine. Long-term sensitization experiments involved feeding flies 1,25 mg/mL methamphetamine supplemented food for 3 days from 8pm to 8am, while from 8am to 8pm flies were receiving regular food. We used Drosophila Activity Monitoring System to monitor locomotor activity of individual flies throughout these experiments.

Our preliminary results show that 12 hours oral administration of methamphetamine leads to increased locomotion and decreased sleep. Repeated administrations with 12 hours between exposures lead to increased motor-activating effect. Startle administered as a brief vibrational pulse leads to increased responses to subsequent stimuli delivered within 15 minutes, which is not present in flies fed with methamphetamine.

Both short and long-term experiments showed behavioral sensitization in the form of increasing of locomotor activity. Despite same phenotype we are currently characterizing sensitization in order to undertake future genetic studies.

CONTACT: ana.filosevic@biotech.uniri.hr

Real Life Sleeping Beauties: case series on Kleine-Levin Syndrome

Ines Kovačić
University of Zagreb, School of Medicine, Zagreb, Croatia

Kleine-Levin Syndrome (KLS), also called sleeping beauty syndrome, is a rare sleeping disorder characterized by episodes of hypersomnolence, behavioural and cognitive disturbances, hyperphagia and hypersexuality.

The aim of this paper was to find out something more about clinical presentation of patients with this condition.

The methods involved reading published papers, so I report four cases diagnosed as Kleine-Levin syndrome.

First case is a 21-year-old male with complaints of excessive sleep episodes associated with aggression, disinhibited behaviour, decreased speech output and hyperphagia. Inter-episodic periods showed complete recovery. He was put on modafinil and later switched to lithium. Now he is maintaining well.

Second case is a 16-year-old female with complaints of excessive sleep, academic decline, increased appetite, irritability and excessive sexual urge. Between these periods she behaved appropriately. She was managed with methylphenidate and lithium in combination with psychotherapy and showed favourable response.

Third case is a 19-year-old male experiencing excessive sleepiness accompanied with lethargic behaviour, a decrease in communication, excessive eating and hypersexuality. At first consultation, he was already being followed up by a psychiatrist and taking venlafaxine and oxycarbamazepine. When the diagnosis was determined to be KLS, venlafaxine dose was reduced and oxycarbamazepine dose was increased. His condition improved.

Fourth case is an adolescent girl who presented with hypersomnic and hyperphagic episodes and functional decline in academic performance. These episodes were correlated with her menstrual cycle. She was given dextroamphetamin and at the four months follow up, she did not experience new episodes.

In conclusion, clinical presentation of patients with Kleine-Levin syndrome is similar, but symptoms are not specific and can easily be misdiagnosed. Even though this condition is rare, we should pay attention to mentioned set of symptoms, as well as exclude other more common psychiatric and neurological conditions, all in order to provide a successful therapy.

CONTACT: ineskovacic@hotmail.com

Difference between subjective and objective evaluation of sleep quality

Ivan Kraljević, Alen Juginović
University of Split, School of Medicine, Split, Croatia

INTRODUCTION: Sleep is needed for daily functioning, psychological and physical health. The amount of sleep depends on many factors. The optimal number of hours needed to sleep is different for each age category. Some of these factors are sleep latency and total sleep time which affect sleep efficiency.

AIM: To show whether there are differences between subjective and objective evaluation of three sleep factors: sleep latency, total sleep time and sleep efficiency.

METHODS: We studied 177 examinees (77% men, 23% women) from the Split Sleep Medicine Centre archive who came to an all-night polysomnographic recording in the 6 month period from January to June 2014. The recording was done with Alice 5 i Alice 6 Diagnostic Sleep System (Phillips Respironics, USA). From the all-night polysomnographic recording for the objective evaluation of sleep quality the following variables were used: sleep latency (minutes), total sleep time (hours), and sleep efficiency (percentage). All examinees filled out the Pitsburgh questionnaire for the assessment of sleep quality. The Pitsburgh questionnaire is used to evaluate the quality and disturbances during sleep in a period of one month. The results differentiate good from bad sleep.

RESULTS: The average age of examinees was 52±14 years. The examinees thought that they needed 15 minutes to fall asleep after they go to bed, but the recording showed that they actually needed on average 35 minutes ($p<0,0001$). Total sleep time was 6,6 hours although they think they sleep 6 hours ($p=0,0315$). They evaluated their sleep efficiency as bad (69,99%-55%) but it was shown that it was underestimated because their sleep efficiency was considered good (84,99%-70%) ($p<0,0001$).

CONCLUSION: The research showed that there were differences in all three recorded parameters between subjective and objective evaluation of sleep latency, total sleep time and sleep efficiency. Sleep latency was longer than the examinees thought as well as total sleep time acquired through all-night polysomnographic recording. However, while interpreting the results, the “first night effect“ – the adaptation of the examinees to sleeping in the laboratory should be taken into account which we couldn’t exclude from our results.

CONTACT: ivan.kraljevic93@gmail.com

Physiological correlates of occupational stress in computer workers: body mass index, active smoking behaviour, alcohol consumption and daily exercise routine

Sanja Sever
University of Ljubljana, Faculty of Arts, Department of Psychology, Ljubljana, Slovenia

Nowadays, occupational stress is a widespread phenomenon to be associated with the negative effects on everyday life and well-being of computer workers. Sitting position, long working hours, daily (over)use of computerized screens on laptops, computers, tablets, mobile phones and "spill over" of various job demands into home or personal domain have caused more and more occurring physiological and psychological health problems.

With specially constructed self-report questionnaire for this research we systematically investigated risk levels of lifestyle factors that many previous studies (Kowalska & Bugajska, 2009; Kouvonen, Kivimäki, Cox, Cox & Vahtera, 2005) confirmed to be linked to occupational stress. We concentrated on four different physiological domains. Correlation analysis showed that higher amount of perceived occupational stress is positively associated with inappropriate body mass index, active smoking, frequent alcohol use and lack of daily exercise routine.

Stress as an all-pervasive phenomenon in modern IT and office occupations should be an important topic for strategic human resources management with emphasis on promoting wellness at work and home. Despite our research results were statistically significant and consistent with our expectations, we recommend further research to start a more visible debate over organisational wellness programme.

CONTACT: sanja.sever@outlook.com

Translation and cultural adaptation of a Slovenian version of ECAS (Edinburgh Cognitive and Behavioural ALS Screen) – presentation and preliminary results

Petra Prunk, Ana Štublar
University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia

Amyotrophic lateral sclerosis (ALS) is a progressive neurological disease caused by degeneration of upper and lower motor neurons. Dysfunction of the motor system, manifested by a progressive weakness and muscle atrophy, dysphagia, dysarthria and, in the final stages, complete paralysis. Besides, characteristic changes in behavioural and cognitive functions are often present, such as deficits in executive functions, language and social cognition. ALS has an incidence of approximately 2 in 100 000.

ECAS (Edinburgh Cognitive and Behavioural ALS Screen) has been developed to detect the specific profile of cognition and behaviour changes in ALS and to differentiate it from other disorders. It is a 15-20 min screen that includes ALS-specific and nonspecific assignments and a carer behaviour screen. In order to use it in a non-English speaking society translation, cultural adaptation and validation have to be done.

We translated ECAS to Slovenian and adapted it to our culture. Our goal is to prove that our version is an effective screen to detect cognitive impairment in ALS patients.

40 patients with diagnosed ALS were tested using the Slovenian version of ECAS. We were looking for specific deficits in various cognitive tasks.

We noticed that the cognitive deficit was mostly seen in the tasks testing executive functions, language, social cognition and memory. We also noticed that a lot of patients had problems with one of the tasks testing visuospatial functions (number location).

Additional control testing, validation and standardization have to be made in order to use the Slovenian version in clinical practice.

CONTACT: petraprunk@gmail.com

The impact of psychological violence during childhood on mental development in adolescents

Ana Spasovska, Martin Angjelov, Amira Eminovikj, Sabina Rustemovska
Ss. Cyril and Methodius University of Skopje, Medical Faculty, Skopje, Macedonia

INTRODUCTION: Violence and abuse of children are the main cause of physical and psychological difficulties on children and adolescents. If these changes are not recognized on time they will be treated incorrectly, which results with irreversible mental changes that last a lifetime.

AIM: To determine the impact of psychological violence during childhood on mental health of adolescents.

MATERIALS AND METHODS: 972 high school students (aged 18-19 years), from different cities of Macedonia, were examined, of which 538 (55.35%) were male, 434 (44.65%) were female, from different nationalities. Data collection was done by two questionnaires: TSCC (Trauma Symptom Checklist for Children) and ACE (Adverse Childhood Experience).

RESULTS: Psychological abuse has been reported in 192 (19.75%) of respondents and had been often observed on Macedonian respondents-20.9%, but none of the Romas. Substance abuse in family is observed in 121 of (12.45%) respondents, mental illness is observed in 57 of (5.9%) adolescents and criminal behavior has been recognized by 50 of (5.1%) respondents. Statistical analysis confirmed that psychological abuse and neglect is highly registered in female adolescents, but sexual abuse and deprivation is significantly more exposed to the male adolescents. All kinds of violence among children and adolescents lead to bigger or smaller mental disorder and physical development (some authors found and changes to the arhitectonic of cerebral cortex) among them.

CONCLUSION: Psychological abuse and neglect during childhood are the most common at females. Dissociation as a highly significant traumatic symptom is more common in adolescents who were mentally abused in childhood. There is no significant association between psychological abuse and the occurrence of anxiety as traumatic symptom. Psychological abuse is significantly more often associated with higher socioeconomic status. Preventive measures to maintain mental balance should include: family, environment and society in general.

CONTACT: spasovskaana@hotmail.com

Traumatic brain injuries during the siege of Sarajevo (1992-1995)

Baščaušević Benjamin, Čelik Adna, Dalač Jasmina
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

Siege of Sarajevo took place from 1992 to 1995. According to most of resources during this time there were 13.952 people killed, including both soldiers and civilians. We analyzed traumatic brain injuries (TBI).

We wanted to determine how many victims suffered traumatic brain injuries (TBI), what kind of TBI and how many of them were combined with injuries of other body parts. The objective of this study was also to determine what regions of head were struck, and which functions of brain were damaged. We also did sex, gender, and geographical distribution of TBI.

We did retrospective cross-sectional study where we analyzed 5444 autopsy reports of people killed in 9 Sarajevo municipalities. We gathered information of interest from database present at Faculty of Medicine, University of Sarajevo. The processing of information was done in Microsoft Office programs.

In our sample total of 1140 (20,9%) people died because of TBI, of which 86.7% were head injuries alone, and 13,3% were head injuries combined with injuries of other body parts. Most of the injuries (58,7%) were explosive wound, 36,5% were gunshot wounds and 4,8% were other injuries including fractures, brain prolapses, destructions of unknown reason, vascular injuries, coma and other. Total of 246 injuries have information about the part of head struck, with frontal part dominating, followed by parietal, temporal, occipital and basal part. Males were victims 4,5 times more often than females. 45,9% of people killed were between the age of 16 and 45.

Out of all autopsies done during 1992-1995 in Sarajevo one fifth was associated with TBI which leads us to the conclusion that TBI had huge impact during the siege.

CONTACT: bascausevicb@gmail.com

Impact of arousal on information processing speed

Lucija Ivanda[1], Ana Matušan[2], Josipa Milas[2]
[1]University of Zagreb, Faculty of Humanities and Social Sciences, Zagreb, Croatia
[2]University of Zagreb, Centre for Croatian Studies, Zagreb, Croatia

Arousal is a state of high activity of physical and cognitive functions which makes a person more careful than usually. It is conceived as a state which varies in continuum from low point in sleep to high point in extreme effort or high affection. Processing speed is a measure of cognitive performance, which grows by aging. That increase is ascribed to myelinisation of axons and increased number of neural connections within the central nervous system during childhood and adolescence. Optimal level of arousal is low intensity one which doesn't interfere with concentration necessary for execution of task. However, there are researches which have shown that optimal level of arousal is correct only at difficult tasks, while for easy tasks is better to have high arousal.

Relying on previous researches, the main goal of this experimental research is to examine whether there is significant impact of level of arousal on processing information speed. Level of arousal is operationalized by movie genres and processing speed is measured by Letter Digit Substitution Test. We expect that the best result on the LDST will gain participants with high caused arousal and the lowest one will gain ones with low caused arousal.

Research was conducted on occasional sample of 183 students of University in Zagreb, 92 females and 91 males, age range was 18 to 27. Participants were probabilistic distributed with table of random numbers in 3 experimental and 1 control group. One way ANOVA was used for data analysis which has provided statistical significant difference between groups on 5 percent level of significance. In further processing, we used Scheffe test which showed us that all 3 experimental groups gain significantly better results on LDST than control one.

CONTACT: lucija.ivanda@gmail.com

Efficiency of amantadine in the treatment of parkinsonism plus

Tomislav Felbabić, Nadja Novak
University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia

INTRODUCTION: Parkinsonisms plus are similar to idiopathic Parkinson's disease (PD). Important difference is that conventional drugs for PD offer no improvement in PP. Currently there is no medicine that would successfully treat PP. Clinical experience shows that patients treated with amantadine show signs of clinical improvement. There is no controlled study that would unquestionably prove the positive effect of amantadine in PP treatment.

AIM: We wanted to determine efficiency of amantadine in treatment of PP. We investigated possible effects of treatment on motor and non-motor status and on the quality of life. With this research we aimed to gain new knowledge about the effects of amantadine and – for the first time in literature – offer a scientifically proven recommendation of it's use.

METHODS: We observed 12 patients with PP, admitted to the Neurological Clinic in Ljubljana between January 2014 and December 2015. This double-blinded study was conducted in two phases. In both phases subjects received either amantadine or placebo (saline solution). They received infusions twice a day for seven days. Before and after infusions clinical status was assessed on the basis of clinical questionnaires. Patients were also evaluated by the occupational therapist and physiotherapist.

RESULTS: Analysis showed that amantadine has no statistically significant effect on most of observed parameters. Only exception was cognitive function where subjects averaged higher on mini-mental state examination ($p=0.020$). After infusion of amantadin 58.3% of subjects felt improvement in their clinical condition.

CONCLUSION: We could not confirm the positive effect of amantadine for the treatment of PP, with the exception of cognitive abilities. Considering the fact that more patients felt the improvement of their clinical condition after the infusion of amantadine rather than saline, it is likely that existing questionnaires that we used are too rough and fail to show improvement which amantadine provides for specific symptoms.

CONTACT: tomifelbabic@gmail.com

Cognitive Reserve in Elderly and Related Changes in Cognitive Functioning

Sara Mičič, Tjaša Omerzu, Aja Lovrec, Karin Bakračevič Vukman, Marina Horvat
University of Maribor, Faculty of Arts, Maribor, Slovenia

The hypothesis of cognitive reserve describes the ability of adult brain to cope with the effects of cognitive aging. Higher education, occupation attainments and stimulating leisure time activities are linked to better performance in cognitive tasks in elderly and also reduced risk of dementia.

The aim of the present study was to research cognitive reserve in elderly and related changes in cognitive functioning in the field of working memory and executive functioning.

23 participants were included in our research. They live in a nursing home and are aged between 65 in 91. Cognitive Reserve Index questionnaire was used for measuring cognitive reserve. We used Wechler's forward and backward span test for evaluation of the capacity of working memory, where subjects were required to memorize set of numbers. We also used TMT (Trail making test) A and B for assessment of executive functions. Subjects were required to draw a line connecting circles in numerical and alphabetical order. We measured time subjects needed for completing the task.

Our results have shown that all three types of cognitive reserve have statistically significant effect on scores, achieved on backward span test. The effect was positive for education and occupation, which indicates that better occupational and educational cognitive reserve predicts better achievement on Wechler's backward span test. However, the effect of free time activities cognitive reserve was negative, indicating that higher free time activities cognitive reserve predicts worse achievement on Wechler's backward span test. No other statistically significant effect of cognitive reserve in scores, achieved on forward span test, TMT A or TMT B were found. Based on our research we can conclude, that cognitive reserve has limited or small effect on executive functions, whereas there seems to be effect of cognitive reserve on memory.

The results suggest that cognitive reserve has the impact on cognitive performance, especially on tasks that demand higher level of involvement. Further research is recommended.

CONTACT: tjasek5@gmail.com

Parent reported quality of life in children with cerebral palsy vs. physician assessment

Sentilija Delalić
University of Ljubljana, Faculty of Medicine, Department of Child, Adolescent and Developmental Neurology, Ljubljana, Slovenia

INTRODUCTION: The Gross Motor Function Classification System (GMFCS) has been proven to be valid, reliable and stable over time clinical tool. It is a useful instrument for identifying functional needs of a child and of great help in planning future interventions.

AIM: The aim of the study was to compare both parents' and child's answers of GMFCS Questionnaire with physician's score of the child's motor abilities on GMFCS scale. We also aimed to see if there is difference between parents' and child's reports of the GMFCS score.

METHODS: We have included 89 boys and 71 girls in our study. We have divided them into four age groups: 2 to 4 years, 4 to 6 years, 6 to 12 years, and 12 to 18 years. We have asked parents and children aged above 12 years to complete GMFCS Questionnaires.

RESULTS: We received 54 questionnaires, among them were 28 boys and 26 girls. In 35 cases, physicians and parents agreed about the GMFCS score. There were a total of 19 discrepancies between the ratings of physicians and parents. In 16 of these (84,2 %) cases, parents considered children to be more physically impaired as compared to the evaluation of the physician. Of the 12 questionnaires, which were sent to the adolescents, we received 8 completed questionnaires. All reported the same score on the GMFCS scale as given by their parents. Adolescents have a tendency to report a higher motor disability as assessed by the physician.

CONCLUSION: We have found only moderate agreement between parents and physicians on the levels of GMFCS scale, which we can partly attribute to the small study sample. Adolescents reported the same score as their parents on the GMFCS scale. Adolescents reported higher motor disability in comparison with physicians' assessment. Further studies, which are already planned, with more participants should be done.

CONTACT: senty.d@gmail.com

Impact of olfactory dysfunction on psychological state and quality of life in patients with Alzheimer disease

Patricija Jakopović[1], Nikolina Tušek[1], Marija Slaviček[2], David Bonifačić[2,3], Lidija Tuškan-Mohar[2,3], Ines Torić[4]
[1]University of Rijeka, Faculty of Health Studies, Rijeka, Croatia
[2]Clinical Hospital Centre Rijeka, Clinic for Neurology, Rijeka, Croatia
[3]University of Rijeka, Faculty of Medicine, Department of Neurology, Rijeka, Croatia
[4]Clinical Hospital Centre Rijeka, Centre for clinical, medical and organizational psychology, Rijeka, Croatia

INTRODUCTION: It was found in some systematic studies that Alzheimer disease is positively associated with olfactory dysfunction. It has been shown that odour identification is directly related to left hippocampal volume which is some of the earliest affected in Alzheimer disease pathology. According to that, olfactory changes may be some of the earliest signs of the disease even in the preclinical phase of dementia. In correlation between disease severity, dysosmia and emotions, quality of life is severely impaired. Patients with progressive Alzheimer disease who suffer from severe olfactory dysfunctions, often experience depressive mood disorder or major depression episodes.

AIM: The aim of this study was to examine the impact of olfactory disfunction on psychological state and quality of life in patients with diagnosed dementia.

PATIENTS AND METHODS: We preformed cross-sectional analysis of 60 participants. Participants were divided into two groups. In first group were patients with diagnosed dementia (N=30) and second were control group (N=30). Information was collected through odour identification test, determination of the hedonic score of odour, structured interview about smell and nasal Information, mental condition and quality of life. Patients were tested with closed eyes, both nostril at a time for their ability to identify an odour and to determine the hedonic score of each odour. We compared the results of the patients with Alzheimer disease and the results of a control group matched by age and gender.

RESULTS: Of 30 patients with Alzheimer's disease, 16 women and 14 men (53% women and 47% men) pleasant smells assess unfavourable 54.45% of patients, and 64.73% of patients assessed unpleasant odours pleasant. Decreased mood had 61.34% of patients, and reduced quality of life had 71.25% of patients.

CONCLUSION: Changes in cognitive abilities influence the perception of smells. The changed perception of smell affects the mental condition and quality of life

CONTACT: patricija.jakopovic@gmail.com

The experience of neurofeedback therapy for children with developmental disabilities

Ivana Horvat[1], Jelena Frančišković[2], Stjepan Jelica[1]
[1]College of Applied Sciences Lavoslav Ružička, Vukovar, Croatia
[2]Association of parents of children with disabilities "Vukovar Butterflies", Vukovar, Croatia

Neurofeedback is a method of monitoring the electrical activity of the brain for the purpose of their self-regulation, through a computer interface. It affects the internal regulatory networks of the brain, and train its functional dysregulation. Treatment is used to treat various disharmony such as attention deficit hyperactivity disorder, autistic spectrum disorders, sleep disorders, and a range of clinical manifestations of these disorders (hypersensitivity, nocturia, deregulated sleep cycle, memory disorders, expression, speech and swallowing disorders, autodestructiveness and emotional overreacting).

Studies show the effectiveness of neurofeedback and positive experiences in the field of safety in clinical application. Side effects are rare and transient.

The importance of work is in emphasizing the possibilities of applications in the treatment of various conditions that are often obstacles for further effective treatment of physiotherapist, speech therapist or occupational therapist.

For the purposes of this study, 32 questionnaires were evaluated. For each child, 30 half-hour treatments were conducted in our association Vukovar butterflies. Parents were asked to complete a modified questionnaire which was used for an initial assessment of symptoms which consists of seven categories such as sleep, attention and learning, feeling, behaviour, emotions, body category, and assessment of pain.

Exclusions factors were: uncontrolled epilepsy and acute conditions (fever or change in therapy-the introduction of new drugs).

Although descriptive nature of these results, the results show the success of the implementation of neurofeedback therapy. Most progress was evident in the category of behaviour (increased expression of interest for the environment and peers, increased attention, concentration and vocalization). In the category of emotions balanced emotional reactivity were recorded and in category sleeping circadian rhythm were improved.

CONTACT: horvat.ivana94@gmail.com

Patients with decreased renal function showed an increased risk for stroke

Ivana Antal[1], Marko Bagić[1], Anamarija Jazbec[2], Lea Smirčić Duvnjak[1,3], Spomenka Ljubić[1,3]
[1]University of Zagreb, School of Medicine, Zagreb, Croatia
[2]University of Zagreb, Zagreb, Croatia
[3]Vuk Vrhovac University Clinic, Merkur Clinical Hospital, Zagreb, Croatia

INTRODUCTION: Patients with diabetes are under increased risk for macrovascular complications. Glycaemia regulation, blood pressure (BP) and lipids are main factors responsible for the development of diabetic complications.

AIM: The aim was to investigate parameters related to the onset of stroke as one of the complication in patients with type 2 diabetes (DM2).

METHODS: Lipid profile, parameters related to glycaemia and BP have been assessed in 173 patients assigned into groups according to the history of stroke. In all statistical tests (T-test, Mann Whitney test, logistic regression) a=0.05 was considered statistically significant.

RESULTS: Patients with DM2 and stroke had significantly lower values of albumin/creatinine (A/K) ratio and glomerular filtration rate (GFR). Women had significantly higher values of postprandial blood glucose (PP BG), whereas high-density lipoprotein, low-density lipoprotein and systolic BP were higher in men. After logistic procedure for stroke as a dependent variable, the best model included GFR (OR=0.949; 95% CI: 0.925-0.972). GFR correlated significantly with PP C-peptide, triglycerides (TG) and diastolic BP (DBP). TG correlated significantly with glycated haemoglobin, fasting and PP BG and C-peptide, and uric acid, whereas DBP correlated with fasting C-peptide.

CONCLUSION: DM2 patients, with decreased renal function could be at increased risk for stroke. Due to the correlation with GFR, TG and DBP could be connected with stroke.

CONTACT: ivana.antal91@gmail.com

Diagnostics and treatment of Syndroma Vertiginosum in ambulatory care conditions

Kenan Gežo[1], Alija Gežo[2], Adis Šahinović[2], Semir Zeković[2], Anid Gežo[2]
[1]University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
[2]Private Healthcare Institution Polyclinic "Dr. Gežo", Sarajevo, Bosnia and Herzegovina

In the period from January 1st, 2007 to January 1st, 2016, into our medical institution, Polyclinic "Dr. Gežo", 320 patients were admitted with vertiginous problems. All patients' medical history was examined and for all of them we conducted additional tests, e.g. the caloric reflex test.

From this group, we randomly selected 25 female patients with an average age of 47.6 and 25 male patients with an average age of 38.6. We excluded patients who had earlier ear or head surgeries or injuries, as well as other pathological conditions that could affect the results.

In 18 (36%) patients we verified a triad of symptoms (vertigo, tinnitus and hearing loss), in 4 (8%) patients was verified hearing loss and vertigo, in 22 (44%) patients tinnitus and vertigo were verified and there were 6 (12%) patients with vertigo as the only symptom.

The treatment was carried out per os with: betahistine (Betaserc) in combination with ginkgo preparations in 40 (80%) patients, pentoxifylline (Pentilin, Dartelin, Trental) in 5 (10%) patients, furosemide (Edemide, Lodix) in 33 (66%) patients (which was prescribed along with betahistine or pentoxifylline) and 1 (2%) with parenteral pentoxifylline (Pentilin + Hydrocortisone).

Out of this patient study group we verified:

- total improvement (disappearance of all symptoms) in 22 (44%) patients,
- partial improvement (disappearance of most symptoms) in 20 (40%) patients,
- unchanged state in 7 (14%) patients,
- exacerbation in 1 (2%) patient.

CONTACT: keno_gezo@hotmail.com

Endovascular treatment of spinal dural AV fistula

Haris Huseinagić[1,2], Marin Lakić[3], Kenan Mulalić[2]
[1]University Hospital Centre Tuzla, Tuzla, Bosnia and Herzegovina
[2]University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
[3]University of Mostar, Faculty of Medicine, Mostar, Bosnia and Herzegovina

Dural AVF is the most common type of malformation, accounting for 70% of all spinal vascular malformations. These fistulas are created when a radiculomeningeal artery feeds directly into a radicular vein, usually near the spinal nerve root. Spinal dural arteriovenous fistulas (SDAVFs) are rare pathologies, with a yearly incidence of 5-10 new cases/million, constituting 60-80% of spinal arteriovenous malformations.

In our work we have tried to prove controversy between endovascular treatment and neurosurgery, and how quickly can act through endovascular treatment.

In Clinical Centre of Tuzla we have 140 endovascular cases through 22 months. 28 of them (20%) are arteriovenosus malformations (AVM). Out of 28, 4 of them were spinal (14%), 24 cerebral
(86%). Also, 54% were female and 46% male. Average age is 29,1 years. Rupture status was: 57% unruptured, 43% ruptured.

Patient with SDAVF come to us with progressive gait disturbance, bladder dysfunction, bound to a wheel-chair. It started with quadriparesis, than paraplegia, which was progressing to quadriplegia and respiratory insufficiency and finally death. Patient was delayed for neurosurgical process.

In case with SPDAVF the patient was treated with ONYX, non-adhesive liquid that consists of Ethylene Vinyl Alcohol Copolymer (EVOH), soluted in Dimethyl-Sulfoxide (DMSO). Depending on the desired character of the liquid, the concentration can be varied, 6 % EVOH (Onyx 18), 8% EVOH (Onyx 34). After treatment there wasn´t bleeding. Paraplegia is unfortunately is still there.

Spinal cord AVMs are notoriously difficult lesions to treat microsurgicaly and often involve high risk of surgical morbidity. The embolisation is less invasive, and we have angiographic control. Embolisation with onyx is feasible, safe and highly effective.

CONTACT: m.lakic.du@gmail.com

Evaluation and treatment of basilar tip aneurysm

Nedim Maltez[1], Affan Aljić[1], Sandra Vegar-Zubović[2], Edin Prelević[2], Deniz Bulja[2], Muris Bećirćić[2]
[1]Sarajevo School of Science and Technology, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
[2]University Clinical Centre of Sarajevo, Department of Radiology, Sarajevo, Bosnia and Herzegovina

INTRODUCTION: Cerebral aneurysms are pathologic focal dilatations of cerebral arteries that are prone to rupture. Saccular or berry aneurysms constitute 90% of all cerebral aneurysms and are located at the major branching points of large arteries, usually located in the anterior circulation in 85-95%. In less than 10% of cases, saccular aneurysms are found in posterior circulation, usually at the tip of the basilar artery. Saccular aneurysms frequently rupture into the subarachnoid space, resulting in spontaneous subarachnoid hemorrhage (SAH). Aneurysmal rupture may also result in intraparenchymal, intraventricular or subdural hemorrhage. SAH occurs in 6 to 11 out of 100,000 people each year and aneurysm rupture accounts for 50 to 80% of these cases. Women have a slightly higher risk than men; the average age is 50 years.

AIM: This is a case report of a 45 year old with subarachnoid hemorrhage (SAH) as a result of basilar tip aneurysm rupture.

MATERIALS AND METHODS: Native CT scanning and CTA have been used to verify the SAH and source of hemorrhage. Digital subtraction angiography (DSA) was used for confirmation and endovascular treatment of the aneurysm.

RESULTS: Massive SAH was noted on native CT scans resulting in consciousness alterations and severe headache. Saccular aneurysm of the basilar artery was demonstrated, occurring at the junction of two posterior communicating cerebral arteries, finding consistent with basilar tip aneurism with rupture and consequent SAH. Patient was referred to a neuroradiologist for endovascular treatment (coiling). Coils were successfully positioned in the aneurysm, resulting in thrombosis of aneurismal cavity end exclusion of the aneurysm from circulation.

CONCLUSION: Basilar tip artery aneurysms represent only 3% - 5% of all intracranial aneurysms but are the most common aneurysms in the posterior fossa. Rupture of an aneurysm can result in subarachnoid hemorrhage but it may also result in intraparenchymal, intraventricular or subdural hemorrhage. Most of the affected individuals (60%) either die or suffer permanent disability; 50% of survivors with favourable outcomes experience considerable neuropsychological dysfunction. Cerebral vasospasm complicates 20-50% of cases and is the major cause of death and disability associated with aneurysmal SAH, all reason for prompt diagnosis and treatment.

CONTACT: nedim.maltez@stu.ssst.edu.ba

Primitive neuroectodermal tumor - patient case report

Affan Aljić[1], Sabina Kurbegović[2], Nedim Maltez[1], Abdulah Hasanagić[3], Eldin Burazerović[3]
[1]Sarajevo School of Science and Technology, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
[2]University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
[3]University Clinical Centre Sarajevo, Clinic for Neurosurgery, Sarajevo, Bosnia and Herzegovina

PNET is a malignant neural crest tumor. It is a rare tumor usually occurring in children and young adults under 25 years of age. PNET develop from cells that are left over in the body from the earliest stages of the development of the nervous system. Normally these cells are harmless, but occasionally they turn into a cancer. They are divided into two main groups: PNET of the brain and CNS, Peripheral PNET (outside the brain and nervous system).

We report a case of a 15-year- old patient with disturbance of consciousness and epileptic seizure. Headaches occurred to the patient a few weeks ago. After a short hospitalization at Paediaterics of her home city hospital she was released from hospital to go home. Fundus was done (pupils were dilated) which was regular according to documentation. CT of the brain was also done. The Neurosurgery of her home city hospital which, having seen the documentation, initiated transfer to Clinical Centre University of Sarajevo.

After admission in Clinic of emergency medicine in a comatose state the patient was intubated, on painful stimulus she moves her hands minimally. It is not possible to estimate the state of consciousness, the pupils were dilated, isochoric and minimal slow reaction on stimulus. Urgent laboratory tests are made, the findings are corrected, appropriate therapy is given, and urgent CT and CTA are done, after that urgent MRI + MRA of neurocranium. On the basis of existing CT, MRI findings and existing clinical presentation an urgent surgical procedure which, after urgent preoperative internist treatment is done. Tumor is recessed maximally, cavum is plastered with surgicel.

The patient is transfered postoperatively in NS. The patient is released conscious, communicative, oriented, afebrile, eupnoic. The control of neurosurgeon is suggested in a month.

CONTACT: affan.aljic@stu.ssst.edu.ba

Video-EEG presentation of myoclonic seizures in juvenile myoclonic epilepsy

Martin Angjelov, Ana Spasovska, Sabina Rustemovska, Amira Eminovikj
Ss. Cyril and Methodius University of Skopje, Medical Faculty, Skopje, Macedonia

INTRODUCTION: Juvenile myoclonic epilepsy (JME) is the most common genetic generalized epilepsy (GGE) in mid-to-late period. It is characterized by 3 generalized seizure types: absences, myoclonic and generalized tonic-clonic seizures (GTCSs). The reasons are: lack of knowledge of the syndrome, unreported and unrecognized myoclonic seizures as epileptic and as generalized seizures, secondary generalized seizures in focal epilepsy of unknown etiology.

AIM: The aim is to present the video-EEG findings of myoclonic seizures in a single wake-sleep EEG after 24 hours of sleep deprivation (SD) in a 15 years old female with JME.

METHODS: A girl, 15 years old manifested GTCS for the first time. Somatoneurological status, standard EEG and NMR are normal. Wake-sleep EEG after 24h SD is performed in order to increase the sensitivity and specificity of EEG method. EEG during wakefulness and non-REM sleep is analyzed. Generalizes discharges of polyspike-wave complexes of 3,5-4,5 Hz are registered during wakefulness after awakening from nonREM sleep, with myoclonic seizures of both arms .Although not reported in medical history, the girl confirmed such events before GTCS has happened. She was not aware that these uncontrolled sudden arm movements are connected with her loss of consciousness and GTCS, but this video EEG after SD helped for diagnosing JME.

CONCLUSION: Certain life style is advised also, to prevent seizures, like avoiding SD, consuming alcohol, stress and photo stimulation (light show, certain TV and video stimulation). Valproat (VPA) is the most efficacious for seizure control in JME, but because of potential teratogenicity, for females low dosage of VPA or other broad spectrum AEDs may be recommended as levetiracetam, lamotrigine (may aggravate myoclonic seizures), zonisamide. Knowledge of JME syndrome is important for prognosis: but lifelong treatment is recommended, although after the 4th decade AED dosage may be reduced.

CONTACT: martinmkd95@gmail.com

Multifactorial trismus

Nikolina Bosančić[1], Goran Bokan[1], Andrej Kečenović[2]
[1]University of Banja Luka, Faculty of Medicine, Banja Luka, Bosnia and Herzegovina
[2]Schön Klinik Bad Aibling, Bad Aibling, Germany

Trismus means impossible mouth opening caused by tonic contraction of mastication muscles. Trismus can be caused by: trauma, surgery, tetanus, temporomandibular joint diseases, and many disorders of central nervous system. This limitation in ability to open mouth can have serious complications, including reduced nutrition and difficulty in speaking.

We would like to report a case of 64-year-old patient who is due to disabled swallowing and rapid weight loss, because of trismus, refereed to neurologist. Those symptoms started a month before hospital admission. In previous history the patient was diagnosed with: depressive psychosis, mixed schizophrenic disorder, restless leg syndrome and alcoholism.

Initial examination of neurologist excluded luxation as the cause of disease. Surgical exploration of jaw was planned, but due to incurred respiratory insufficiency, treatment was continued in the Intensive unit where the conicotomy was performed, tracheal cannula was placed and antibiotics were ordinated.

By returning to the neurological clinic, the patient was sedated and review determined that exist tetraparesis, rigor of upper extremities and masseter spasm. Neurologist included L-DOPA in therapy, because of suspicion on non-specific Parkinson's syndrome. Suspected tetanus, autoimmune encephalitis and neuroleptic malignant syndrome were eliminated. EMG indicated a complete block of conduction of impulses through masseter. Brain MR imaging was correct, and acoustic evoked potentials also. Feeding was enabled with urinary catheter connected to gastric fistula. Every day, mastication muscles were spun out (1mm per week) with spatulas.

Reduction of medications due to improved health status, patient was released from clinic with possibility of swallowing pureed food in several smaller meals using rubber spoon. Parkinson's syndrome withdraws and patient moves independently with help of wheelchair.

Early diagnosis of this condition is important to prevent facial deformities. Therefore, diagnostic procedure should be done as soon as possible, and resistance in practice is necessary in order trismus not be lasting.

CONTACT: nina.bosancic@gmail.com

Atypical presentation of Guillain-Barre syndrome

Nikolina Golec[1], Margareta Golubić[1], Nina Barišić[2]
[1]University of Zagreb, School of Medicine, Zagreb, Croatia
[2]University Hospital Centre Zagreb, Department of Pediatrics, Division of Pediatric Neurology, Zagreb, Croatia

Guillain-Barre syndrome (GBS) is an immune-mediated disease that mostly manifests as an acute inflammatory demyelinating polyradiculoneuropathy, but has a number of clinical variants. Classic symptoms of GBS are acute flaccidity, symmetric and ascending weakness and areflexia which occur from several days to several weeks after a prior respiratory or gastrointestinal tract infection. The diagnosis of GBS is primarily based on the patients clinical history and presentation.

We present a 17-year-old female patient who, during 2 weeks had sleeping problems because of tingling and progressive pain in the both lower legs, extensive perspiration and cold of hands and feet. On the day of hospitalization she felt weakness in her left leg and then in her left arm. Neurological examination showed bilateral positive Lasegue, left-side plegia, distal hypoesthesia and hyperreflexia. A comprehensive diagnostic assessment (brain and cervical MRI and CT, chest X-ray, EEG, basic laboratory studies, CSF analysis, B. burgdorferi serology, abdominal ultrasound) was performed but, apart decreased blood pO2, showed no pathological findings. Although the patient primary denied infection of any figure and diagnostic procedures did not implicate GBS, the intravenous immunoglobulin (IVIG) therapy was initiated because of rapidly progressive weakness and decreased blood pO2. Therapy response was positive and GBS was confirmed by EMG and Nerve conduction studies (signs of chronic neurogenic lesion, proximal conduction block, absence of the F-wave, normal nerve conduction).

Although GBS typically occurs after GI or respiratory infection and presents with symmetric weakness and areflexia, it is not always the case. In our example it was presented with asymmetric progressive weakness, hyperreflexia and autonomic dysfunction. In conclusion, this case emphasizes the fact that it is necessary to keep in mind the diversity of clinical presentation of GBS.

CONTACT: nikolina.golec007@gmail.com

Myasthenia gravis and adjustment disorder - a case report

Diana Didović[1], Nikolina Friščić[1], Helena Gmaz[1], Nina Barišić[1,2], Marina Grubić[2]
[1]University of Zagreb, School of Medicine, Zagreb, Croatia
[2]University Hospital Centre Zagreb, Department of Pediatrics, Division of Pediatric Neurology, Zagreb, Croatia

Myasthenia gravis (MG) is an autoimmune disorder in which antibodies are directed against the acetylcholine receptors (AChR), causing weakness and fatigability of the muscles under voluntary control. MG mostly occurs in adults and rarely in children. It is frequently manifested with painless fatigability of muscles, diplopia, ophthalmoparesis and swallowing difficulties.

We present a 17 year old patient who experienced her first episode of myasthenic crisis at the age of 13. During the first attack she experienced fatigue and difficulties while talking and swallowing, ptosis of the left upper eyelid, diplopia and muscle weakness that was expressed mostly on the upper extremities and trunk associated with headache, dizziness and depigmentation of her right eyelid and eyelashes . Extensive diagnostic procedures were performed in order to exclude other autoimmune and paraneoplastic disorders which could be associated with MG. Diagnosis of MG was supported by positive serology on AChR antibodies. Despite the treatment with pyridostigmine, corticosteroids, azathioprine and gamma globulins no improvement occurred and thymectomy was performed. Deterioration of patient's behaviour and suicidal thoughts required psychological and psychiatric assessment and diagnosis of adjustment disorder with depressed mood was established. Psychotherapy and antidepressant therapy was suggested but rejected by her parents. Her father suffers from posttraumatic stress disorder. Our patient's numerous hospitalization were mostly induced by intercurrent respiratory infections and impairment of muscle weakness. Duration of hospitalization was mostly prolonged due to simulation of the symptoms and signs of MG. However the signs of muscle weakness decrease only when she receives intravenous gamma globulins.

Considering frequent relapses of MG and joined adjustment disorder, multidisciplinary approach in treatment of this patient is necessary, including paediatric neurologist, psychologist, psychiatrist, ophthalmologist and other specialists depending on associated comorbidities.

CONTACT: didovic.diana@gmail.com

Adrenomyeloneuropathy - a case report

Sabina Rustemovska, Martin Angjelov, Tansu Omer, Ana Spasovska
Ss. Cyril and Methodius University of Skopje, Medical Faculty, Skopje, Macedonia

INTRODUCTION: Adrenomyeloneuropathy is a rare genetic disease that is a form of adrenoleukodystrophy. It is caused by a genetic defect (mutation) of the ABCD1 gene on the X chromosome that causes a build-up of a specific type of fat in the body called very-long chain fatty acids. The disease affects the nerve cells in the spine and possibly the brain and the adrenal glands. The first symptoms are often trouble walking. Adrenomyeloneuropathy most often occurs in young men (20 to 40 years), but may begin anywhere between the ages of 20 and 50 years.

AIM: To present a rare case report of a patient with adrenoleukodystrophy, who came to the Neurology Clinic in Skopje in December 2013.

METHODS: We present 32 year old boy, who came to the University Clinic for Neurology in December 2013 at the Department of Neurophysiology in Skopje. The neurological symptoms can divide into three major groups: A) sphincter difficulties: urinary urgency and hesitancy; B) gait impairment, lower extremities weakness and C) muscle-skeleton: 8 months ago - muscle wasting in both lower and upper extremities. In the past 9 months, 7-8 kg weight lost, difficulties swallowing, tingling in lower legs and feet. The necessary neurological examination showed: spastic quadriparesis, pp. paraparesis MR increased, (clonus of Achil's reflex bil.), positive Babinski, bilaterally generalized muscle hypotrophy, moderate in upper extremities, severe in lower extremities (LE).

CONCLUSION: The most appropriate treatment for this disease is: Lorenzo's Oil, then potential blood marrow transplantation and cortisones from drugs. Thus, we discuss molecular targets and emerging treatment options that may be common to both multifactorial neurodegenerative disorders and X-ALD. New-generation antioxidants, some of them mitochondrial targeted, mitochondrial biogenesis boosters such as pioglitazone and resveratrol and the mTOR inhibitor temsirolimus hold promise as disease-modifying therapies.

CONTACT: sabin4e_sweety@hotmail.com

Erythromelalgia as a manifestation of autonomic nervous system involvement in multiple sclerosis

Tomislav Herega[1], Ines Lakoš Jukić[2], Mario Habek[1,3]
[1]University of Zagreb, School of Medicine, Zagreb, Croatia
[2]University Hospital Centre Zagreb, Department of Dermatology and Venereology, Zagreb, Croatia
[3]University Hospital Centre Zagreb, Department of Neurology, Zagreb, Croatia

Erythromelalgia is a rare disorder characterized by intense burning pain, warmth and redness usually located in the lower extremities. The disorder is believed to be caused by a change in peripheral vascular function which leads to a decrease of oxygen and nutrients delivery to cells, alongside a simultaneous hyperperfusion of the tissue. Although mostly considered an isolated condition, it has been linked to conditions causing capillary microthrombosis, such as myeloproliferative diseases and connective tissue diseases.

We present a 51-year-old female patient, diagnosed with multiple sclerosis four months ago, complaining of redness, warmth and burning pain in her feet that was relieved only by immersion of the feet in cold water. MRI showed multiple T2 and FLAIR hyperintensive lesions, two in the pons and three in the cervical spinal cord. A comprehensive immunological workup revealed a speckled pattern of anti-nuclear antibody, with all other antibody tests negative. Complete blood count and Color Doppler of leg arteries and veins were normal. The patient was diagnosed with erythromelalgia and underwent additional autonomic nervous system testing, including Quantitative Sudomotor Axon Reflex Test (QSART). Test results revealed a moderate sudomotor dysfunction with reduced sweating in lower extremities. Combined analgesic pharmacotherapy was initiated, but soon discontinued, because of skin rash and poor therapy response. The patient continued to immerse her feet in lukewarm water. During the following year, the pain, redness and swelling gradually decreased.

So far there has been only one case report describing erythromelalgia in MS. Prior studies have shown that MS lesions in the brainstem may cause alteration of central nervous system control of postganglionic sympathetic function, as it was demonstrated in our patient using QSART. We believe that the autonomic dysfunction caused by MS might have had a causative role in the development of erythromelalgia, but further causal relationship studies are needed.

CONTACT: therega@gmail.com

The syndrome of inappropriate antidiuretic hormone secretion and tetraplegia in patients with acute intermittent porphyria

Mara Boban[1], Ivana Bonacin[2], Željko Vučičević[3]
[1]University of Zagreb, School of Medicine, Zagreb, Croatia
[2]University of Zagreb, Zagreb, Croatia
[3]University Clinical Hospital Centre "Sestre Milosrdnice", Zagreb, Croatia

Acute intermittent porphyria (AIP) is a rare autosomal dominant metabolic disorder which occurs due to deficiency of enzyme porphobilinogen deaminase. Consequently, production of heme is hampered and toxic precursors aminolevulinic acid (ALA) and porphobilinogen (PBG) accumulate in blood and urine. Central and peripheral nervous system are particularly sensitive to their toxicity. The main symptoms include abdominal pain with neurological and psychiatric disorders. In more severe cases, patients can present with tetraplegia and syndrome of inappropriate antidiuretic hormone secretion (SIADH). In SIADH, there is a constant hypersecretion of antidiuretic hormone (ADH, vasopressin), which leads to hypoosmolarity with hyponatremia, despite normal quantity of sodium in the body.

We report a case of 31-year old female who presented with abdominal pain which misled to a diagnosis of acute abdomen. Explorative laparotomy and appendectomy were performed. Due to persistent postoperative hyponatremia accompanied by a seizure, the patient was admitted to the internal medicine intensive care unit. The patient was also adynamic with signs of depression and anxiety, in constant tachycardia (120bpm) and with elevated arterial blood pressure (150/90 mmHg). Neurological exam revealed reduced motor strength of all extremities which progressed to tetraplegia. Considering these findings, differential diagnosis of SIADH associated with AIP was proposed. The diagnosis was confirmed by increased levels of ALA and PBG in urine. The patient was treated with intravenous glucose solution, high calorie diet and hemin, followed by intensive physical therapy. In spite of complicated clinical presentation, almost full recovery was achieved.

Given the various differential diagnosis, accessible diagnostic methods and the imperative of early treatment, AIP should be taken into consideration whenever a patient presents with abdominal pain and neurological symptoms.

CONTACT: boban.mara@gmail.com

Neurological presentation of accelerated bone growth syndrome (Marshall - Smith syndrome)

Silvija Pušeljić[1,2], Mirna Rozić[3], Dora Savanović[3], Nives Šalek[3], Anja Tomić[3]
[1]University Hospital Centre Osijek, Clinic for Pediatrics, Osijek, Croatia
[2]Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Department of Pediatrics, Osijek, Croatia
[3]Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia

Marshall - Smith syndrome is a rare genetic disorder characterised by craniofacial disorders, psychomotor retardation and accelerated bone growth. Malformations of other organic systems are also noticed. There are less than 50 patients in the world suffering from this syndrome and no patients with the same clinical presentation of this disease. Most of them don't live up to late childhood and death is usually caused by respiratory complications.

Phenotype was the only diagnostic criteria until 2010, while today the diagnosis is confirmed by the existence of mutated nuclear factor I/X (NFI-X) gene. The protein encoded by this gene is a transcription factor, ubiquitary expressed in the embryonic tissue with high expression in CNS and skeletal system. De novo mutation of this gene is found in all of the patients with this diagnosis.

We report a case of a 5-year old patient suffering from this syndrome. Her parents are both healthy and she has two healthy older siblings. Mother had a regular pregnancy and the patient was born 3400g heavy and 52 cm long. Due to the heavy inspiratory dyspnea and visible degenerative stigmas she is replaced to the Department of intensive care for endangered newborns.

The patient was born with brahicefalic head configuration, wide and prominent forehead, prominent eyeballs, very small and upturned nose with stenotic left nostril. Ears are poorly modelled and with lower deposition. Fingers and toes are long and pointed, looking as "claws". Cortical atrophy of the brain and hypoplasia of the corpus callosum are visible on the MRI.

Although the NFIX gene mutation is confirming the diagnosis, the key is to recognize the phenotype features which raise suspicion of this disease. Due to that, we emphasize the importance of recognizing CNS malformations, as well as malformations of other organic systems in the diagnostic of this disease.

CONTACT: dora.savanovic@gmail.com

Clinical presentation of Neuro-Behçet Disease

Marko Galić, Barbara Dumančić
Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia

When we speak of the clinical presentation of Behçet's disease, we consider it primarily a rheumatic disorder that includes a triad of symptoms: aphthous stomatitis, genital ulcerations and uveitis. Neurological symptoms occur less often and present late in the course of the disease. On the other hand, in a small number of patients, these may occur as the first indication, which is a differential-diagnostic problem.

The aim of this article is to describe neurological manifestations and clinical features of Behçet's disease which overlap with other neurological diseases.

For the purpose of our case presentation, we summarize the medical history of a 48-year-old female patient.

During the past six years, the patient was repeatedly hospitalized in the Clinic of Neurology with suspected cerebrovascular insult and multiple sclerosis. Neurological examination revealed sensorimotor deficit, sphincter deficiency and symptoms of brainstem lesion. Furthermore, the patient was uncritical about her illness. Detailed diagnostics were performed and the results yielded suspicion of antiphospholipid syndrome. During her next hospital stay the patient developed a diffuse bullous rash located on head, trunk and extremities, which brought the diagnosis of Morbus Beçhet under consideration. Pathergy testing was performed, but turned out negative. Upon the doctor's insistence on a detailed medical history, the patient admitted that she had experienced recurrent orogenital ulceration and had been treated for ocular changes 10 years prior. Subsequently, from heteroanamnesis, we learned that the patient's father had been diagnosed with Behçet's disease. Moreover, HLA typing demonstrated that the patient was predisposed to developing Behçet's disease.

Due to conspicuous neurological disturbances and variable symptoms, which match the multisystemic and periodic nature of Behcet's disease, establishing the diagnosis was difficult. An aggravating circumstance was the patient's cavalier attitude toward her health, which served to stress how vital accurate anamnesis and clinical examination are in establishing a correct diagnosis.

CONTACT: mgmefos@gmail.com

Case report - Respiratory insufficiency caused by acute disseminated encephalomyelitis

Jovana Jevđić[1], Arijana Knežević[1], Peđa Kovačević[2], Mirko Stanetić[2], Saša Dragić[2], Danica Momčičević[2]
[1]University of Banja Luka, Faculty of Medicine, Banja Luka, Bosnia and Herzegovina
[2]University Clinical Centre of the Republic of Srpska, Banja Luka, Bosnia and Herzegovina

Acute disseminated encephalomyelitis (ADEM) is an autoimmune demyelinating disease of the central nervous system, commonly triggered by infections and immunization. The lesions are usually multifocal. Most commonly affected structures are deep cerebral hemispheric and subcortical white matter, as well as basal ganglia, gray-white junction, diencephalon, brainstem, cerebellum and spinal cord.

We report a case of a 24-year old female patient who was admitted at Medical intensive care unit (MICU) due to respiratory insufficiency accompanied by fever, epileptic seizures and positive meningeal signs. Although the clinical presentation initially indicated meningoencephalitis, further diagnostic procedures (endocranial NMR and lumbar puncture) were enough to set the doubt to ADEM, with demyelination lesions localized in pons, medulla oblongata and cervical part of spinal cord.

Therapy algorithm which included immunoglobulin and corticosteroids resulted in gradual recovery. Due to necessity of continuous hemodynamic and respiratory monitoring, mechanical ventilation, physical treatment and other supportive therapeutic measures, patient went through prolonged hospitalization. All of this led to complete recovery.

Early admission at MICU, mechanical ventilation and vital functions support, accompanied by multidisciplinary approach to this complex case, led to early diagnosis followed by proper treatment and positive outcome.

CONTACT: jovanafagot@yahoo.com

Othello Syndrome

Ivona Jerković[1], Emanuela Ilijić[1], Matija Sošić[2,3], Olivio Perković[2,3]
[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]University of Rijeka, Faculty of Medicine, Department of Neurology, Rijeka, Croatia
[3]Clinical Hospital Centre Rijeka, Clinic for Neurology, Rijeka, Croatia

Othello Syndrome (OS) is a rare type of paranoid delusional jealousy, characterised by the false absolute certainty of the infidelity regarding the patient's partner. The psychosocial consequences of this morbid jealousy can be catastrophic for the patient and for their families, as suicide and homicide have been reported. It has been documented that OS is most commonly associated with a neurological disorder compared with psychiatric disorders. One study suggests that of the patients with a neurological disorder, 76.7% had a neurodegenerative disorder. Seven of eight patients with a structural lesion associated with OS had right frontal lobe pathology. Recent studies also suggest that OS may be provoked in Parkinson´s Disease (PD) by treatment with dopamine agonists or amantadine. We present a documented case of a 68 year old man with no psychiatric history and no dementia who developed drug – induced delusional jealousy as a complication of PD treatment.

CONTACT: ivona.jerkovic051@gmail.com

Workshops

Population aging – increasing challenge of health care systems

Sanja Kovačić
General Hospital Zabok and Hospital of Croatian Veterans, Department of Neurology, Zabok, Croatia

Process by which older individuals become a proportionally larger share of the total population represents one of the most distinctive demographic events of the twenty-first century. It is a by-product of the demographic transition in which both mortality and fertility decline from higher to lower levels. Initially experienced by the more developed countries, the process has recently become apparent in much of the developing world as well. For the near future, virtually all countries will face population ageing, although at varying levels of intensity and in different time frames. The rapid growth of the oldest groups among the older population is of special relevance in terms of public policy.

The continuing increase of this ratio implies that more and more frequently both family and hospital physicians will increasingly care for older populations. This trend tends to impose specific demands on the health care systems and to health workers. Increasing longevity results in rising medical costs and increasing demands for health services, since older people are typically more vulnerable to chronic diseases. The phenomenon of lack of physiological reserve in older people results in rapid onset of illness, delayed recovery rate and increased incidence of complications compared with younger patients. A significant proportion of elderly patients experience delayed discharge are elderly due to failure of communication between family of the older patients and/or health and social care. Furthermore, doctors are continually being reminded of the importance of obtaining consent for treatment and of involving patients in decisions about their care. However, difficulties can arise when patients are unable to understand decisions or give informed consent due to specific cognitive decline.

Patient-physician communication is an integral part of clinical practice. The manner in which a physician communicates information to a patient and the caregiver is as important as the information being communicated. Based on emerging literature on the value of effective communication, medical students and postgraduates are increasingly given instruction on communication techniques.

This workshop provides an overview of the importance of world population ageing process and increasing demands for health services, focusing on introductions to some health care particularities of the elderly and training of communication with this population group and caregivers.

CONTACT: sanja.kovacic2@gmail.com

Principles of scientific integrity in biomedical research

Ksenija Baždarić
University of Rijeka, Faculty of Medicine, Department of Medical Informatics, Rijeka, Croatia
Croatian Medical Journal, Research Integrity Editor
European Science Editing, Chief Editor

Ethical issues are an inevitable part of any research in biomedicine. Adhering to the high ethical standards is called good research practice and is described in several documents, for example in the European Code of Conduct for Research Integrity (*http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf*) and Good Publication Practice for Communicating Company-Sponsored Medical Research: GPP3 (*http://annals.org/article.aspx?articleid=2424869*). Those principles include data, procedure, responsibility and publication. Publication is the last phase of research and it gives the visibility of research. Publishing a research is very difficult, especially in high quality journals and often burdened by many problems. Young researchers, non-native English speakers, and those not acquainted with the ethical standards may have difficulties in producing a quality publication that can be visible in the scientific community. Without adhering to the principles of scientific integrity biomedical research has no value and can leave great consequences on health.

Therefore, the aim of this workshop is to present good research and publication practices principles and means of avoiding honest errors and scientific misconduct presenting theoretical background and presentation of most typical cases of scientific misconduct (fabrication, falsification, plagiarism and other) to students, future researchers and authors of scientific publications.

CONTACT: ksenija.bazdaric@medri.uniri.hr

Acknowledgements

ORGANIZED BY

FOSS MedRi
Braće Branchetta 20
HR-51000 Rijeka

CO-ORGANIZED BY

MEDICINSKI FAKULTET SVEUČILIŠTA U RIJECI

University of Rijeka, Faculty of Medicine

PSIHIJATRIJSKA BOLNICA RAB

Rab Psychiatric Hospital

SUPPORTERS

We would like to thank the following supporters for their generosity and support during the 6th Student Congress of Neuroscience - NeuRi 2016

MEDRI
MEDICINSKI FAKULTET SVEUČILIŠTA U RIJECI

UNIRI

Under sponsorship of the President of the Republic of Croatia, Kolinda Grabar-Kitarović

SPONSORS

We would like to thank the following sponsors for their generosity and support during the 6th Student Congress of Neuroscience - NeuRi 2016

WEB: www.neuri.uniri.hr E-MAIL: neuri@foss.hr