Abstract Book / 4th Student Congress of Neuroscience, NeuRI 2014

Abstract Book

4th Student Congress of Neuroscience

April 25th–27th, 2014
Rijeka, Rab

NEURO 14

Abstract Book

4th Student Congress of Neuroscience
April 25th–27th, 2014
Rijeka/Rab

Impressum

PUBLISHED AND ORGANIZED BY
FOSS MedRi

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

FOR PUBLISHER
Sven Pal

EDITORS IN CHIEF
Hrvoje Omrčen, Luka Fotak

ENGLISH TRANSLATION
Ante Šokota

LANGUAGE EDITORS
Ante Šokota
Hrvoje Omrčen

PRINT
Printex, Čakovec

COPIES
350

ISBN: 978-953-7957-19-3
UDK: 61
CIP entry is available at the University Library of Rijeka in their Computer Catalog under number 130412072

Contents

57 FARIS KADIĆ, LOVRE KRŠAN MILOSTIĆ: Marijuana treatment of muscle spasticity in patients with multiple sclerosis

58 MARIJA JOSIPOVIĆ, VESNA MAHULJA-STAMENKOVIĆ, IGOR PRPIĆ: Long- term outcome of children with antenatal detected malformation of central nervous system in Clinical hospital centre Rijeka–epidemiological study (2006.-2013.)

59 NICOL RADOLOVIĆ, INGRID ŠKARPA–PRPIĆ: Sweet or bitter sting–A case of severe recurrent cytomegalovirus (CMV) encephalitis induced by bee venom application

60 ARNELA MUJAGIĆ, IBRAHIM OMERHODŽIĆ, ELZANA KARAHODŽIĆ, SELMA PAŠAGIĆ: Surgical treatment of brain edema in patient with acute viral encephalitis

61 ANDRIJANA KOLAR, ROMANA PERKOVIĆ, MARINA BABIĆ, KRISTINA KRALIK, SILVA BUTKOVIĆ–SOLDO: Hypertension as risk factor and cause of death from stroke in Eastern Croatia

62 ANAMARIJA JOVANOVSKA, ELENA GJORCHEVSKA, ELMA KANDIĆ, ILIJA PANGOVSKI, VESNA VELIK STEFANOVSKA: Predictive factors in the outcome of spontaneous intracerebral hemorrhage

63 ASJA MURATOVIĆ, AZRA HUSIĆ, AIDA AVDIĆ, AMAR TERZIĆ, MIRZA GAVRANOVIĆ: Brain metastases-incidence and primary localisation

64 LUKA ALAGIĆ: Neurolinguistic research - sign language aphasia

65 AIDA AVDIĆ, ASJA MURATOVIĆ, AZRA HUSIĆ, MIRZA GAVRANOVIĆ, AMAR TERZIĆ: Incidence of astrocytoma in younger age in Tuzla Canton

66 NIVES ŠALEK, ROMANA PERKOVIĆ, MARINA BABIĆ, SOFIJA TURJAK, SILVA BUTKOVIĆ-SOLDO: Cardiomyopathy as a risk factor and cause of death from stroke in Eastern Croatia

67 VENESA ŠKRIJELJ, VILDANA HUSKIĆ, AZRA KADIĆ, EMINA HRVAT: Marking risk factors in 50 patients with a TCD verified diagnosis of vertebrobasilar insufficiency hospitalized at the Neurology Clinic KCUS, June-October 2013

68 MAJA ĐORĐEVIĆ, ANDREJ HLADNIK: The influence of alcohol on the results of IQ tests

69 MIRZA HALILČEVIĆ, ARNESA MAŠIĆ, VALENTINA MITROVIĆ: Clinical characteristics and early diagnosis factors for subarachnoid hemorrhage patients in the Tuzla Canton region

70 MIA LONČAR, IGOR PRPIĆ: Social adolescent habits and epilepsy

71 PETRA HORVAT, DORA CVELBAR: Case study: Communication of a person with Wolf-Hirschhorn syndrome

Poster Session

75 MATEA KOLAČEVIĆ, NINA VRSALJKO, NINA KOSI, SREĆKO GAJOVIĆ, DINKO MITREČIĆ: Nucleolar protein 2 is expressed in the adult mouse brain

76 LAMIJA POJSKIĆ, AIDA RIBIĆ, EMA TAHTO: Chronic subdural hematoma in Zenica-Doboj Canton

77 PETRA NOVAK, BARBARA KOLBAH, DARKO LEDIĆ, VUKOSAVA MUSULIN TIJANIĆ, PETAR MARČINKOVIĆ: Nontraumatic acute subdural hemorrhage treated at the Clinic for neurosurgery, CHC Rijeka

78 MARINA MORIĆ, BORIS KUZMAN, MARINA MALEŠEVIĆ, DUBRAVKA ŠVOB ŠTRAC: The effects of combined gabapentin and alcohol treatment on HEK 293 cell culture

79 BORIS KUZMAN, MARINA MORIĆ, GORDANA NEDIĆ ERJAVEC, MATEA NIKOLAC PERKOVIĆ, KORONA NENADIĆ ŠVIGLIN, FRAN BOROVEČKI, DOROTEA MUCK-ŠELER, NELA PIVAC, DUBRAVKA ŠVOB ŠTRAC: The association of Ser310Ala functional polymorphism in the GluR7 glutamate receptor subunit gene with the age of onset of alcohol abuse in alcohol - dependent patients

80 SABRINA ZULČIĆ, SAMRA PAJAZETOVIĆ, SEMRA PAJAZETOVIĆ, NENAD LAZIĆ, JASENKO RADOVIĆ, EMIR TUFEKČIĆ, FAHRIJA SKOKIĆ, SELMA MURATOVIĆ: Incidence of hypoglycemia in hypertrophic newborns of non - diabetic mothers

Organizing Committee

PRESIDENT OF NEURI 2014
Igor Salopek

GENERAL SECRETARY OF NEURI 2014
Sven Pal

VICEPRESIDENTS OF THE ORGANIZING COMMITTEE NEURI 2014
Marija Vrljičak, Damir Ćaćić, Ivana Radovčić

SECRETARY OF THE ORGANIZING COMMITTEE: Ante Šokota
SCIENTIFIC LOGISTICS COORDINATOR: Ivana Radovčić
SCIENTIFIC COMMITTEE COORDINATOR: Josip Aničić
ABSTRACT BOOK EDITORS: Hrvoje Omrčen, Luka Fotak
PARTICIPANTS COORDINATORS: Sara Vukasović, Matea Tomasić
PROTOCOL COORDINATOR: Ana Oljača
PROMOTIONAL COORDINATOR: Dolores Marinić
PUBLIC RELATIONS COORDINATOR: Kristina Kampić
RESOURCES COORDINATOR: Ivana Maričić
TECHNICAL SUPPORT COORDINATOR: Nikolina Zrakić
ACCOMODATION COORDINATOR: Ema Karmelić
DIETARY COORDINATOR: Merljinda Ljušaj
EVENTS COORDINATOR: Damir Ćaćić

MEMBERS OF THE ORGANIZING COMMITTEE
Haris Babačić, Darko Bagarić, Kristian Barbić, Dušanka Beslać, Andrea Blažić, Barbara Brcković, Matej Bura, Franjo Carović, Marko Dombi, Tamara Dujmov, Iva Dumančić, Dorotea Franceković, Katja Gavrić, Franka Gregurović, Valentina Jung, Nikolina Jurjević, Dora Karmelić, Lara Kuzmanović, Mia Lončar, Jelena Ljubić, Dolores Makovac, Ivona Marić, Mihaela Marinović, Roberta Marković, Petar Martinčić, Anđela Nadinić, Petra Novak, Deni Oreb, Matea Paić, Matija Pajić, Valentino Pavišić, Romana Perković, Maja Ploh, Petra Puntarović, Petra Remenarić, Ana Rijavec, Karla Rubelj, Maria-Helena Ružić, Iva Skočilić, Martina Suton, Ivana Šutić, Ema Tahto, Sanja Tesla, Kruno Topolski, Lorena Vuleta, Vesna Zarezovski

SCIENTIFIC COMMITTEE

Prof Gordana Župan, MD, PhD, President
Ass Prof Igor Antončić, MD, PhD
Goran Arbanas, MD, PhD
Ksenija Baždarić, PhD
Prof Zoran Đogaš, MD, PhD
Prof Tanja Frančišković, MD, PhD
Prof Srećko Gajović, MD, PhD
Rajna Knez, MD, PhD
Prof Natalia Kučić, MD, PhD
Prof Darko Ledić, MD, PhD
Prof Đulijano Ljubičić, MD, PhD
Prof Daniela Malnar, MD, PhD
Prof Amir Muzur, MD, PhD
Ass Prof Kristina Pilipović, MD, PhD
Prof Igor Prpić, MD, PhD
Prof Gordana Rubeša, MD, PhD
Ass Prof Vesna Šendula–Jengić, MD, PhD
Ingrid Škarpa–Prpić, MD, PhD
Prof Mladenka Tkalčić, PhD
Prof Ivanka Živčić–Bećirević, MD, PhD

HONORARY BOARD

Ass Prof Željko Jovanović, MD, PhD
Prof Pero Lučin, MD, PhD
Prof Nevenka Ožanić, PhD
Prof Bojan Polić, MD, PhD
Prof Tomislav Rukavina, MD, PhD
Prof Alan Šustić, MD, PhD

Welcome note

Dear colleagues

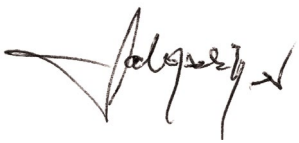
I am happy I can welcome you for the fourth time on behalf of all members of the Organizing, Scientific and Honorary Board of NeuRi - Student Congress of Neuroscience! The first three congresses were marked by establishing of NeuRi, as well as creating neuroscientific recognition of Rijeka, and setting our place among student congresses. Upon completion of the third congress, we are proud to be able to point out that NeuRi has been fully established as a must go 'end of April' event for students who reflect on the whole range of functions of the most remarkable and mysterious human organ - the brain.

In the year 2013 we have witnessed the launch of two important brain research incentives. On one hand, The Human Brain Project (HBP) as an initiative of the 'old continent', and on the other, the American response to the HBP in a form of the BRAIN Initiative (Brain Research through Advancing Innovative Neurotechnologies). If someone has so far doubted in the motto of the XXI. century as the century of the mind, these - and many other projects that will follow - will surely confirm the direction and the focus of modern science. Science that will, I believe, provide answers to a number of unknowns, especially those concerning brain pathology: neurological or psychiatric in nature. Thus, neuroscientific breakthroughs will change clinical practice, enabling us not only to treat more successfully, but also to prevent diseases, improve the quality of life and ultimately make the world a happier place to live in!

So I am using this opportunity to warmly welcome you to the 4th Student Congress of Neuroscience–NeuRi 2014. We have prepared three days filled with scientific and social programs at the Faculty of Medicine, University of Rijeka as well as in the city of Rijeka (or as it is called by its inhabitants, 'the city that flows') and the Kvarner paradise - the island of Rab with wonderful hosts at the Psychiatric Hospital Rab.

Dear students, dozens of your colleagues, as well as many scientists and teachers, will be working hard this year to prepare the best atmosphere for a student scientific congress, which you will, we promise, remember for a lifetime!

So: welcome to Rijeka and Rab at NeuRi 2014!



Igor Salopek
PRESIDENT OF NEURI 2014
Rijeka, 25th April 2014

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

Programme

Friday, April 25th 2014
FACULTY OF MEDICINE, RIJEKA

13.00–15.30 REGISTRATION (Great Hall)

16.00–16.30 OPENING CEREMONY NEURI 2014 (AUDITORIUM 2)
CHAIRPERSONS: Gordana Župan, Igor Salopek, Sven Pal, Marija Vrljičak, Ivana Radovčić, Damir Ćaćić

16.30–16.45 GROUP PHOTO OF ALL PARTICIPANTS
(in front of the Faculty)

16.45–17.45 PLENARY LECTURE (AUDITORIUM 2)
Srećko Gajović: Combining stem cells and biomaterials in brain repair after ischemic lesion in mouse, as an experimental model for the ischemic stroke in humans
CHAIRPERSONS: Gordana Rubeša, Igor Salopek, Marija Vrljičak, Josip Aničić

17.45–18.15 COFFEE BREAK (Great Hall)

18.30–19.30 STUDENT PLENARY LECTURE (AUDITORIUM 2)
Haris Babačić, Maja Boshkovska: The death of the 'grey cells'
CHAIRPERSONS: Igor Prpić, Ivana Radovčić, Damir Ćaćić, Ante Šokota

19.30–21.00 DINNER (Great Hall)

21.00 WELCOME PARTY

Saturday, April 26th 2014
PSYCHIATRIC HOSPITAL RAB

07.00 DEPARTURE BY BUS TO RAB (BUS STATION RIJEKA)

10.00–11.00 PLENARY LECTURE (CONGRESS HALL)
Vesna Šendula-Jengić: Psychiatry of the 21st century
CHAIRPERSONS: Amir Muzur, Haris Babačić, Luka Fotak, Ivana Maričić

11.00–13.00 STUDENT SESSION (CONGRESS HALL)
CHAIRPERSONS: Kristina Pilipović, Iva Dumančić, Ema Karmelić, Kruno Topolski

1. **Bernarda Barbarić:** Where psychotherapy meets neuroscience
2. **Malik Ejubović:** Analysis of the psycho-social elements of the perpetrators and victims of sexual violence
3. **Asja Dubravčić, Petra Švađumović:** Neurobiology of joint attention
4. **Ana Marija Vukasović, Sara Vukasović:** Influence of environmental and biological factors in developing antisocial personality disorder
5. **Mladenka Vukojević, Vesna Varunek, Danijela Šoše, Matea Maslać, Martina Maslać:** Gender differences in early symptoms of attention deficit hyperactive disorder (ADHD) in children aged 5–8 years
6. **Mirta Dumančić, Ana Sušac, Sanja Josef Golubić, Andreja Bubić, Ralph Huonker, Jens Haueisen, Selma Supek:** Attention modulates the earliest visual neuromagnetic responses
7. **Nina Kočar:** Therapeutic play hours with a dog for hyperactive children
8. **Luka Fotak, Vuk Prica:** Media and suicidal risk
9. **Marija Jovanoska:** Coffee drinking habits of medical students–an international pilot study
10. **Valerija Trojar:** Psychiatry and literature: Emma Bovary from the psychiatric angle

13.00–14.00 LUNCH AND SIGHTSEEING

14.00–15.00 PLENARY LECTURE (CONGRESS HALL)
Zoran Đogaš: Sleep and respiratory control
CHAIRPERSONS: Vesna Šendula-Jengić, Romana Perković, Ema Tahto, Merljinda Ljušaj

15.30–17.00 RAB SIGHTSEEING

17.30–20.00 RETURN TO RIJEKA

21.00 SURPRISE PARTY

Sunday, April 27th 2014
FACULTY OF MEDICINE, RIJEKA

08.00–08.45 BREAKFAST (Great Hall)

09.00–10.30 POSTER SESSION (GREAT HALL)
CHAIRPERSONS: Rajna Knez, Ivana Radovčić, Dušanka Beslać, Iva Skočilić

1. Matea Kolačević, Nina Vrsaljko, Nina Kosi, Srećko Gajović, Dinko Mitrečić: Nucleolar protein 2 is expressed in the adult mouse brain
2. Lamija Pojskić, Aida Ribić, Ema Tahto: Chronic subdural hematoma in Zenica-Doboj Canton
3. Petra Novak, Barbara Kolbah, Darko Ledić, Vukosava Musulin Tijanić, Petar Marčinković: Nontraumatic acute subdural hemorrhage treated at the Clinic for neurosurgery, CHC
4. Marina Morić, Boris Kuzman, Marina Malešević, Dubravka Švob Štrac: The effects of combined gabapentin and alcohol treatment on HEK 293 cell culture
5. Boris Kuzman, Marina Morić, Gordana Nedić Erjavec, Matea Nikolac Perković, Korona Nenadić Šviglin, Fran Borovečki, Dorotea Muck-Šeler, Nela Pivac, Dubravka Švob Štrac: The association of Ser310Ala functional polymorphism in the GluR7 glutamate receptor subunit gene with the age of onset of alcohol abuse in alcohol - dependent patients
6. Sabrina Zulčić, Samra Pajazetović, Semra Pajazetović, Nenad Lazić, Jasenko Radović, Emir Tufekčić, Fahrija Skokić, Selma Muratović: Incidence of hypoglycemia in hypertrophic newborns of non-diabetic mothers
7. Emir Bećirović, Lejla Mazić, Amila Pjanić, Osman Sinanović: Guillain - Barre syndrome: Affection of cranial nerves and basic clinical characteristics
8. Lejla Mazić, Emir Bećirović, Amila Pjanić: Antiphospholipid syndrome with neurological manifestations
9. Marin Lakić, Kenan Mulalić, Mirza Mušanović: Duchenne and Becker muscular dystrophy: contribution of immunohistochemical analysis in diagnosis
10. Jurij Dreo, Simon Knez, Sabina Skubic: Libet's experiment
11. Jernej Vrtek: Acute effect of biologically active substances on human cerebral vessels
12. Martina Fišić, Tea Haramija: Neurocognitive rehabilitation patients after brain trauma
13. Valerija Kočila, Tea Ahel, Igor Prpić, Antun Sasso: Neuroimaging in childhood headache–physician judgement or parental demands?
14. Mila Prskalo, Valentino Rački, Daniela Petrić: Late-onset depression as a prodrome to Alzheimer's disease: Case report
15. Goran Glodić, Sarah Bjedov, Mirta Ciglar, Anton Mažuranić, Luka Perčin, Marijana Braš: Correlation between appearance and exacerbation of symptoms of an autoimmune disease with chronic psychological stress
16. Milena Milićević, Srećko Potić, Iva Klić: Assessment of motor functioning in children after acquired traumatic brain injury
17. Milena Milićević, Iva Klić: The nature of Developmental Coordination Disorder–theoretical considerations

18. Srećko Potić, Mirjana Đorđević, Slobodan Banković: Sensory profile of adolescents with moderate intellectual disability
19. Đorđe Pojatić, Dunja Degmečić: Influence of blindness on beliefs in a just world and anxiety levels
20. Ivona Jovanoska, Sonja Jovanoska, Kornelija Gjorgjieska, Marija Jovanoska: How to recognize and treat Alzheimer's disease; literature review
21. Kornelija Gjorgjieska, Ivona Jovanoska, Marija Jovanoska: Pineal gland - our third eye

09.30–11.15 STUDENT SESSION II (AUDITORIUM 1)
CHAIRPERSONS: Daniela Malnar, Franka Gregurović, Nikolina Zrakić, Dolores Marinić

1. Ema Tahto, Lamija Pojskić, Anes Jogunčić, Alma Džubur Kulenović: Incidence of posttraumatic stress symptoms after acute coronary syndrom
2. Katarina Šalamon, Ante Šokota, Igor Prpić, Ivona Močenić: Neuronal Ceroid Lipofuscinosis-case report of patients with Jansky–Bielschomsky disease
3. Dorotea Vukelić, Iva Bilić-Čače: Neonatal seizures and birth trauma-Case report
4. Jana Kupusović: Infertility in women with epilepsy
5. Biljana Cvetanovska: Unrecognized neurological symptoms in high school students
6. Tena Ormuž, Josipa Brčić, Renata Martinec: Dance / movement therapy as a complementary approach to the treatment of Parkinson's disease
7. Kruno Topolski, Paula Senković: Dance therapy in Parkinson's disease

STUDENT SESSION III (LECTURE HALL)
CHAIRPERSONS: **Ksenija Baždarić, Dora Karmelić, Sara Vukasović, Matea Tomasić**

1. Valentino Rački, Nikola Đurđević, Natalia Kučić, Jasenka Mršić Pelčić: A model of in vitro induced hypoxia in microglial cells
2. Semra Pajazetović, Sabrina Zulčić, Samra Pajazetović, Jasenko Radović, Osman Sinanović: Stenosis of the carotid artery as risk factors of stroke in Tuzla Canton during the period from 2011 to 2013
3. Sven Pal, Yi Zhang, Orlando Diaz: STA-MCA bypass in a patient with moyamoya disease
4. David Andrijević, Romana Perković, Marina Babić, Sofija Turjak, Silva Butković-Soldo: Atrial fibrillation as a risk factor and cause of death from stroke in Eastern Croatia
5. Almir Huremović, Elmir Čičkušić: Morphological and epidemiological analysis of primary tumors of the central nervous system
6. Edin Begić, Amra Dobrača, Nedim Begić, Haris Bradarić: The safety of spinal anesthesia
7. Faris Kadić, Lovre Kršan Milostić: Marijuana treatment of muscle spasticity in patients with multiple sclerosis

11.15–11.45 COFFEE BREAK (GREAT HALL)

11.45–13.15 STUDENT SESSION IV (AUDITORIUM 1)

CHAIRPERSONS: Goran Arbanas, Dušanka Beslać, Hrvoje Omrčen, Kristina Kampić

1. Marija Josipović, Vesna Mahulja-Stamenković, Igor Prpić: Long-term outcome of children with antenatal detected malformation of central nervous system in Clinical hospital centre Rijeka–epidemiological study (2006.-2013.)
2. Nicol Radolović, Ingrid Škarpa-Prpić: Sweet or bitter sting–A case of severe recurrent cytomegalovirus (CMV) encephalitis induced by bee venom application
3. Arnela Mujagić, Ibrahim Omerhodžić, Elzana Karahodžić, Selma Pašagić: Surgical treatment of brain edema in patient with acute viral encephalitis
4. Andrijana Kolar, Romana Perković, Marina Babić, Kristina Kralik, Silva Butković-Soldo: Hypertension as risk factor and cause of death from stroke in Eastern Croatia
5. Anamarija Jovanovska, Elena Gjorchevska, Elma Kandić, Ilija Pangovski, Vesna Velik Stefanovska: Predictive factors in the outcome of spontaneous intracerebral hemorrhage
6. Asja Muratović, Azra Husić, Aida Avdić, Amar Terzić, Mirza Gavranović: Brain metastases-incidence and primary localisation
7. Luka Alagić: Neurolinguistic research-sign language aphasia

STUDENT SESSION V (LECTURE HALL)

CHAIRPERSONS: Đulijano Ljubičić, Ana Oljača, Maja Ploh, Maria-Helena Ružić

1. Avdić Aida, Muratović Asja, Husić Azra, Gavranović Mirza, Terzić Amar: Incidence of astrocytoma in younger age in Tuzla Canton
2. Nives Šalek, Romana Perković, Marina Babić, Sofija Turjak, Silva Butković-Soldo: Cardiomyopathy as a risk factor and cause of death from stroke in Eastern Croatia
3. Venesa Škrijelj, Vildana Huskić, Azra Kadić, Emina Hrvat: Marking risk factors in 50 patients with a TCD verified diagnosis of vertebrobasilar insufficiency hospitalized at the Neurology Clinic KCUS, June-October 2013
4. Andrej Hladnik, Maja Đorđević: The influence of alcohol on the results of IQ tests
5. Mirza Halilčević, Arnesa Mašić, Valentina Mitrović: Clinical characteristics and early diagnosis factors for subarachnoid hemorrhage patients in the Tuzla Canton region
6. Mia Lončar, Igor Prpić: Social adolescent habits and epilepsy
7. Petra Horvat, Dora Cvelbar: Case study: Communication of a person with Wolf-Hirschhorn syndrome

13.15–14.00 LUNCH (GREAT HALL)

14.00–15.30 WORKSHOPS (LECTURE HALL, AUDITORIUM 1, 4, 5, 6)

I. Neurological patients: Ethical and legal issues (Sanja Kovačić)
II. The technique of ceramics as a medium of expression emotions for people with intellectual disabilities and autism (Stanka Pinjuh)
III. Networking–building block of your experience (Ivona Namjesnik)
IV. Neurological Emergencies (Siniša Dunatov)
V. 'Mindless sex' (Goran Arbanas)

15.30–16.00 CLOSING CEREMONY (AUDITORIUM 2)

CHAIRPERSONS: Gordana Župan, Igor Salopek, Sven Pal, Marija Vrljičak, Ivana Radovčić, Damir Ćaćić

Plenary Lectures

Combining stem cells and biomaterials in brain repair after ischemic lesion in mouse, as an experimental model for the ischemic stroke in humans

Srećko Gajović
University of Zagreb, Faculty of Medicine, Croatian Institute for Brain Research, Zagreb, Croatia

Stroke represents one of the leading causes of death and disability in adult humans in developed countries. In recent years, the mechanisms of brain repair and regeneration after stroke attracted much attention of researchers and clinicians, and currently are considered as possible target for the stroke therapy. After ischemic stroke neurons are rapidly damaged and inflammation is initiated for days and months thereafter. The role of inflammation in stroke remains controversial as some of its components have beneficial and some detrimental consequences. The recent results of our group have shown that the cell death after ischemic injury is delayed if post-stroke inflammation is attenuated through Tlr2-related signaling pathway. This highlighted the time dimension in assessing the beneficial aspects of any mechanism or intervention. The ideal approach to monitor the post-stroke events in time appears to be in vivo imaging, in particular using the bioluminescent molecular markers (e.g. firefly luciferase). Together to modulation of inflammatory effects we have introduced stem cell and biomaterials technologies, in particular showing that inflammation enhances the delivery of stem cells to the brain. The emerging conclusion is that any post-stroke cellular or molecular mechanism or intervention strategy should be assessed through the time in particular in relation to the late events after ischemic injury. To further analyze the underlying mechanisms of beneficial effects of stem cells and biomaterials, in particular in the modulation of inflammation the GlowBrain platform was organized. GlowBrain is an infrastructural project financed by EU FP7 program. It introduces combination of stem cell and biomaterials technologies for brain repair. To monitor the molecular effects of applied interventions in the living animal the bioluminescent and magnetic resonance imaging is introduced. This should enable to address in mouse cellular and molecular mechanisms before stem cell therapy can advance to full-scale clinical trials.

CONTACT: srecko.gajovic@hiim.hr

The death of the ‘grey cells’

Haris Babačić, Maja Boshkovska
Ss. Cyril and Methodius University of Skopje, Faculty of Medicine, Skopje, Macedonia

‘Live long and prosper’. This remains a challenge for the modern medicine. The longer we live - the more we suffer from degenerative diseases, which, not necessarily, come with age... The brain, although being the most perfect and most complex organ in the human body, is not spared.

In the past couple of decades, we have discovered much about the nervous system and how genes work; we have understood much about the many pathophysiological mechanisms of neurodegeneration and the genes responsible for them. Yet, we are unable to understand the bigger picture how and why it occurs and how to use that knowledge to cure these diseases.

In this lecture we will tackle just a bit of the bigger picture of neurodegeneration and neurogenetics. Answering the past questions we have encountered new ones. Here we will discuss the current questions we have to answer and whether we can face our challenge.

CONTACT: haris.babacic@gmail.com

Psychiatry of 21st century

Vesna Šendula Jengić
Rab Psychiatric Hospital, Rab, Croatia

What is the future of psychiatric practices of the 21st century? New trends in somatic medicine, which imply the development of a number of specialties and subspecialties, also impose a new paradigm, but the question is whether psychiatry will follow only that example?

The increase in scientific research and knowledge in all areas of medicine, including those in neuroscience, and increase of technology deployment models in systems of diagnostics and treatment, etc. impose heavy demands on each individual. Doctors are now differentiated according to specializations such as surgery, internal medicine, radiology, paediatrics, psychiatry, etc. immediately after the regular education, and requiring additional years of education. Medical accreditation system recognizes several dozen different specialties. But trends do not stop at the level of specialization. Specialties differentiate further into subspecialties that focus on even more specific areas and require an additional years of education. Internal medicine in developed countries accredits physicians within 15-18 subspecialties, contemporary psychiatry at 5 subspecialties (child and adolescent, geriatric psychiatry, forensic psychiatry, substance abuse and psychosomatic medicine). Very recently child psychiatry was initiated in our country as a special branch of education. Most psychiatrists indeed focus on only one type of disorder such as anxiety disorders, bipolar disorder, eating disorders, psychotic disorders, etc. This trend is likely to continue due to the many positive aspects it demonstrates. However, there is a danger that this trend could start a new paradigm in medicine, particularly in psychiatry, which could be described: one disorder - one doctor, what should instead be: one person - one doctor, or even better - one team of doctors.

This paradigm will be significantly more difficult to implement in clinical psychiatric practice because of overlapping clinical pictures, syndromes and symptoms of many psychiatric disorders, with comorbidity that has become almost the norm in psychiatry. Further on, the stigma of mental illness and mental health issues is still strong, despite many years of work on that issue by professionals, which makes the process of treatment and social reintegration more difficult. Revision of the postulates of anti-stigma programs and recent research opened new insights and showed the ways to new approaches to combat stigma.

In conclusion, the psychiatry of the 21st century is expected to increase the quality of evidence based models, allow convergence of scientific research and clinical practice that will enable us to understand the dis-

orders on a macrocellular and microcellular level, but also to shift the focal point back to the person whom we treat with all his/her pathological and nonpathological physical, mental, social, ethical, spiritual and other dimensions with the fundamental goal of the final destigmatization of mentally ill individuals in the family and society. Only in this way can we maintain the big picture of competence in diagnosis and treatment, be aware of the "forest" while staying focused on the "tree" or more "trees" with intertwined branches and/or roots. Just as philosophy of life focuses on the well-being of individuals and societies, so should treatment have the same mission in all its segments.

CONTACT: vesna.sendula@gmail.com

Sleep and respiratory control

Zoran Đogaš
University of Split, Faculty of Medicine, Department of Neuroscience, Split, Croatia

There is solid evidence showing that the neural networks involved in state control are tightly connected to respiratory-related areas and/or to respiratory neurons, and the changes affecting these networks during the sleep/wake cycle may also affect the control of breathing. A specific depression of minute ventilation occurs during sleep in normal subjects. This sleep-related ventilatory depression is partially related to mechanical events and upper airway atonia but some data also indicate that it is likely to be centrally mediated. The sleep-related ventilatory depression depends upon the enhanced GABAergic activity together with a loss of suprapontine influence depending on the cessation of activity of the reticular formation.

Plasticity of the nervous system is a basis of many physiological functions such as learning and memory. It is defined as permanent change in the nervous control system based on previous experience. Respiratory control system also posses an impressive plasticity which may be defined as a long term change of respiratory pattern when original stimulus is not present any more. Respiratory plasticity may be induced by hypoxia, hypercapnia, exercise, injury or stress. Plasticity of the respiratory system includes two forms induced by intermittent hypoxia: carotid chemosensitive plasticity following chronic intermittent hypoxia, and long term facilitation (LTF) of respiratory motor output following acute intermittent hypoxia (AIH).

LTF of breathing, often seen as phrenic LTF, is central (or spinal) neural mechanism that exhibits prolonged increase of respiratory motor output following episodes of AIH. It lasts long after direct effects of hypoxia. Hypoxia stimulates carotid chemoreceptors, which then in turn activate respiratory neurons in medulla (responsible for rhythm) and 5-HT neurons in raphe nuclei. Released 5-HT from raphe terminals activates serotonin receptors on phrenic motoneurons. This mechanism is very sensitive to anesthetics, serotonin, and opioid drugs.
So far, there were unsuccessful tries to evoke it in awake humans but it was observed during non-REM sleep. LTF is considered to be a useful factor in maintenance of respiratory homeostasis during sleep, which may increase the muscle tone of upper airways. It is, therefore, suggested that LTF is an early defense mechanism in obstructive sleep apnea (OSA) patients.

OSA and other sleep breathing disorders are strongly linked not only to increased excessive daytime somnolence, but also to cardiovascular morbidity and mortality glucose metabolism, cognitive dysfunction, pe-

ripheral neuropathy, etc. There is a growing awareness about implications of OSA and other sleep disorders on traffic safety and sleepiness behind the wheel, which is a great concern at the level of EU.
Further studies of these central neuronal mechanisms of respiratory control may provide new insights into our present knowledge of respiratory disturbances during sleep and may lead us to better diagnostic and therapeutical approaches for a very large patients population in this field of sleep medicine.

CONTACT: zdogas@gmail.com

Symposia

Where psychotherapy meets neuroscience

Bernarda Barbarić
University of Zagreb, Centre for Croatian Studies, Department of Psychology, Zagreb, Croatia

Advances in neuroscience have led us to a better understanding how psychotherapy may affect brain functioning. Empirical and clinical studies have shown that psychotherapy can help patients who suffer of variety disorders – anxiety disorder, phobias, depression, obsessive-compulsive, borderline personality disorder etc.

Psychological interventions can profoundly change patients' behaviour, ways of thinking, sets of beliefs. Neuroscience has spread our knowledge about these processes by different neuroimaging technologies – positron emission tomography (PET), single-photon emission computed tomography (SPECT) and functional magnetic resonance imaging (FMRI). The aim of this paper is to review and provide current findings of neuroimaging on psychotherapy effects.

CONTACT: barbaric.bernarda@gmail.com

Analysis of the psycho-social elements of the perpetrators and victims of sexual violence

Malik Ejubović
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

INTRODUCTION: The concept of sexual violence was introduced in the 1970s, although it had existed before in many cultures. One of the definitions of sexual violence indicates that sexual violence, sometimes labeled as harassment, is defined as imposition of unwanted sexual behavior of one person to another.

GOAL: Analysis of the psycho-social elements of the perpetrators and victims of sexual violence.

MATERIAL END METHODS: The research was conducted as a retrospective study in central Bosnia during the period 1991-2013, based on legal expertise. The study included cases of sexual violence with suspected pathologies.

RESULTS: Of the total number (1034), a group of 104 cases was selected. Marital status (offenders): single-71; married-46; divorced-16; widowed-7. Type of violence: rape-53; lewd acts-21; gang rape-14; attempted rape-13; anal rape-4. Age of offenders: up to 20 years-20; 21-25 years-32; 26-30 years-16; 31-35 years-28; 36-40 years-15; 41-45 years- 8; 46-50 years-5; 51-55 years-5; 56-60 years- 3; over 60-8 (youngest perpetrator is 15, the oldest 78 years). Age of victims: under 10 years-16; 11-15 years-29; 16-20 years-26; 21-25 years-14; 26-30 years-3; 31-35 years-6; 36-40 years-1; 41-45 years-7; 46-50 years-1; 51-55 years-2; over 60-8 (the youngest victim 3, the oldest 82 - rape in two occasions). Of the 113 victims, there were 11 males. The relationship of the perpetrator and victim: members of the same family-10; acquaintances-42; without previous acquaintance-52. The number of repetitions of the crime: once 85, twice-3, repeated rape (the period from 3 days to 4 years)-16. Occupation of perpetrators: jobless-93, employee-30; student 10; retiree-7. Occupation of victims: schoolgirl-57; unemployed-40; employed -9; retiree-5; child-2. Earlier crimes: no previous offenses-112, with earlier crimes- 26; repeated felony-2. Psychosocial: without psychopathology-65; alcohol-28; mental retardation/psychological disturbance-11.

CONCLUSION: Lately, there is an increase of cases with 'deeper' pathology (incest or pedophilia) than in 'classical' rape cases.

CONTACT: malik_e16@hotmail.com

Neurobiology of joint attention

Asja Dubravčić, Petra Švađumović
University of Zagreb, Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia

In development of children we emphasise the importance of development of child's awareness of themselves and others as the ground of development of social knowledge. And for that we need joint attention, which requires integrative activation of anterior and posterior cortical network, which controls our attention and is closely connected with social knowledge functions (Justice, 2006). Joint attention is defined as triadic interaction in which two persons coordinate their attention towards the object of mutual interest (Carpenter i Liebal, 2011). When two persons join their attention they are actively engaged in: (1) processing information about their actions and body scheme, (2) processing information about attention and behaviour of other person, (3) integration of those input with the information about the object of mutual interest (Mundy i Jarrold, 2010; Mundy i Newell, 2007).

There are two main components/categories of joint attention (Mundy i Newell , 2007; Mundy i Sigman, 2006):

1.Responding to joint attention (RJA) - ability to follow gaze and gestures of others in order to share mutual point of interest. RJA is associated with the activity of parietal and superior temporal cortex which are responsible for forming representational schemes, imitation, perception of orientation of the head and the eyes, and perception of spatial relationship.

2.Initiating joint attention (IJA) - ability to use eye contact and gestures to redirect others attention to the object. IJA is associated with the activity of prefrontal associative cortex and anterior cingulate cortex. This part controls voluntary, goal-oriented attention and self-evaluation of behaviour.

Although joint attention begins to emerge at about nine months, with the phenomena of intentional communication, from the neurobiological perspective that development begins much earlier. So there is a great need to understand neurological basis of joint attention in order to get further insight of its clinical and developmental importance.

CONTACT: asja.dubravcic@gmail.com

Influence of environmental and biological factors in developing antisocial personality disorder

Ana Marija Vukasović[1], Sara Vukasović[2]
1.University of Split, Faculty of Medicine, Split, Croatia
2.University Hospital Centre Rijeka, Rijeka, Croatia

Antisocial personality disorder (ASPD), caracterised by antisocial behavior, presents both individual and social issue. ASPD has an incidence of 2-18% of general population, but its prevalence is shown to be higher at prison population and amoung men.

Appearance of this disorder is not completly clarified and it is under the influence of both environmental and biological factors. Biological factors implicate genetic, hormone, neurotransmitter and neurocognitive factors and their importance in developing antisocial behavior. It is important to distinguish relevance of genes responsible for creation of MAO-A enzyme wich reduced levels are shown to be predictor of antisocial behavior and aggression. Further more, hormone and neurotransmitter disbalance can also lead to ASPD. Interactions between serotonin, cortisol and testostreone has a great influence to this matter. Lower levels of cortisol can be related with appearance of antisocial behavior. Serotonine may affect aggression and impulsivity, one of characteristics of ASPD. Testosterone is shown to be related with functional polymorphism MAO-A enzyme gene and its increased levels at cerebrospinal fluid may cause reduction of MAO-A enzyme. Middle frontal gyrus and orbitofrontal cortex volume reduction may also lead to ASPL.

Environmental factors such parental antisocial behavior, domestic violence, divorce, high levels of parent-child conflict, maladaptive parenting and affiliation with deviant peer group have a great influence on appearance of antisocial behavior at childhood and developing ASPD at adulthood. History of family antisocial behavior is considered to be the most powerful predictor of antisocial behavior in offspring.

CONTACT: amvukas@gmail.com

Gender differences in early symptoms of Attention Deficit Hyperactive Disorder (ADHD) in children aged 5-8 years

Mladenka Vukojević[1], Vesna Varunek[1,2], Danijela Šoše[1], Matea Malać[1], Martina Maslać[1]
1. University of Mostar, Faculty of Medicine, Mostar, Bosnia and Herzegovina
2. University of Mostar, Faculty of Mathematics and Science Education, Mostar, Bosnia and Herzegovina

OBJECTIVE: Determine how the probability of ADHD disorder exists in the selected sample of children judging from the questionnaire to teachers, divide perceptions of teachers of children marked with very high, high probability and possible probability for the disorder, by gender and age.

PATIENTS AND METHODS: The study included 107 children, of which 51 children were female and 56 male. The research I used a survey that consisted of a questionnaire for school evaluation, which was intended for teachers questionnaire The questionnaire contains 39 statements covering the three dimensions of child behavior necessary for the diagnosis of ADHD. The raw results obtained from each questionnaire and were converted to Total standard norms (TSS), as such were used for statistical analysis.

RESULTS: Teachers where is also a small number of children showed a high probability of ADHD (P=0,001). Teachers estimated that there were more female children (P=0,001).

CONCLUSION: In our population of children there is a low probability for ADHD. Teachers estimated that female gender was more likely to have this disorder than male gender.

CONTACT: danijela.nella@yahoo.com

Attention modulates the earliest visual neuromagnetic responses

Mirta Dumančić[1], Ana Sušac[1], Sanja Josef Golubić[1], Andreja Bubić[2], Ralph Huonker[3], Jens Haueisen[3,4], Selma Supek[1]
1.University of Zagreb, Faculty of Science, Department of Physics, Zagreb, Croatia
2.University of Split, Faculty of Philosophy, Split, Croatia
3.University of Jena, Faculty of Medicine, Department of Neurology, Jena, Germany
4.Ilmenau University of Technology, Department for Biomedical Engineering and Informatics, Ilmenau, Germany

Spatially directed attention facilitates the detection and discrimination of stimuli appearing at attended location. Recent studies using electroencephalography (EEG) and magnetoencephalography (MEG) have shown attentional effect on the earliest visual responses (50–100 ms).

The aim of this study was to further explore these earliest attentional effects by using multiple current dipoles to model the neuromagnetic responses in attended and non-attended conditions.

The evoked visual responses were measured on 14 subjects using Elekta Neuromag 306-channel MEG system at the Biomagnetic Center in Jena. Two types of top-down cuing were employed: trial-by-trial cuing with unpredictable attended location and sustained cuing with attention to a specific location during the whole block. Standard (frequent) stimulus was a Gabor pattern presented in the upper left or lower right parafoveal locations for a duration of 100 ms. Target (rare) stimulus consisted of the standard Gabor pattern with a ring of reduced luminance. The task of the participants was to respond to targets presented at the cued location. In the control condition, participants had to respond to targets presented at both locations.

MEG data were analyzed using the MRIVIEW Calibrated Start Spatio-Temporal (CSST) multi-start inverse procedure for spatio-temporal source localization. We identified 2-3 sources during the first 100 ms post-stimulus.

The preliminary results of our multi-dipole source analysis suggest attentional modification of the visual activity in both types of cueing. Differences in the locations and dynamics of the occipital sources were found for the same stimulus when it was attended and non-attended during 65-100 ms.

CONTACT: mirta.dumancic@gmail.com

Therapeutic play hours with a dog for hyperactive children

Nina Kočar
University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Department of Biopsychology, Koper, Slovenia

Play has been defined as any activity freely chosen, intrinsically motivated, and personally directed. It increases brain development and growth, establishes new neural connections, and enhances cognitive abilities.

A therapy dog is a dog trained to provide affection and comfort to people in hospitals, nursing homes, schools and to children with learning difficulties. Research also indicates that a presence of a therapy dog has a positive influence on children with autism, ADHD or ADD.

To combine positive effects of play and presence of a dog, we have conducted therapeutic play hours with a dog, for hyperactive children. Our goal is to improve their cognitive development and attention, and promote positive interaction with their parents.

We present a case study of a mother and 3, 5 years old twins, born preterm with history of home violence. Both twins have developmental delays, especially in linguistic field, accompanied with increased hyperactivity, though not diagnosed with ADD or ADHD. They are accommodated in a safe house, where they are once a week assessed with therapeutic play hours with a dog. Therapeutic play hours are divided into three parts, each lasting approximately 20 min. The first and the third parts consist of twins' interaction with a dog, through which they learn responsibility and importance of rules and directing their attention. The second part is focused on play with their mother to improve the dynamics of the triade.

Methods for measuring the progress are half structured interview and observations. Since the study is still in progress, up to date results will be presented at the congress.

CONTACT: ninaa.kocar@gmail.com

The media and suicidal risk

Luka Fotak[1], Vuk Prica[2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Rijeka, Croatia

After Goethe's novel 'The Sorrows of Young Werther' came out, an epidemic wave of suicides appeared in Europe among the young people who had read the book and identified with its protagonist.

Keeping in mind that suicides, especially the ones committed by famous people, are of great interest to the media, and that the media have a significant role in everyday life, they are the ones that can generate suicidal behavior – especially among adolescents and psychiatric patients. Printed media have a greater potential of provoking a person to commit a suicide by copying (copycat suicide) than television. The role of internet has not yet been adequately investigated.

The way in which the media convey messages about suicides, specifically decreasing the amount of news dealing with this subject, can have an effect on lowering the suicidal risk.

CONTACT: fotak.luka@gmail.com

Coffee drinking habits of medical students – an international pilot study

Marija Jovanoska[1,2], Ana Vasileva[2], Marko Kostovski[2], Sanja Mancevska[2]
1.University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia
2.Ss. Cyril and Methodius University of Skopje, Faculty of Medicine, Skopje, Macedonia

BACKGROUND: Coffee is continuously gaining popularity as stimulant among youngsters, especially students during period of intensive studying. The purpose of our study was to evaluate and compare the awareness of Slovenian and Macedonian medical students regarding drinking coffee and its pattern, reason of consumption, and its effects on sleeping pattern.

METHODS: Based on the responses of a survey of 186 students, in the age group of 20-26 years, of whom 100 Slovenian and 87 Macedonian students, we assessed and compared coffee consumption patterns and habits between the two samples of students.

RESULTS: Our results showed that coffee consumption is far more popular among Macedonian compared to Slovenian students (87.2 % versus 68% respectively; $\chi^2 = 5.114$, df=2, p=0.02). They consume significantly more cups of coffee during one week compared to their Slovenian peers ($\chi^2 = 35.547$, df=2, p<0.0001). Two main reasons for not using coffee by non-users were 'awareness from its side effects' and 'no need for coffee'. There is no difference in coffee consumption habits during intensive studies between both samples (p=0.614). The most favourable coffees reported from Macedonian students were Turkish coffee and Espresso. Slovenian students use other caffeine based beverages, such as coca cola and black tea. 80% of the students do not consider them coffee addicts.

CONCLUSION: To our best knowledge this is the first study that assesses coffee consumption among medical students in an international setting. Practice of consuming coffee is highly prevalent among medical students in both countries. The much lower degree of coffee consumption on everyday basis in Slovenian students suggests their higher awareness of side effects. This warrants the creation of continued public health awareness about the appropriate use of coffee and correction of wrong perceptions among students.

CONTACT: marija.bunda@yahoo.com

Psychiatry and literature: Emma Bovary from the psychiatric angle

Valerija Trojar
University of Maribor, Faculty of Medicine, Maribor, Slovenia

In their wish to treat patients holistically, psychiatrists read literature. Only rare medical branches deal with their images in the media as much as psychiatry which is traditionally accompanied by prejudice in society and consequently in the media. Literature and psychiatry are both interested in story, i. e. events sequenced in causal or chronological order. Story has a special meaning in the civilization; it is a means of knowledge transfer and a means of socialization. Literature can serve psychiatry and other medical branches as a handy means for opening unpleasant questions. Moreover, psychiatry and medicine are both interested in emotions, feelings, personal and intimate matters and use linguistic means referring to that, e. g. (cognitive) metaphors. Also, for psychiatry, literature can serve as a drill field for exploration of human characters. A literary character lives only in a book indeed but a book can provide a more in-depth insight into his or her live than a psychiatrist can gain with any patient because the character's life is limited to the book, because he or she cannot conceal anything from the psychiatrist and because some character's inner worlds are very well presented. The article presents the main character of the first modern novel Madame Bovary by Gustave Flaubert, Emma Bovary, from the psychiatric angle of view. According to contemporary psychiatric knowledge, her behaviour characterized by excessive sentiment, affected manners, feelings of boredom, mental instability, feelings of dissatisfaction and emptiness and seeking for attention shows some traits of a personality disorder. After she gets married, she starts to feel depressed and shows some symptoms of somatization. She is taken over by negative emotions, she does not perform her daily household chores. Her sexual behaviour and irrational money management are difficult to evaluate. Since she breaks social norms, people start to gossip and trigger a persecutory delusion and illusion. Also, she experiences an acute stress disorder, a state of trance, an acute panic attack, and just before her self-inflicted death, an acute confusional state.

CONTACT: valerijatrojar@yahoo.com

Incidence of posttraumatic stress symptoms after acute coronary syndrom

Ema Tahto[1], Lamija Pojskić[1], Anes Jogunčić[1], Alma Džubur Kulenović[2]
1.University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
2.University Clinical Center Sarajevo, Department of Psychiatry, Sarajevo, Bosnia and Herzegovina

INTRODUCTION: Posttraumatic stress disorder(PTSD) is related to acute coronary syndrome(ACS-myocardial infarction or unstable angina) recurrence. PTSD is associated with negative impacts on physical health. Patients with ACS who develop PTSD may be particularly affected by these impacts due to their cardiovascular vulnerability.

AIM: The aim of this study was to explore the realtionship/correlation between PTSD symptoms and cardiac events(ACS).

MATERIALS AND METHODS: We examined 25 (8 (32%) women, 17 (68%) men) ACS patients who had been treated at the University Clinical Center of Sarajevo between February and March 2014. They completed a brief PTSD screen (IES-R=The Impact Event Scale-Revised) 3-10 days post ACS. The assessments also included M.I.N.I (Mini International Neuropsychiatric Interview) to exclude the previous psychotic disorders, socio-demographic questions and questions related to clinical history and hospitalization. Medical records were reviewed for collection of clinical data. The age of the examinees was between 51 and 85 years (mean 68).

RESULTS: Mean IES-R score in the sample was 34,36. 15 (60%) patients had a score for 'likely PTSD' (≥33) (X^2=36,01; p<0,0001). 7 (28%) of them were women, and 8 (32%) were men. Considering that in this study were only 8 women, it could be said that 88% of them developed the symptoms of PTSD after ACS. As for men 47% of them developed symptoms od PTSD after ACS. 17 (68%) of them met the cutoff score for high avoidance, 17 (68%) for high intrusions and 9 (36%) for high hyperarousal. Patients with high PTSD intrusion scores reported higher avoidance and hyperarousal symptoms. M.I.N.I showed that none of our patients had previous psychotic disorder.

CONCLUSION: For many patients an ACS is sufficiently traumatic to elicit PTSD symptoms. This study demonstrates that PTSD symptoms are present in ACS patients. It is important to know that this patients can develope PTSD symptoms so they can on time be offered psychological interventions as needed.

CONTACT: ema.tahto@gmail.com

Neuronal Ceroid Lipofuscinosis-case report of patients with Jansky–Bielschomsky disease

Katarina Šalamon1, Ante Šokota[1], Igor Prpić[2], Ivona Močenić[3]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Paediatrics, Rijeka, Croatia
3.General Hospital Pula, Pula, Croatia

Neuronal ceroid lipofuscinosis (NCLF) is an autosomal recessive progressive lysosomal storage disease. It is classified into four types with a main characteristic of lipofuscin buildup in cells of the central nervous system (CNS) as well as in other organ systems, causing their damage. Incidence of NCLF in general population is 1 in 20.000-100.000.

The two presented patients have Jansky-Bielschomsky disease, one of four types of NCLF. It is a fast–progressing disease with first manifestation between 2nd and 4th year in a form of myoclonic epileptic seizures, progressive mental deterioration and vision and speech impairment. Definite diagnosis is established with confirmation of the CLN2 gene mutation alongside with enzyme tripeptidyl-peptidase 1 (TPP- 1) deficiency in leukocytes. Current therapy is symptomatic although there are promising results in gene therapy with adeno-asociated viruses.

Patients presented are sister and brother with clinically healthy heterozygous blood unrelated parents. In both patients disease presented itself with myoclonic epileptic seizures resistant to classical treatment at age of 2.5, with progression of disease manifesting itself through delayed mental development, vision and speech impairment, myoclonus - neurological symptoms which led to diagnosis. The girl, now age of 10, is at home aided by mechanical ventilation and suffering from intermittent myoclonus and severe psychomotor retardation. The boy, age of 8.5, is in advanced stage of the disease. Both patients are on multiple anticonvulsants with additional supportive respiratory and nutritional therapy. Persistent epilepsy with progressive delay in psychomotor development should always arouse suspicion of possible onset of neurodegenerative diseases.

CONTACT: katarina.salamon@hotmail.com

Neonatal seizures and birth trauma – Case report

Dorotea Vukelić[1], Iva Bilić-Čače[2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Neonatology, Rijeka, Croatia

INTRODUCTION: A seizure is a paroxysmal behavior caused by hypersynchronous discharge of a group of neurons. Neonatal seizures are the most common overt manifestation of neurological dysfunction in the newborns. In a newborn, seizures are often short and subtle; it can be difficult to tell whether a baby is actually having one. Seizures in newborns can include repetitive facial movements, unusual cycling or pedalling movements of the legs, staring, apnea, clonic, tonic and myoclonic seizures. The frequency of their occurrence is in the range of 5 to 20 per 1000 live births. Rarely, birth trauma can cause neonatal seizures.

Injuries to the infant that result from mechanical forces during the birth process are categorized as birth trauma. Recognition of trauma necessitates a careful physical and neurological evaluation of the infant.

CASE REPORT: A male newborn was admitted to the neonatal intensive care unit because neonatal seizures.

The child was born on term. Birth was by vaginal delivery with meconium-stained amniotic fluid and occipital presentation.

The birth weight was 3020gr, birth length 48cm, head circumference 34cm, and Apgar score 10/10.

On the 5th postnatal day the nurse noted that an infant is having abnormal movements of the extremities, which appeared to be in accordance with seizure activity. A probable etiologic factor was founded after taking excessive diagnostic evaluations. Magnetic resonance imaging (MRI) showed a presence of subdural hematoma as a consequence of birth trauma.

A proper therapy was determined and initiated. On follow up MRI one month later, there were no signs of subdural hematoma. Anticonvulsive medication has been withdrawn, and child remained without symptoms.

CONCLUSION: The outcome of neonatal seizures depends primarily on the underlying cause. Neonatal seizures require urgent treatment to prevent further consequences of neurodevelopment.

CONTACT: vukelic.dorotea@gmail.com

Infertility in Women With Epilepsy

Jana Kupusović
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

Epilepsy is often associated with endocrine disorders like polycystic ovary syndrome, hypothalamic amenorrhea, hyperandrogenism , and functional hyperprolactinemia Most studies show that women with epilepsy are less fertile compared with the general population.

Possible causes are : the direct influence of epileptic lesions , lower incidence of marriage , reproductive - endocrine dysfunction secondary to taking AEDS and epileptic seizures , fear of birth defects in pregnancy exposed to antiepileptic drugs, the fear that the child will have epilepsy and social stigma . It is known that the enzyme -inducing antiepileptic drugs affecting reproductive concentration of steroid hormones and SHBG. The reduced concentration of hormones and increased SHBG influence the menstrual cycle, act inhibitory in ovulation – and in doing so reduce fertility.

Valproate is associated with increased incidence of polycystic ovary syndrome (PCOS), a leading cause of infertility. PCOS may be mediated through elevated body weight, insulin resistance and an increased concentration of androgens.

Type of epilepsy also affects fertility. Study of Schupf and Ottman has shown that women with partial epilepsy have a higher incidence of infertility than those with generalized epilepsy.

CONTACT: j.kupusovic@gmail.com

Unrecognized neurological symptoms in high school students

Biljana Cvetanovska
Ss. Cyril and Methodius University of Skopje, Faculty of Philosophy, Skopje, Macedonia

INTRODUCTION: Symptoms that indicate neurological disorders in children can easily be unrecognized or neglected due to many different reasons. Neglecting these symptoms can increase the risk of the development of neurological disorders, the primary and secondary consequences of which are thus only increasing and becoming more profound instead of being minimized through prompt diagnosing and adequate treatment.

AIM: Recognition of neurological symptoms in high school students and providing proper attention to these children, instead of them being neglected, on the contrary, they should be helped with adequate treatment and work for their improvement.

METHOD: Sample of 43 high school students (14 to 19 years old), randomly chosen (cluster sampling using random numbers tables), covering all study years and classes at 'Krste P. Misirkov" High School, in Demir Hisar. The assessment was individual using a battery of tests including: Wechsler's Memory Scales I, The Block – Design Test and Bender Visual Motor Gestalt Test. The results are analyzed descriptively, using a combination of qualitative and quantitative methods.

RESULTS: The low scores on Wechsler's Memory Scales and on the Block-Design Test, along with the extremely high scores on the Bender-Gestalt test and its qualitative analysis are pointing out to low intellectual abilities, disorders of ego-functions, cognitive deficits, motor incoordination and possible organic developmental disorders.

CONCLUSION: The research implies that many children show certain symptoms that indicate neurological disorders, lag in cognitive development and have low scholastic achievement. Also, these children are marginalized and neglected, and thus are lost in the educational system which does not offer them neither education nor basic enabling for social functioning. Hopefully this pilot study could encourage deeper investigations of this problem, and represent the beginning of a challenging work with children who have neurological disorders.

CONTACT: biljana_@live.com

Dance/movement therapy as a complementary approach to the treatment of Parkinson's disease

Tena Ormuž, Josipa Brčić, Renata Martinec
University of Zagreb, Faculty of education and rehabilitation sciences, Zagreb, Croatia

The goal of this paper is to provide an overview of research on the influence of dance/movement therapy on motor skills and psychosocial characteristics of persons with Parkinson's disease. According to the American Dance Therapy Association, this kind of therapy utilizes dance and movement in the creative process in order to improve the emotional, cognitive, social and physical integration of the individual. Today this therapy is being applied all over the world in many specialized clinics, rehabilitation and education centres as a means of prevention and treatment of various mental and physical disorders. Research has shown that dance/movement therapy is very effective as a complementary method in the treatment of various psychological and neurological disorders, oncological and chronic diseases, eating disorders etc. This therapy is also used as a part of an interdisciplinary approach to Parkinson's disease; a group of movement disorders which are a result of the decrease in dopamine secretion in the part of the brain that has an important role in the control of voluntary movements, i.e. basal ganglia. Taking into account the fact that Parkinson's disease affects the locomotor system, a systematic workout is recommended because it proved to be very effective in improving physical functioning and an overall life quality. If patients start with workout in the early stages of the disease, it can even slow the progression of the disease. In patients with Parkinson's disease a numerous undesirable side effects, like fatigue, apathy, shame, etc., appear so they often give up or do not workout consistently. In order to raise their motivation for physical activity, dance/movement programs have been designed with techniques that encourage not only motor activity but also a positive somatoemotional experience. Due to the fact that research has shown that dance/movement therapy can influence various neurological, functional and psychological characteristics of the persons with Parkinson's disease, there is a need for further consideration and application of this approach as a part of holistic treatment and rehabilitation of this population.

CONTACT: tena.ormuz@gmail.com

Dance therapy in Parkinson's disease

Kruno Topolsk, Paula Senković
University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Parkison's disease (PD) is a progressive, neurodegenerative disorder of the central nervosus system. The main symptoms of disease result from death of dopamine- generating cells in substantia nigra. People with Parkinsons disease experience rigidity, bradykinesia and festinating gait leading to frequent falls. Dance therapy is the therapeutic use of movement to improve cognitive, physical, social and emotional well being of a person.

The aim of this study is to present achievement in balance and gait stability of patients with PD during the dance therapy.

This study is based on the research from 'Pub Med' with a view to discover information relevance. Measures that were used to show modifications of balance and gait of patients are Berg Balance Scale and 6-minute walk test.

Statistically comparison of avaible analytical datas showed that genres of dances as tango, waltz/foxtrot and Thai Chi may be an effective alternative to traditional exercises. Result of research justify a progress of individuals in gait, balance and motor ability. It reported increase from 40 to 60 meters and enhance of velocity from 0,08 to 0,1 m/s on the 6-minute walk test. Moreover, marked balance progress was 8 percent and the individual evaluation of therapy 131 percent higher than before. Tango, which basic step is gait imitation, showed optimal results in relation to planning movements and attracting attention to gait.

Dance therapy reclaims patient motivation and provides balance stability by using specific dance moves. Dance with certain intensity can be used as a perfect form of aerobic exercises. Auditory signals may balk the basal ganglia and access the supplementary motor area through the thalamus or they may access premotor cortex through the cerebellum. Therefore, music becomes an auditive association and certain help for movement performance.

CONTACT: kruno.topolski@gmail.com

A model of in vitro induced hypoxia in microglial cells

Valentino Rački[1], Nikola Đurđević[1], Natalia Kučić[2], Jasenka Mršić Pelčić[3]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University of Rijeka, Faculty of Medicine, Department of Physiology and Immunology, Rijeka, Croatia
3.University of Rijeka, Faculty of Medicine, Department of Pharmacology, Rijeka, Croatia

INTRODUCTION: Microglial cells are immunological cells of the brain directly involved in the processes of regulation, phagocytosis, production of cytokines and growth factors. In the central nervous system, cerebral ischemia and hypoxia lead to neuronal damage but also to activation of glial cells. In vivo studies have shown that neuronal death is preceded by activation of microglial cells as an indicator of oxidative stress and damage. The aim of this study was to develop an in vitro model of hypoxia on BV-2 microglial cell line.

METHOD: BV-2 mouse microglial cells were used. The cells were maintained in standard conditions for cell cultivation. In vitro hypoxia was induced in a chamber by gradually filling up to 98% nitrogen until oxygen levels decreased under 2% for 6 hours. Microscopic analysis of BV-2 microglial cells has been made immediately post hypoxia and also 24, 48, 78 and 168 hours after hypoxia. Changes in cell morphology were analyzed as an indirect indicator of activation as a result of hypoxia.

RESULTS: Change in morphological characteristics has been noted in all periods of time monitored during the experiment.

CONCLUSION: Morphological changes on microglial cells as an indirect indicator of their activation in conditions of hypoxia suggests an exposure to oxidative stress and damage as a result of a successfully established experimental model of in vitro hypoxia. Further research is required to characterize the parameters of cell damage to confirm our hypothesis.

CONTACT: sykra91@gmail.com

Stenosis of the carotid artery as a risk factor in cerebrovascular insult (CVI) in the Tuzla Canton in period 2011.-2013.

Semra Pajazetović[1], Sabrina Zulčić[1], Samra Pajazetović[1], Jasenko Radović[1], Osman Sinanović[2]
1. University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
2. University Hospital Center Tuzla, Department of Neurology, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Acute cerebrovascular insult is the third most common cause of death and first cause of invalidity in developed countries. It is estimated that every 45 seconds one person gets and every 3 minutes one person dies from CVI. Knowing of the risk factors and their elimination or control are important for reduction of incidence. There are factors that we can not influence (sex, age, race, heredity) and factors that we can influence (diabetes mellitus, hypertension, atrial fibrilation, heart diseases, smoking). Main goal is to show the incidence of stenosis as a risk factor in CVI in patients hospitalized on the Clinic for Neurology in period 2011.-2013.

PARTICIPANTS AND METHODS: Retrospective study was performed on the Clinic for Neurology of the Clinical University Center Tuzla for period from 1.1.2011. till 31.12.2013. Sample includes 900 subjects, both sex and all age groups, which were hospitalized in that time frame. Stenosis was observed in corelation with diabetes, place of living, age and sex. Following statistical methods were applied: T-test, ANOVA and descriptive statistics (arithmetic mean, standard deviation).

RESULTS: According to the study results, link between stenosis and diabetes is statisticly different regarding the researched period and grow proportionaly during the time (ANOVA: $F(2,299)=1.43$; $p<.05$; diabetes is 'strong influence' factor eta2=0.230). According the datas diabetes and stenosis in 2011. Had 2,33%, in 2012. 3,66% and in 2013. 5,66%. Place of living does not have statisticly significant influence on carotid artery stenosis. There is no significant difference between the age groups, p=0,13. Males have significantly more common stenosis ($t(2011)=5.09$; $df=299$; $p<.001$;) regarding the females and that trend is noted in whole research period with tendency to grow during years, which is not noted in females.

CONCLUSION: Results show that diabetes is one of the most important risk factor with a great influence on devellopment of carotid artery stenosis, which increases the total risk for development of CVI.

CONTACT: semrapajazetovic@gmail.com

STA–MCA bypass in a patient with moyamoya disease

Sven Pal[1], Yi Zhang[2], Orlando Diaz[2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.Houston Methodist Hospital, Houston, USA

14-year old patient with a history of left hemisoheric ischemic infarct anesthesia disorders came to the hospital to confirm a suspected moyamoya disease. Moyamoya (MMD) is a rare but important source of neurological morbidity as a result of both ischemic and hemorrhagic sequelae. It is a cerebrovascular disorder without a known origin that is characterized by progressive stenosis and abnormal collateral vessels. To be more precise, it is a disease characterized by a chronic progressive steno-occlusive disease at the distal portion of the internal carotid artery (ICA) with abnormal Moyamoya vessel (MMV) development without associated diseases. Children with this disease usually have strokes, whereas adults have ischemic symptoms or intracranial hemorrhage. In order to make proper treatment recommendations, high resolution, superselective cerebral angiogram was indicated. Bilateral internal carotidnartery occlusion was found, and in order to prevent further neurological complications from progression of the moyamoya disease surgical extracranial-intracranial bypass was recomended. Superficial temporal artery to middle cerebral artery revascularization (STA-MCA bypass) is a technique that allows the blood supply from the extracranial carotid circulation to be routed to the distal middle cerebral artery branches. Specific indications include nonatherosclerotic occlusive vascular disorders, symptomatic brain ischemia in patients with inaccessible atherosclerotic occlusive disease who have not responded to maximal medical therapy, carotid artery dissection or penetrating injuries and as an adjunct for deliberate large vessel arterial occlusion after failure of temporary trial occlusion. As it was recommended, left frontal parietal craniotomy for microsurgical superficial temporal artery-middle cerebral artery bypass anastomosis was done. Following the surgery, the patient awoke in a stable condition and was transfered to the PACU. He was then moved to the neurosurgical ICU where he recovered well and was transfered to the neurosurgery floor. The patient was deemed safe and discharged 7 days after confirmed diagnosis, and 4 days after the operation.

CONTACT: pal.sven@gmail.com

Atrial fibrillation as a risk factor and cause of death from stroke in Eastern Croatia

David Andrijević[1], Romana Perković[1], Marina Babić[1], Sofija Turjak[2], Silva Butković-Soldo[3]
1.University J.J.Strossmayer of Osijek, Faculty of Medicine, Osijek, Croatia
2.University J.J.Strossmayer of Osijek, Faculty of Economics, Osijek, Croatia
3.Clinical Hospital Centre Osijek, Department of Neurology, Osijek, Croatia

To examine the connection between atrial fibrillation and mortality from stroke, we had to gather medical documentation about all the patients that suffered from stroke during specific time period, and also note cases in which atrial fibrillation occurred. From these patients we documented mortality rate with presence or absence of atrial fibrillation. We have also divided the population by genders, to additionally examine any further variability. Statistical analysis have shown the presence of atrial fibrillation of 18% in all patients that suffered from stroke, and the mortality rate, from these 18% was 28,8%, in contrast to 12,7% for people who didn't have the presence of atrial fibrillation. Furthermore, women patients had greater percentage of atrial fibrillation (22,4%) contrary to men (13,9%), but in the same time the mortality rate with presence of atrial fibrillation in female population was (22,5%), but in the male population (38,5%). In addition to that, mortality rate contribution with presence of atrial fibrillation in the overall mortality rate from stroke between sexes is almost the same, 5,04% in female, and 5,4% in male population.

CONTACT: david.andrijevic@gmail.com

Morphological and epidemiological analysis of primary tumors of the central nervous system

Almir Huremović[1], Elmir Čičkušić[2]
1.University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
2.University Hospital Center Tuzla, Department of Pathology, Tuzla, Bosnia and Herzegovina

Primary brain tumors constitute approximately 2% of all malignancies and 20% of malignancies in children. Brain tumors among adolescents and young adults are the third most common cause of death due to cancer. The survival time in about one-third of patients is poor, averaging 5 years. The prognosis is unfavorable because a significant number of brain tumors grow infiltratively and diffusely, and therefore are not amenable to total resection and are prone to recur, and they are often located in functionally highly specialized or vital regions.

Our aim was to show the epidemiological characteristics of central nervous system(CNS) tumors , their morphological characteristics and the importance of good pathohistological and immunohistochemical diagnostic methods.

The retrospective analisis of the biopsy protocols of the University Clinical Center in Tuzla included biopsies of primary CNS tumors during the period 2008-2013. The analysis includes the gender and age of the patients, the location, type and grade of the tumors and used immunohistochemical diagnostic methods.

A total of 297 tumors were analyzed. Astrocytomas constituted 43,4% of all tumors with 60,4% being glioblastomas, followed by meningiomas 42,4%, medulloblastomas 2,7% , ependymomas, 0,7%, oligodendrogliomas 1% and schwannomas 4%. The incidence of menigiomas (42,4%) is higher than the world average (34%). Five patients (1,7%) were under 15 years old and 292 (98,3%) above 15 years. The greatest incidence was found in patients in their fifties and sixties. The overall male/female ratio was 1:1,2. The male/female ratio in glioblastomas (1,69:1), was greater considering data from similar studies (1,26-1,28:1). Similar results with meningiomas (F:M=2,2:1) in relation with data faund in literature (F:M=1,7:1). 77% of all tumors were localised supratentorial, 13% infratentorial and 10% spinal. In 3,4% of all biopsy samples tumors could not be diagnosed. The most common reason was an inapropriate biopsy sample. Immunohistochemical methods were used in only 10% of undiagnosed tumors. Immunohistochemical methods were used in 73 (24,6%) cases, usualy in meduloblastomas (75%), oligodendrogliomas (66,7%) and astrocytomas grade I (58,3%).

The most common tumors in this study were astrocytomas and meningiomas. The incidence of glioblastomas in males and meningiomas in females was higher considering the published results in other studies. Immunohistochemical analysis was needed in 24,6% of all cases. The

number of tumors without pathohistological diagnosis, although relativly low (3,4%), could be lowerd with better radiological diagnosis, targeted biopsies, use of ex-tempore biopsies and immunohistochemical methods.

CONTACT: almir.hurem@gmail.com

The safety of spinal anesthesia

Edin Begić1, Amra Dobrača2, Nedim Begić[1], Haris Bradarić[1]
1.University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina
2.University of Sarajevo, Faculty of Pharmacy, Sarajevo, Bosnia and Herzegovina

Spinal anesthesia is the fastest and most reliable form of central neuraxial anesthesia. Injection of local anesthetic into the subarachnoid space occurs return nervous block of front and rear of the roots, which leads to loss of autonomic, sensory and motor activities. It is ideal for lower abdominal, pelvic, perineal and lower extremity surgery. The most common side effects are headache, nausea, vomiting, hiccups, hypotension and bradycardia. It can also lead to a decrease in body temperature as a result of sympathetic blockade and associated vasodilation. Also in the early postoperative period it may cause urinary retention, post-lumbar puncture headache, low back pain, and transient neurological complications. The survey was conducted on 20 patients, in whom spinal anesthesia is administered due to surgical treatment. The study had a clinical, prospective, descriptive and analytical character.

Spinal anesthesia was performed with 27 G needle (0.41 mm), with 0.5% bupivacaine in dose of 15-20 mg. From the studied patients, 19 (95%) were male. Hernia inguinalis was conducted in 9 (45%) patients, in 6 (30%) patients transurethral resection of the prostate (TURP), and in 5 (25%) patients sine pilonidalis. Tension value is continuously recorded, and in 2 (10%) patients a decline of tension (systolic blood pressure below 90mmHg) was recordedafter 10 minutes. The pulse ranged between 60-80 beats per minute in all patients. In 3 (15%) patients spinal block was not complete. After 12 hours 1 (5%) patient complained about the headache and vomiting. At the site of injection in 2 (10%) patients appeared redness, without infectious process.

As a unique anesthetic technique spinal anesthesia is the fastest and most reliable method of regional anesthesia, with a high degree of success and extremely rare complications.

CONTACT: edinbegic90@gmail.com

Marijuana Treatment of Muscle Spasticity in patients with Multiple Sclerosis

Faris Kadić, Lovre Kršan Milostić
University of Sarajevo, Faculty od Medicine, Sarajevo, Bosnia and Herzegovina

Spasticity refers to feelings of stiffness and a wide range of involuntary muscle spasms (sustained muscle contractions or sudden movements). It is one of the more common symptoms of multiple sclerosis. Spasticity may be as mild as the feeling of tightness of muscles or may be so severe as to produce painful, uncontrollable spasms of extremities, usually of the legs. Spasticity may also produce feelings of pain or tightness in and around joints, and can cause low back pain. Although spasticity can occur in any limb, it is much more common in the legs.

Marijuana is a green, brown, or gray mix of dried, crumbled leaves from the marijuana plant. It can be rolled up and smoked like a cigarette or cigar or smoked in a pipe. Sometimes people mix it in food and eat it. Marijuana can cause problems with memory, learning, and behavior. Smoking it can cause some of the same coughing and breathing problems as smoking cigarettes. Some people get addicted to marijuana after using it for a while. It is more likely to happen if they use marijuana every day, or started using it when they were teenagers.

Studies have shown that smoking marijuana cuts spasticity and pain that's resistant to conventional treatments in patients with multiple sclerosis, although it does have some cognitive effects as well. Spasticity scores on the modified Ashworth scale dropped by an average 2.74 points more with smoked cannabis than with a placebo.

CONTACT: kadicfaris@gmail.com

Long-term outcome of children with antenatal detected malformation of central nervous system in Clinical Hospital Center Rijeka–epidemiological study (2006-2013)

Marija Josipović[1], Vesna Mahulja-Stamenković[2], Igor Prpić[3]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Gynecology & Obstetrics, Rijeka, Croatia
3. University Hospital Centre Rijeka, Department of Paediatrics, Rijeka, Croatia

Congenital malformations of the central nervous system (CNS) are relatively common and as such, a common cause of infant death.

The aim of this study is to present the oucome of children with congenital malformations of CNS in the Clinical Hospital Centre Rijeka during the eight-year period.

During the study period there were 24 506 deliveries with a total of 44 fetuses with isolates or multiple CNS malformation (0.18%). Number of malformations is 46. The most common malformations were: neural tube defects 22/44 (50%), hydrocephalus 8/44 (18.2%), agenesis of corpus callosum 6/44 (13.6%), holoprosencephaly 3/44 (6.8%), Dandy-Walker malformations 2/44 (4.5%) and other malformations 5/44 (11.4%). 18 children (40%) were live births, while medically induced abortion due to CNS malformations was performed in 24 fetuses (54.5%). Two children were stillborn. In 40/44 pregnant women (91%) malformation were detected prenatally and in 28/44 (63.6%) of them, in the period up to 22 weeks of gestation. Long-term outcome was evaluated in the Pediatric Hospital, The Neurological ambulance. In total, 16 of the 18 live births (89%) were observed, while the informations for two (11%) is unknown. Length of opservation averaged for 3.5 years (1-7 years). None of the infants died during the first seven days of life, while within three months, two children died. Normal mental/locomontor development with independence appropriate for age is considered a favorable outcome, and unfavorable outcome is slow mental/locomotor development with enviromental dependency in daily activities. 7/16 (44%) children had a favorable and 9/16 (56%) had unfovarable long-term outcome.

Results indicate good prenatal screening in detecting CNS malformations, but in 36.4% of pregnancies malformation was discovered after 22nd week of gestation. Long-term outcome for most children is unfavorable.

CONTACT: marija.josipovic@foss.hr

Sweet or bitter sting–A case of severe recurrent cytomegalovirus (CMV) encephalitis induced by bee venom application

Nicol Radolović[1], Ingrid Škarpa-Prpić[2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Neurology, Rijeka, Croatia

Apitherapy is an alternative medicine therapy which consists of bee products treatment – honey, bee propholis, royal jelly, and bee sting or bee venom. Like every therapy, it shows its effect also on the nervous system by its mostly positive, but also negative manifestations, especially if used inappropriately.

A case of a 20 year old female patient, who asks for help from a neurologist because of progressive psychomotor slowness, balance and extreme walking difficulties, insomnia and febrility, is portrayed. Routine laboratory serum test values were at a normal level. Intrathecal synthesis of the IgG globulin fluid level was extremely high, with the negative results of the oligoclonal bans.

The magnetic resonance imaging (MRI) of the brain showed an oedema of subcortical brain parts, mainly temporoparietal, with basal ganglia being affected as well as crura pontis. A further extensive medical analysis proved cytomegalovirus (CMV) encephalitis.

Application of a specific therapy led to good recovery of the neurological status, but not good enough recovery, according to the patient's expectations.

Three years later her neurological status suffered another extreme aggravation. The control MRI described multifocal leukomalactic areas which could suggest viral encephalitis recidive, but also energetic metabolism disorder caused by intoxication. Repeated serum and cerebrospinal fluid analysis confirmed that the encephalitis (CMV) recidive was dealt with.

With the goal of searching for a cause of disease recidive, an extensive medical analysis was conducted, which excluded most of the possible causes, as well as the possibility of potential toxic substances application. However, long-term monitoring indicated a clinical radiological paradox. Therefore, a repeated analysis of the hetero-anamnestic and anamnestic data resulted in discovering that the patient has been deliberately applying bee venom for two years.

She was advised to quit the application of the bee venom and her medical treatment has been continued according to the evidence-based medicine. This led to a satisfying but not full recovery of the neurological deficit.

Three years later, the MRI of the brain showed a stationary medical report of the leucomalactic changes.

Based on the clinical picture, the conducted analysis and the long-term monitoring, but mainly on the repeated anamnesis and heteroanamnesis, we believe that in the case of this patient the encephalitis (CMV) recidive was induced by excessive application of the bee venom.

CONTACT: duga22@gmail.com

Surgical treatment of brain edema in patient with acute viral encephalitis

Arnela Mujagić[1], Ibrahim Omerhodžić[2], Elzana Karahodžić[1], Selma Pašagić[1]
1.University of Sarajevo, Faculty of medicine, Sarajevo, Bosnia and Herzegovina
2.University Hospital Centre Sarajevo, Department of Neurosurgery, Sarajevo, Bosnia and Herzegovina

BACKGROUND: Encephalitis is an acute usually diffuse inflammatory process involving the brain.

Viruses are the most common cause of encephalitis and disease usually occurs in alteration of the normal immune system.

The most commonly treated viral encephalitis has incidence of 1/ 1,000 000 cases per a year. In the United States of America there are 2000 new cases every year.

OBJECTIVE: In this case we present a 20-year-old female patient with symptoms of acute inflammatory disease of the brain and subsequent quantitative deterioration of consciousness. Initial symptoms appeared a few days before hospitalisation with the classical clinical features. A computed tomography (CT) scan of the brain showed hypodense right hemisphere of cerebrum with incipient signs of bleeding and signs of compression on the lateral ventricle. Serological testing for Herpes Simplex Virus (HSV) demonstrates positive IgG (1158). During conservative treatment at the Department for infectious diseases patient shows progressive deterioration of consciousness accompanied by bradycardia. Control CT scan was performed and revealed deterioration which correlates with the clinical presentation. Neurosurgeon decided to do surgery.

METHODS: Decompressive craniectomy was done and dura was opened and closed with lyodura to improve more space for oedematous brain. At the clinical level evident positive effect of surgery. Postoperative MRI findings demonstrate satisfactory results. Herpes encephalitis was confirmed. The treatment was continued according to the protocol of infection therapy. Upon recovery of the patient, as planned, it has been done a new neurosurgical intervention; bone was placed back into its position.

RESULTS: One year after surgery the patient is conscious, communicative, oriented, walking alone, with no obvious neuro deficits or clear lateralisation. In the psychological status there are rare outbursts of aggression and short-term episodes of amnesia(up to 15 sec).

CONCLUSION: Decompressive craniectomy as a modality of treatment of brain edema, which in our case has given an unusually good result, can be a key treatment option and reason for patient survival.

CONTACT: arnelamujagic@gmail.com

Hypertension as risk factor and cause of death from stroke in Eastern Croatia

Andrijana Kolar[1], Romana Perković[1], Marina Babić[1], Kristina Kralik[2], Silva Butković-Soldo[3]
1.University J.J.Strossmayer of Osijek, Faculty of Medicine, Osijek, Croatia
2.University J.J.Strossmayer of Osijek, Departement of biophysics, medical statistics and medical informatics, Osijek, Croatia
3.Clinical Hospital Osijek, Departement of Neurology, Osijek, Croatia

INTRODUCTION: Hypertension is the highest risk factor in stroke occuring. Around three thirds of all patients which have had stroke, simultaneously have arterial hypertension. Stroke is third most common cause of death after coronary heart disease and carcinoma in world.

AIM: Make a connection between hypertension and stroke in Eastern Croatia, as well as to determine differences between sexes in presence of hypertension and differences in mortality of patients with hypertension in stroke.

METHODS: Research was conducted in Departement of neurology in Clinical Hospital Center Osijek. With data analysis from anamnesis of patients hospitalized because of stroke in year 2011, we researched presence of hypertension in patients with stroke.

RESULTS: Research was conducted in 732 patients, from which was 51,1% men and 48,9% women. Middle age of patients was 76 years. All patients have had stroke, 15,8% patients died, 17,3% of men and 13,7% women respectively. Hypertension have had 85% patients, from which was 49% of women and 51% of men, which is 84% of all men and 86% of all women who have had stroke. 14,5% patients with hypertension did not survived, which is 56% of men and 44% of women, that is 15,9% of all men and 13% of all women who has a stroke.

CONCLUSION: Hypertension patients are represented in 85% of all number of patients, which confirms that high blood pressure is risk factor in occurance of stroke. Men get stroke in younger age then women. Stroke has became big public health problem in Croatia and there is need to intensify prevention measures and perform better control in hypertension patients.

CONTACT: andrijanakolar.kolar@gmail.com

Predictive factors in the outcome of spontaneous intracerebral hemorrhage

Anamarija Jovanovska, Elena Gjorchevska, Elma Kandić, Ilija Pangovski, Vesna Velik Stefanovska
Ss. Cyril and Methodius University of Skopje, Faculty of Medicine, Skopje, Macedonia

INTRODUCTION: Spontaneous intracerebral hemorrhage (SICH) is a non-traumatic bleeding in the brain tissue. Cerebrovascular damage of small arteries and arterioles due to chronic hypertension is recognized as the most significant cause of this condition.

AIM: To analyze the potential predictive factors in the outcome of SICH.

MATERIALS AND METHODS: In an analytical prospective 12 months study in 2013, 70 patients on treatment for SICH at the Clinic of Neurosurgery in Skopje were analyzed. Patients were divided into two groups related to the presence of risk factors. The first group included 38 patients with hypertension as a single risk factor. Second group included 32 patients with multiple risk factors. Data regarding socio- demographic and clinical characteristics were collected from the medical records. Descriptive statistics as well as Chi-square test were used for data analysis.

RESULTS: Out of all patients in the first group, 66% had lobar hemorrhage, 18% had basal ganglia hemorrhage, 16% had intraventricular hemorrhage and 71% had altered consciousness. Ten patients (26%) were treated with surgical method. The survival rate was 82%. From the patients in the second group, 81% had diabetes mellitus, 46% were smokers, 31% had lipidemia, 22% were constant alcohol consumers, and all of them had hypertension. Out of 32 patients in this group, 32% had lobar hemorrhage, 32% had intraventricular hemorrhage, 22% had basal ganglia hemorrhage, 14% were patients with intraventricular plus lobar hemorrhage and 84% of them had altered consciousness. Ten patients (31%) were treated with surgical method. The survival rate in this group was 34%. Between the two groups there was a significant difference due to the survival rate Chi - square=16.13 df=1 p=0.00006 [OR=0.12 (0.03<OR<0.40) CI 95%];

CONCLUSION: SICH patients with only hypertension as a risk factor had lower risk of death in comparison with the ones with multiple risk factors.

CONTACT: anamarija.jovanovska90@gmail.com

Brain metastases – incidence and primary localisation

Asja Muratović, Azra Husić, Aida Avdić, Amar Terzić, Mirza Gavranović
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Brain metastases are the most common intracranial tumors among adults and the most common complication of systemic malignancy. with improved survival of cancer patients, rising the incidence.

AIM: The aim was to establish the frequency and the origin of the metastatic deposits in the brain, from January 2010 to the end of 2014. As well as to determinate the age and sex of the patients related to the time of the diagnosis.

MATERIAL AND METHODS: This research encompasses the data obtained from the archives of the Pathology Department as well as the Neurosurgery Department of the UKC Tuzla, from where the basic anamnesis data (such as age and sex) have also been retrieved.

RESULTS: Out of 493 diagnosed tumors, 36 were brain metastases (7.3%) with equally presence in both sexes, 18 both (1:1). The majority of these cases were diagnosed in patients older than 50 years. The most common origin of brain metastasis were lung (38.89%), followed by breast carcinoma (13.89%), intestine (13.89%), melanoma (13.89%), lymphoma (8.3%), transitional epithelium (8.3%) and urinary tract (2.8%).

CONCLUSION: As an increasingly important cause of morbidity and mortality in cancer patients, the brain metastasis presents a therapeutic challenge. The most frequent primary origin are lungs among men and ovary among women. Early diagnosis and aggressive treatment of brain metastases may result in remission of brain symptoms and may enchance the quality of patient's life and prolong survival.

CONTACT: asja.muratovic@gmail.com

Neurolinguistic research – sign language aphasia

Luka Alagić
University of Zagreb, Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia

Sign language is a system of visual signs whose linguistic parameters such as hand shapes, place of articulation, type of movement and palm orientation form concepts, or the meaning of words, thus creating a language with its own phonology, morphology, syntax, semantics and pragmatics. Sign language use also the upper part of the body and torso whose movements come together with head and face movements to create facial grammar.

Neurolinguistic research try to link specific areas and regions of the brain with language comprehension, production and acquisition. Sign languages give rise to the question of which area of the brain is responsible for processing sign languages, specifically do the neurolinguistic areas of sign languages differentiate from those of spoken languages.

Studies show that sign languages are indeed languages. Moreover, the majority of brain functions active in spoken languages are also active in sign languages. However, some of the areas underwent a functional reorganization enabling and enhancing the processing of sign language.

Damage to the perisylvian region in people who use sign language leads to sign language aphasia. The most common symptoms of such an aphasia (depending on location and extent of damage) are similar to Broca's or Wernicke's aphasia; however, certain changes in functioning are characteristic for only these types of aphasia.

This paper summarizes specific neurolinguistic characteristics of sign languages and points to characteristic language changes caused by brain damage in patients whose primary form of communication is sign language. All these evidence support the thesis that sign languages are not manually coded spoken languages, but complex autonomous language systems with complete and specific structure and rules.

CONTACT: alagic.luka@gmail.com

Incidence of astrocytoma in younger age in Tuzla Canton

Aida Avdić, Asja Muratović, Azra Husić, Mirza Gavranović, Amar Terzić
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Astrocytoma is CNS tumor originating from the glial cell, astrocyte. They are classified according to microscopic characteristics (cellularity, pleomorphism, mitosis, necrosis, vascular proliferation).The first group are low grade -LG astrocytoma (G1 and G2) and the second is astrocytoma of high grades - HG (G3 and G4). Those tumors are more common in adults particularly in the cerebrum, while in children are mostly originate in cerebellum.

AIM: The aim of the work is to establish the incidence of astrocytoma in younger age.

MATERIAL AND METHODS: This research encompasses the data obtained from the archives of the Pathology Department and Neurosurgery Department of the University Clinical Center Tuzla, from where the basic anamnesis data(age and sex) have been retrieved. The research retrospectively shows astrocytoma diagnosed in the period of 2010–2013 in children and young adults (from birth to 35 years).

RESULTS: Out of of 493 diagnosed tumors, 13 were astrocytoma (11 HG and 2 LG). Out of 11 HG tumors, 6 cases were G3, while 5 cases were G4. Astrocytoma in general as well as HG tumors were more common in female (69.23%). Regarding the age, 2 astrocytoma were diagnosed in children at age 5 and 16, while the rest were diagnosed in the life span between 20 and 35.

CONCLUSION: Although high grades astrocytoma are rare in younger age, it is important to think about them because of the nature of the tumor. It is possible that they represent group with a specific molecular basis and growth mechanism.

CONTACT: avdicaidaaa@gmail.com

Cardiomyopathy as a risk factor and cause of death from stroke in Eastern Croatia

Nives Šalek[1], Romana Perković[1], Marina Babić[1], Sofija Turjak[2], Silva Butković-Soldo[3]
1.University J.J.Strossmayer of Osijek, Faculty of Medicine, Osijek, Croatia
2.University J.J.Strossmayer of Osijek, Faculty of Economics, Osijek, Croatia
3.Clinical Hospital Center Osijek, Departement of Neurology, Osijek, Croatia

INTRODUCTION: Heart diseases as cardiomyopathy are one of biggest risk factors in stroke occurence. The cardiomyopathy within the heart cavities creates clots whose parts are in circulation and lead to embolic occlusion of cerebral blood vessels.

AIM: To determine connection between cardiomyopathy and stroke in Eastern Croatia, as well as to determine differences between sexes in presence of cardiomyopathy and differences in mortality of patients with cardiomyopathy in stroke.

METHODS: Research was conducted in Departement of neurology in Clinical Hospital Center Osijek. With data analysis from anamnesis of patients hospitalized because of stroke in years 2010, 2011, 2012 and 2013, we researched presence of cardiomyopathy in patients with stroke.

RESULTS: Research was conducted among 1189 patients with stroke, from which was 50,4% (599) men and 49,6 % (590) women. From total number of patients, 23.1% had cardiomyopathy. From total number of men, 5.51% died with cardiomyopathy, and 12.35% died without cardiomyopathy. From total number of women, 11.53% died without cardiomyopathy, and 9.15% died with diagnosed cardiomyopathy.

CONCLUSION: Our findings indicate that the mortality rate of patients with stroke and cardiomyopathy is 31.6%, whereas in patients without cardiomyopathy is 15.1%. 16.5% is higher mortality rate in those patients with stroke and cardiomyopathy. Cardiomyopathy is more present in female patients and is 28.1% compared to 18.2% in male patients and there is a difference of 10% in favor of women. Mortality rate from cardiomyopathy and stroke by gender is a difference of 4%. The presence of cardiomyopathy has worse consequences for female patients compared to male patients.

CONTACT: salek.nives@gmail.com

Marking risk factors in 50 patients with a TCD verified diagnosis of Vertebrobasilar insufficiency hospitalized at the Neurology Clinic KCUS, June-October 2013

Venesa Škrijelj, Vildana Huskić, Azra Kadić, Emina Hrvat
University of Sarajevo, Faculty of Medicine, Sarajevo, Bosnia and Herzegovina

Vertebrobasilar insufficiency (VBI) is a hemodynamic posterior circulation transient ischemic attack (TIA) caused by decreased blood flow in the posterior circulation of the brain which is fed by two vertebral arteries that join to become the basilar artery.

Transcranial Color Doppler (TCD) is noninvasive diagnostic device that measure the velocity of blood flow of the cerebral vessels.

The risk factors which contribute to VBI are age, sex, hypertension, smoking, diabetes, dislypidemia, obesity, stroke history and others.

Our goal is to mark risk factors within patients with VBI in order to decrease symptoms and incidence.

A retrospective study was carried out on the 50 patients with TCD verified diagnose of VBI (data taken from medical histories) from june to october 2013. at the Clinic of Neurology, Clinical Center University of Sarajevo.

Of 50 patients with VBI, 19(38%) are men and 31(62%) are women, divided in 4 age groups with majority of 46-65 years old – 26 (52%) patients. Our results show that hypertension as risk factor was present in 40 (80.0%) patients with VBI, in relation to gender in 13 (65.0%) men and 27 (90.0%) women. DM was presented in 18 (36.0%) patients, 7 (36.8%) men and 11 (35.5%) women. Smoking is present in 7 (35.0%) patients, 7 (35.0%) males and 9 (30.0%) women. Hyperlipidemia was present in 23 (46.0%) patients, 9 (47.4%) men and 14 (45.2%) women. 11 (22%) of 50 patients have obesity as risk factor in their medical history. 17(34%) patients have in their medical history post CVI, of which 11 are woman (35, 5%).

In our conclusion, all examined risk factors were found with emphasis on hypertension and obesity. According to these results, our recommendation will be to treat these variable risk factors more effectively in order to decrease symptoms as well as using control TCCD within risk population, non-invasive,useful and promising technique in establishing the diagnosis.

CONTACT: venesa.skrijelj@hotmail.com

The influence of alcohol on the results of IQ tests

Maja Đorđević, Andrej Hladnik
University of Rijeka, Faculty of Medicine, Rijeka, Croatia

In our pilot-study we researched the influence of alcohol the IQ tests results. We tested the group of subjects three times with the blood alcohol concentration of 0‰, 0.5‰ and 1‰. We used three variants of the Wechsler intelligence test. The control group, witch was not under the influence of alcohol, solved the same tests.

The results of the control group were the same on all three tests and scored average based on the population scale without a significant deviation in the results of the three tests, as we expected. On the other hand, the results of the research group were also average; but, the whole research group which took the test with the blood alcohol concentration of 0.5‰ scored better than in the first test without the consumption of alcohol. To our surprise, all the research group scored better results on the third test then in the first two, with the blood alcohol concentration of 1‰. Although there is no statistically significant difference between the results of the first two tests and the second two, there is statistically significant difference between the results of the first and last test. The results are startling, as we expected that the subject, when drunk, will give at least the same results as on the first test (while sober) or the worst results. We believe that the results came so because alcohol had a relaxing effect and made the subject not to ponder on the answers and the outcome of the test, moreover they answered the question with self-confidence.

Although our study does not show that alcohol has an impact on the intelligence level, it definitely indicates the effect of alcohol on cognitive abilities and on the emotional state that both influence IQ test solving. In other words, a determined concentration of alcohol does not have a negative influence on the solving of IQ tests.

CONTACT: majarv91@gmail.com

Clinical characteristics and early diagnosis factors for subarachnoid hemorrhage patients in the Tuzla kanton region

Mirza Halilčević, Arnesa Mašić, Valentina Mitrović
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Subarachnoid hemorrhage (SAH) is an urgent state in neurology, with a dramatic clinical display and a high mortality rate.

Goals: To analise the clinical characteristics and risk factors that are important for an early prognosis of subarahnoid hemorrhage in the Tuzla Kanton region.

MATERIALS AND METHODS: The research is retrospective, and medical documentation has been analised for patients that have been treated on the Neurology Clinic JZU UKC Tuzla, in the period of 01.01.2011. until 30.12.2013. The statistical analasys has been completed by using statistical software IBM SPSS Statistics V21.

RESULTS: In the stated period a total of 102 patients with subarachnoid hemorraghe have been treated (44/43,1% male; 58/56,9% female), with an average age of 59,6 years (± SD 13.1) for male, and 59,9 years (±SD 13.2) for female. The incidence in the population is 7.123 in 100 000. The largest number of patients belongs to an age group above 60 years old (47/46,1%). Two thirds (67,3%) of the patients with SAH have been taken the the hospital the same day as the simptomes occured. 77,4% have survived the first 7 days, and there is no significant diference between genders. Patients with consciousness disorder and a higher Hunt-Hess score had a significantly higher mortality rate $p<0,000$ ($X^2=30,29$), while vomiting and hypertension have not had a significant affect on the mortality rate. By comparing the computerised tomography (CT) findings, patients with both subarachnoid and intracerebral hemorraghe had a lower survival rate ($p<0,009$, $X^22=9,403$). Angiography has been done for 81 (79,4%) patients, and for 54 (52,9%) of them the reason of the hemorraghe has been an aneurism.

CONTACT: halilcevicmirza@yahoo.com

Social adolescent habits and epilepsy

Mia Lončar[1], Igor Prpić[2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Paediatrics, Rijeka, Croatia

INTRODUCTION: Primary Generalized Epilepsies (PGE) are an epilepsy syndromes of unknown cause.Typical syndromes for adolescent age are: Juvenile myoclonic epilepsy, juvenile absence and epilepsy with generalized tonic-clonic seizures. First onset epileptic seizure is related to provoking factors such as lack of sleep, alcohol consumption, stress and exposure to flickering light.

AIM: The aim of this study was to determine whether different adolescent social habits influence earlier onset of PGE. The incidence and mean age of first epileptic seizure in adolescents with PGE was explored within two different time periods.

MATERIALS AND METHODS: Retrospectively medical data of adolescents hospitalized on Pediatric Clinic, University hospital centre Rijeka with newly diagnosed PGE were analyzed. Diagnosis was confirmed according to standardized criteria.. In the period from 1996. to 2000. there were 75 patients – 1st. period (P1), while from 2008. to 2012. – 2nd. period (P2) were 76. Provoking factors were obtained based on (hetero)anamnesis from medical data base and were defined as lack of sleep, alcohol consumption and others. Data were analysed using t-test and chi-square test.

RESULTS: There has not been found any significant difference in gender (P1- M:F = 32:44 / P2- M:F= 35:40) or incidence rate of PGE (P1:P2 = 75:76).

Mean age of patients in P1 was 15,1(± 2,65) years and in P2 14,7(± 5,73) years, which was not significant. Statistically significant more adolescents in P2 were exsposed to provoking factors then in P1, 27(36%) vs 15(19%), respectively.

CONCLUSION: It is evident trend of decreasing mean age of PGE incidence as well as significantly more frequent provoking factors for the first epileptic seizure in P2 than P1. Those differences can be attributed to more common sleep lacking or/and higher alcohol consummation due to changes in social habits of adolescents in recent years.

CONTACT: mia_loncar@yahoo.com

Case study: Communication of a person with Wolf–Hirschhorn syndrome

Petra Horvat, Dora Cvelbar
University of Zagreb, Faculty of Education and Rehabilitation Sciences, Zagreb, Croatia

Wolf – Hirschhorn syndrome (WHS), a condition first described in 1965, is in the most cases caused by a de-novo deletion on chromosome 4. It has an estimated incidence of one in 50 000 births. Some research has pointed out that developmental outcome in WHS depends on the size and location of the deletion, but these are not the only factors. Patients with WHS show abnormal craniofacial features, hypotonia, growth retardation, congenital heart malformations, epilepsy, delayed psychomotor development, learning difficulties, communication, language, and speech disorders.

We report a case of a girl born on June 27, 2007 who has been diagnosed with WHS at the age of 2. She shows symptoms of motor and sensory impairments, intellectual disabilities, vision impairment, epilepsy, gastroesophageal reflux disease and abnormal EEG and MRI results. She had some operations (e.g. on cleft palate).

Due to her difficulties, she is unable to communicate orally, so she uses gestures. Her comprehensive abilities are more developed than language production skills. The role of the speech and language pathologist in this case is to enable functional communication with the environment. In order to establish communication needs and facilitate communication development, augmentative and alternative communication (AAC) is used in therapy. AAC includes use of gestures, vocalization, visual cards, concretes, computer or iPad. The aim of the therapy is to activate the girl in communication, i.e. encourage her to ask/ refuse objects or activities, to comment etc.

This case is yet another proof of how important multidisciplinary approach is. It is important to mention the contribution of different branches of medicine in the treatment of many difficulties in this population. Speech and language therapy and early intervention are also significant because of their efforts in establishing complex communication needs of this population and stimulation of their cognitive, communication and other abilities.

CONTACT: petra.horvat9@gmail.com

Poster Session

Nucleolar protein 2 is expressed in the adult mouse brain

Matea Kolačević, Nina Vrsaljko, Nina Kosi, Srećko Gajović, Dinko Mitrečić
University of Zagreb, Faculty of Medicine, Croatian Institute for Brain Research,
Laboratory for Stem Cells, Zagreb, Croatia

Nucleolar protein 2 (Nop2, Nol1, p120) is a gene encoding nucleolar-specific protein with RNA-binding function. Until now, Nop2 expression has been described in highly proliferative tissues with a rapid cell cycle, including malignant neoplasms in which stronger Nop2 expression is related to poor prognosis. The main goal of this work was to investigate whether adult mouse brain expresses Nop2, which could suggest existence of cells exhibiting active mitosis.

Transgenic mouse expressing Nop2 coupled with beta-galactosidase was used. After isolation, fixation and freezing, 20μm thick frontal and sagittal sections of mouse brain were obtained using criotome. Expression of Nop2 was visualized in Nop2 - heterozygous animals by X-gal staining and confirmed by immunohistochemistry using antibodies against beta-galactosidase and Nop2, both in wild type and Nop2 heterozygous animals.

Positive activity of β-galactosidase in X-gal treated sections and a positive signal using antibody against beta-galactosidase confirmed our hypothesis that Nop2 is present in adult mouse brain. Double immunohistochemistry with Nop2 and Map2 and Nop2 and NeuN antibodies revealed a highly surprising finding that majority of Nop2 positive cells were neurons. Double immunohistochemistry with Nop2 and Gfap revealed that some Nop2 positive cells were astrocytes.

Our finding that adult brain neurons which are terminally differentiated cells express Nop2 is significantly changing a current view of this gene function. Apart from highly proliferative tissues, Nop2 could as well be needed in cells with a high synthesis of proteins. Following this finding, we propose that Nop2 could be used as a marker of so far undefined subpopulations of cells that have a potential role in the regeneration of nerve tissue.

CONTACT: mateaoo@gmail.com

Chronic subdural hematoma in Zenica-Doboj Canton

Lamija Pojskić, Aida Ribić, Ema Tahto
University of Sarajevo, Faculty of medicine, Sarajevo, Bosnia and Herzegovina

INTRODUCTION: Chronic subdural hematoma(CSH) is often condition in neurosurgery and neurology. It usually occurs in older people and alcoholics, who often fall and then experience a head injury. Frequently it's minor trauma,and symptoms gradually develop during 4-6weeks.Neurological findings are often normal,and most common neurological deficits are latent hemiparesis and epileptic seizure.Recurrence rate is high,and control is common after 3-4 weeks after surgery

AIM: Aim of this study is epidemiological analysis of operatively treated patients(pts)with CSH in Cantonal Hospital Zenica(KBZ) in five years period in relation to sex,age,mechanism of injury, treatment outcome.

METHODS: Retrospective study in which 23 operatively treated pts with CSH were analyzed at Department of neurosurgery KBZ.Pts were treated in period from 2006-2011. Followed parameters were sex,age,correlation with mechanical trauma and surgery outcome. Patients histories of disease and operative findings were our main source of information.

RESULTS: From 23pts 74%were male,26%female. Pts were from 38-89 years old,with medium age 71.2yrs.52% experienced head trauma in last 3 months,9%denied trauma,in 31% there weren't any data about injury,1pts(4%)developed a hematoma due over-shunting at ventriculoperitoneal shunt implanted in hydrocephalus,and 1pts developed CSH postoperatively(intraventricular ependymoma). Glasgow Coma Scale(GCS) during admission in hospital was in range from8-15.Medium value was 12.8. 9%pts had GCS8,and 4% had GCS10 and 11.Score12 and 13 had 17%pts,score 14 32%pts and score 15 had 17%pts. Treatment outcome is valued through Glasgow Outcome Scale(GOS). Medium value of GOS was 3.8.Complete recovery was noted in 31%.14pts had on discharge neurological deficit,from which 43% had GOS score4 and 17% score3. 2pts had lethal outcome(GOS1). 17%pts had bilateral hematoma,and reoperation was performed in 4pts (17%).

CONCLUSION: The frequency of CSH is higher in elderly people, predominantly males.In more than half of patients there is information about head injury in previous 3months while the third of pts had no data in history about injury.Medium value of GCS is 12.8,and of GOS 3.8.Our study in their characteristics and conclusions corresponds to the data found literature.

CONTACT: lamija.pojskic@gmail.com

Nontraumatic acute subdural hemorrhage treated at the Clinic for Neurosurgery, CHC Rijeka

Petra Novak[1], Barbara Kolbah[2], Darko Ledić[2], Vukosava Musulin Tijanić[2], Petar Marčinković[3]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University Hospital Centre Rijeka, Department of Neurosurgery, Rijeka, Croatia
3.Clinical Hospital Centre 'Sestre milosrdnice', Zagreb, Croatia

Intracranial hemorrhage (ICH) is the pathological accumulation of blood within the cranial vault.

By localization, it can be divided into epidural, subdural, subarachnoid, intracerebral and intraventricular hemorrhage. ICH can be also classified as acute, subacute and chronic. It can be caused by brain trauma or spontaneous.

Subdural hematoma (SDH) is a collection of blood between the dura mater and the arachnoid membrane. Usually it is the result of tears in bridging veins which cross the subdural space. In most cases there is trauma involved.

In acute subdural hematoma, the symptoms usually appear soon after a injury rangeing from minutes to within 24-48 hours.A wide range of neurological disturbance is possible, from confusion to loss of consciousness and coma.

The aim of our study was to verify the clinical impression that in cases of acute subdural hematoma without a clear head trauma many patients are taking anticoagulant therapy.

We analyzed all patients with subdural hematoma treated at our hospital during 2011 and 2012. Among the 82 such patients, 18 patients had no clear history of trauma. Among the 18 patients, 7 were taking an anticoagulant therapy. When this data was analyzed statistically a correlation was found between anticoagulant therapy and spontaneus SDH.

CONTACT: novak.petra55@gmail.com

The effects of combined gabapentin and alcohol treatment on HEK 293 cell culture

Marina Morić, Boris Kuzman, Marina Malešević, Dubravka Švob Štrac
Ruđer Bošković Institute, Laboratory for Molecular Neuropharmacology, Division of Molecular Medicine, Zagreb, Croatia

Gabapentin, an analogue of GABA, was originally developed to treat epilepsy. However, this anticonvulsive drug demonstrated some positive effects in the treatment of alcohol addiction and withdrawal. Recent reports also indicated potential neuroprotective and antioxidant effects of gabapentin. Although different receptors are suggested to be implicated in its action, the precise mechanisms are still not known.

As neurotoxic consequences of high alcohol consumption are common, the aim of our study was to investigate possible protective ability of gabapentin in alcohol-induced citotoxicity.

Human embryonic kidney (HEK) 293 cells, non-transfected and stably transfected with α1β2γ2S GABAA receptors, were exposed to various concentrations of alcohol and gabapentin for different periods of time. A trypan blue exclusion assay was performed to assess cell viability. Membrane preparations of stably transfected HEK 293 cells treated with 100 mM alcohol in combination with 1 μM gabapentin for 96h were used in [3H]flunitrazepam binding studies to determine the number and affinity of benzodiazepine binding sites, and their allosteric interactions with GABA binding sites.

Observed cytotoxic effects of 100 mM alcohol were reduced by simultaneous 1 μM gabapentin treatment only in HEK 293 stably transfected with α1β2γ2S GABAA receptors. On recombinant GABAA receptors alcohol induced up-regulation of benzodiazepine binding sites without affecting their affinity. In the same time, alcohol decreased GABA-induced potentiation of benzodiazepine binding, suggesting allosteric uncoupling of receptor binding sites. Simultaneous gabapentin treatment did not change the number of benzodiazepine binding sites, but restored normal functional interactions of GABAA receptor binding sites.

Our findings support the hypothesis that gabapentin exert at least some of its actions via GABAA receptors. However, further studies are necessary to elucidate whether functional recovery of GABAA receptor binding sites following gabapentin treatment is related to its protective effects against the alcohol-induced cytotoxicity in HEK 293 cells.

CONTACT: mmmmoric@gmail.com

The association of Ser310Ala functional polymorphism in the GluR7 glutamate receptor subunit gene with the age of onset of alcohol abuse in alcohol-dependent patients

Boris Kuzman, Marina Morić, Gordana Nedić Erjavec, Matea Nikolac Perković, Korona Nenadić Šviglin, Fran Borovečki, Dorotea Muck-Šeler, Nela Pivac, Dubravka Švob Štrac
Ruđer Bošković Institute, Laboratory for Molecular Neuropharmacology, Division of Molecular Medicine, Zagreb, Croatia

INTRODUCTION: There is accumulating data suggesting an involvement of glutamate in the acute and chronic effects of alcohol, including dependence and withdrawal, and glutamatergic system is emerging as potential target for alcoholism treatment. Recent studies have suggested an association of ionotropic glutamate receptor genes with alcohol dependence.

PURPOSE: The aim of this study was to examine the association of Ser310Ala functional polymorphism (rs6691840) in the GluR7 glutamate kainate receptor subunit gene (GRIK3) with the development of alcoholism. New insights into the genetic background of alcohol addiction could help identify individuals with high risk of alcoholism development, which would contribute to the prevention as well as alleviation of the consequences of this complex disorder.

MATERIALS AND METHODS: The study included 275 alcohol-dependent patients and 208 healthy subjects. Possible differences in the frequency of GRIK3 genotypes and alleles between subjects of different gender and smoking status, as well as between alcohol-dependent patients stratified according to aggressive and suicidal behavior, onset of alcohol abuse and type of alcoholism according to Cloninger's classification were also studied. Genotyping of Ser310Ala polymorphism (rs6691840) in the GRIK3 gene was performed by using TaqMan Real-Time allelic discrimination technique after extraction of DNA from the whole blood with a salting out procedure. Allele and genotype frequencies in the control and alcohol-dependent subjects were compared using $\chi 2$ test.

RESULTS: The results demonstrated lower frequency of homozygous CC genotype in patients who started abusing alcohol before 25. years of age in relation to alcohol-dependent subjects with the late onset of alcohol abuse.

CONCLUSION: The results have provided supporting evidence for the association of the GRIK3 gene polymorphism (rs6691840) with the age of onset of alcohol abuse in patients of Croatian origin. Further studies are needed to elucidate the role of GRIK3 gene in the development of alcohol dependence.

CONTACT: borisokuzman@gmail.com

Incidence of hypoglycemia in hypertrophic newborns of non-diabetic mothers

Sabrina Zulčić[1], Samra Pajazetović[1], Semra Pajazetović[1], Nenad Lazić[1], Jasenko Radović[1], Emir Tufekčić[1], Fahrija Skokić[2], Selma Muratović[2]
1.University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
2.University Clinical Center Tuzla, Department of Paediatrics, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Hypertrophic newborns are considered as a risk group for development of hypoglycemia. Brain function depends on glucoses and glucoses intake in brain cells is dependent on concentrations in blood. Exactly that is the reason why hypoglycemia is first manifested as a disorder of brain functions.

GOALS: In our study we wanted to determine the frequence of hypoglycemia in hypertrophic newborns according to sex, gestational age, birth weight, length and time of appearance; risk factors from the side of the mother and the newborn for the occurrence of hypoglycemia in hypertrophic newborns and influence of hypoglycemia on perinatal outcome in these newborns.

PARTICIPANTS AND METHODS: Retrospective study was performed on Department for newborns at the Clinic for Gynecology and Obstetrics in Tuzla, in time period from year 2010 until year 2011. In this researche were incuded all newborns with high birth weigth (>4000g), both sex, from single-fetus pregnancy. These terms furfilled 890 newborns. In 133/890 (14,9%) newborns glucoses blood concentration was controlled during the first days of life. Control group was in-term eutrophyc newborns in the same time period, both sex and birth weight from 3500 till 3999 grams (n=50).

RESULTS: Repetitive hypoglycemia had 30 (22,6%) of hypertrophyc newborns with domination of male sex (70%) and most frequente occurrence in the first day of life (81,2%). Hypertrophic newborns had statisticly significant lower levels of glucoses in blood in regard to eutrophyc newborns (mean value was 2.8±1.1 mmol/L). 46.6% of hypertrophyc newborns suffered from intrapartal asphyxia which is statisticly more frequente in regard of hypertrophyc newborns without hypoglycemia. 63,3% of newborns with hypoglycemia and 6.8% without had unfavorable perinatal outcome. Analyzed factors from the side of mother and the newborn did not showed any statistical validity in prediction of hypoglycemia in hypertrophyc newborns.

CONCLUSION: Hypertrophyc newborns are considered as a risk group for development of hypoglycemia and should be subject of investigation of glucoses level during the first day of life.

CONTACT: sabrinazulcic@hotmail.com

Guillain-Baree syndrome: Affection of cranial nerves and basic clinical characteristics

Emir Bećirović[1], Lejla Mazić[1], Amila Pjanić[1], Osman Sinanović[2]
1.University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina
2.University Clinical Hospital Center Tuzla, Department of Neurology, Tuzla, Bosnia and Herzegovina

INTRODUCTION: Guillain–Baree syndrome (GBS) or Polyradiculoneuritis acuta is acute inflammatory demyelinating simetric polyneuropathy with, still unknown etiology and pathogenesis. It can be discovered in every age, although incidence is increasing with ages (it is most common in age of 50 to 74 year old). Men are more affected with this disease than women. In classical clinical picture there is progressive weakness first in lower limbs and after that in upper limbs with or without sensory disfunction. Weakness develops acutely and progresses over days to weeks. Affected cranial nerves are relatively common mostly VI and VII cranial nerves,followed by XII, V, IX and X cranialn nerves.

OBJECTIVE: The main objective of this work is to show main clinical manifestations of the Guillain-Barre syndrome in patients who are hospitalized on the Clinic for neurology at University Clinical Center Tuzla in the period between 2011-2013. Main focus is on commonly affected cranial nerves.

SUBJECT AND METHODS: For this purpose we analysed medical hystories of the patients with Guillain-Baree syndrome in already mentioned period. From over 4911 hospitalised patients, 18 of them had GBS (0,36 %).

RESULTS: From a total of 18 patients with GBS (8 women, 10 men), eight of them had cranial nerves affection (44.4 %), 4 women and 4 men. Of the total number, 11 patients were aged over 40 (61.1 %). The same number of patients stated upper respiratory infection, sensibility failure was present in 55.5 % of patients by type 'gloves and socks', 11.1% of patients had non-specific hypoesthesia, and 55.5 % of patients have discussed interference with urination, while 22,2 % of patients had interference with breathing. Four patients (50 %) had affection of only one cranial nerve (II, V, VIII, IX), and the other four had affection of many cranial nerves (III, IV, V, VI, VII, IX, X).

CONCLUSION: The three-year period (2011-th– 2013-th) at the Department of Neurology, Clinical Center Tuzla hospitalized 18 patients with GBS (0.36 %), and involvement of cranial nerves was present in 44.4 % of patients, while a half of them was affected only one cranial nerve (II, V, VIII, IX).

CONTACT: becirovic.emir@live.com

Antiphospholipid syndrome with neurological manifestations

Lejla Mazić, Emir Bećirović, Amila Pjanić
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

The main purpose of this work is to show a detailed description of antiphospholipid syndrome and to define the role of antiphospholipid antibodies in the pathophysiological mechanisms of neurological manifestations. The syndrome was first disclosed in 1983. year by Graham Hughes. Today, 30 years after the discovery of this syndrome, neurological manifestations are recognized as one of the most important and most common aspects of the antiphospholipid syndrome. This is a non-inflamatory, autoimmune disease in which there is an increased risk of thrombosis, where such complications may develop cerebral ischemia, the cause of a large number of neurological symptoms depending of obstructed vessel. Ischemic stroke and transient ischemic attack are the most common manifestations of venous thrombosis. Other clinical manifestations includes: migraine, epilepsy, headache, multi-infarct dementia, myelopathy, congenital dysfunction, chorea, idiopathic intracranial hypertension, sensorineural hearing loss, ocular syndromes. Numerous studies prove the hypothesis that the greater number of neurological symptoms caused by the presence of antiphospholipid antibodies (anticardiolipin antibodies and lupus antibodies) and the changes that occur within the primary and secondary antiphospholipid syndrome. Taking into account the available data, the antibody titar has to be determined in all patients with autoimmune diseases and neuropsychiatric manifestations and in individuals with autoimmune diseases unconfirmed who developed cerebral ischemia, particularly in patients under 40 years of age and in patients with non-clasical manifestations of multiple sclerosis, transverse myelitis. Since that clinical manifestations are very heterogeneous and they often mimic other syndromes most doctors in clinical practice are making real crucial error in the diagnosis of diseases and therapeutic approach. Patients are being subjected to aggressive treatment of steroid drugs and immunosuppressants which also is not effective in preventing the progression of neurological damage. Knowing that patients can be treated only anticoagulant therapy brings fundamental changes in medical practice.

CONTACT: lejla_90.com@hotmail.com

Duchenne and Becker muscular dystrophy: contribution of immunohistochemical analysis in diagnosis

Marin Lakić, Kenan Mulalić, Mirza Mušanović
University of Tuzla, Faculty of Medicine, Tuzla, Bosnia and Herzegovina

Duchenne muscular dystrophy (DMD) and Becker muscular dystrophy (BMD) are X-linked recessive disorders caused by mutations of the DMD gene located at Xp21. In DMD patients, dystrophin is virtually absent; whereas BMD patients have 10% to 40% of the normal amount. Deletions in the dystrophin gene represent 65% of mutations in DMD/BMD patients. To explain the contribution of immunohistochemical analysis in the diagnosis of these dystrophies, we present 5 cases of DMD/BMD with particular features.

All patients were diagnosed in the Clinic for neurology, University clinical center Tuzla, Bosnia and Herzegovina. Patients showed progressive muscle weakness, calf hypertrophy, and elevated serum creatine kinase levels. Routine histological analysis of formaline fixed and paraffin embedded muscle biopsies, stained by H&E, PAS and Masson-Trichrome methods, revealed a dystrophic myopathy in all cases.

Frozen sections of muscle biopsies were analyzed immunohistochemically using three step imunoperoxidase with streptavidine. The mouse monoclonal antibody Dys-1, Dys-2, Dys-3 (against C-terminal, N-terminal and rode domain of dystrophin), mouse monoclonal antibodies against α-, β-, γ- and δ-sarcoglycan, and monoclonal antibodies against merosine and dysferline were used (NovoCastra, Newcastle, UK).

Four patients showed complete absence of dystrophin and normal expression of α-, β-, γ- and δ -sarcoglycans, merosine and dysferline suggesting DMD phenotype. One patients, showed the pattern consisting an irregular Dys-1, Dys-2 and Dys-3 immunoreactivity with preservation of α-, β-, γ- and δ -sarcoglycans, merosine and dysferline, determining a BMD phenotype.

The complete immunohistochemistry analysis with all available anti dystrophin and other antibodies important in muscular dystrophy evaluation, is a useful tool to guide to the correct diagnosis, that include necessary molecular genetic investigations.

CONTACT: m.lakic.du@gmail.com

Libet's experiment

Jurij Dreo[1], Simon Knez[2], Sabina Skubic[2]
1.University Medical Center Ljubljana, Department of Neurology,
Laboratory of cognitive neuroscience, Ljubljana, Slovenia
2.University of Ljubljana, Faculty of Education, Ljubljana, Slovenia

Libet's research named Preparation-to-act Or Intention-to-act, In Relation To Pre-event Potentials Recorded At The Vertex (1983) on readiness potentials is one of the most cited research papers. Libet's experiment showed that unconscious electrical activities in the brain precede conscious decisions. These results proposed a question whether consciousness is a product of brain activity or does consciousness produce brain activity. A controversial topic about free will and mindbody problem was raised. His results could be interpreted in a way that conscious will is an illusion, and that actions are initiated by neural processes not under conscious control. Many authors replicated the experiment or used his metodology or results in their researches. On the other hand, his experiment was criticized in many perspectives, from metodology to the interpretations of his results.

As Cognitive science students, we are a part of a research in a Laboratory of cognitive neuroscience (Department of Neurology, University Medical Center Ljubljana, Slovenia), which replicated the Libet's research. Our task was to find a general opinion in science on the original paper. For this, we looked through most (75% out of 509) of the available papers from our data that cited Libet's research and assessed them by their agreement and relatedness. We found some interesting correlates.

CONTACT: vbknez@hotmail.com

Acute effect of biologically active substances on human cerebral vessels

Jernej Vrtek
University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia

BACKGROUND: Vascular diseases are a common cause of death and decreased quality of life. Endothelium dysfunction is the first step in their pathology - the pathway that leads to atherosclerosis, stroke, aneurysm etc. Because of the fact that much of the vascular events occur in cerebral vessels and the fact that cerebral vessels have different functional properties in contrast to other blood vessels in the body, we have chosen cerebral vessels as the prime element of our research.

AIM: The goal of our research was to determine the acute effect of several natural compounds. We focused on those that are commonly present in every day nutrition, but their effect is still unknown. We expected to find protective effects on vascular endothelium and its function through relaxational effect on cerebral vessels.

METHODS: We screened 26 compounds on rat aortas, measuring changes in force displacement of aorta rings. Those, that were potentially protective, causing vasorelaxation, were used on human cerebral vessels. We have measured isometric contractile force of the vascular rings and studied the acute effect of increasing concentrations of compounds in the vascular rings precontracted with phenylephrine (protocol 1) and the acute effect of increasing concentrations of compounds in the vascular rings precontracted with phenylephrine and incubated with NOS inhibitor (protocol 2).

RESULTS: Chlorogenic acid, gentisic acid, vanillin, maltol, catehin, ferulic acid, syringic acid and p-hydroxybenzoic acid had acute concentration dependent vasorelaxation on human cerebral vessels. Incubation of human cerebral vessels with the NOS inhibitor resulted in statistically significant reduced vasorelaxation of maltol, vanillin, catehin in concentration of 10μM.

CONCLUSIONS: We have confirmed that some of our chosen natural compounds have vasorelaxant effect. Some act partly through NO synthesis, others with yet not known mechanisms.

CONTACT: jernej.vrtek@gmail.com

Neurocognitive rehabilitation patients after brain trauma

Martina Fišić[1], Tea Haramija[1], Daniela Malnar[1,2]
1.University of Rijeka, Faculty of Medicine, Rijeka, Croatia
2.University of Rijeka, Faculty of Medicine, Department of Anatomy, Rijeka, Croatia

Neurocognitive rehabilitation (NKR) is a multidisciplinary, active and dynamic process which reduces persons disability. It improves cognitive functions; awareness, perception, reasoning, intuition, knowledge, learning, thinking. It is still insufficiently explored area of medicine, which has given us the goal: to present papers and previous studies showing NKR.

Brain trauma affects the patients which leads to numerous of problems related to the overall quality of life, problems functioning in everyday life. Brain trauma affects the emotional, behavioral, sensomotor, cognitive functions of the brain. The loss of cognitive function are commonly manifested as loss of concentration, memory, perception, data processing.

NKR aim is to enable people with brain injury to participate effectively in life. The goals of rehabilitation outcomes must be clearly defined, then they are the central focus of the patient. Is very essential to the patient to have a specified target because it will give better results as opposed to the more general goal. Very important in the rehabilitation of the patient is a 'Theory of control of the patient', which reduces the gap between the current situation and objectives which is crucial in reducing emotional stress. It is also important that the patient participates in setting goals. Patients with memory loss have a problem with remembering targets and they should be motivated to remember their goals. A holistic approach to the patient implies that it makes no sense to separate the cognitive, emotional and social consequences of brain injury. Access takes place through the model hierarchy through phases. One method is the understanding of the injury, very important in the process of rehabilitation is that the patient understands how the injury occurred, what kind of damage works, how the recovery and the consequences can be expected. It is important to increase awareness, self-confidence. In patients with memory loss two methods are used, internal and external. Internal goal is to increase the residual capacity of learning and external methods include aids such as diaries, calendars, reminders, computers.

It is important to start early neurokognitvnu therapy. The best results are visible within two years of traumatic brain injury.

CONTACT: ella1703@hotmail.com

Neuroimaging in childhood headache – physician judgement or parental demands?

Valerija Kočila[2], Tea Ahel[1], Igor Prpić[1], Antun Sasso[1]
1.University Hospital Centre Rijeka, Department of Pediatrics, Rijeka, Croatia
2.University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Headache is the most common neurological disorder in children and adolescent, by the age of 16 years, more than 90% of all adolescents have already experienced at least one episode of intense headache.

The aim is to determine whether there is significant discrepancy between clinical practice and clinical practice guidelines on indications for neuroimaging studies.

We have reviewed the medical records from the past 4 years, of children with chronic daily headache - 241 patients, mean age 11 years; 45.2% boys and 54.8% girls (the Children's Hospital »Kantrida«, Department of Pediatric Neurology). We reviewed MRI/CT scanning indications comparing them to clinical practice guidelines.

All in all brain imaging was performed in 164 (76.3%), MRI (magnetic resonance) in 93 (43.2%) and CT (computed tomography) in 71 (33.0%) patients; 51 (23.7%) patients didn't require neuroimaging. Child's family's insistence/anxiety was reason for MRI/CT in 117 (54.4%) children. Other indications included 21 children under 5 years of age (12,8%), 4 (2,4%) with abnormal neurologic examination, and 22 (13,4%) with associated features suggesting neurologic dysfunction.

Various clinical practice guidelines are developed to avoid overuse of diagnostic techniques for the management of childhood headache. However, in every day's practice, neuroimaging studies are frequently performed in children with headache, based only by parents' demands.

CONTACT: valerija_kocila@hotmail.com

Late-onset depression as a prodrome to Alzheimer's disease: Case report

Mila Prskalo[1], Valentino Rački[1], Daniela Petrić[2]
1.University of Rijeka, Faculty of medicine, Rijeka, Croatia
2.University Hospital Center Rijeka, Department of Psychiatry, Rijeka, Croatia

Alzheimer's disease (AD) is the most common cause of dementia — a group of brain disorders that results in the loss of intellectual and social skills. These changes are severe enough to interfere with day-to-day life. Diagnosing AD in its early stages is difficult. A review of the literature suggests that late-life onset depression may be a part of AD prodrome phase1,2.

We present a case of a 71 year old that started treatment in 2011. for depressive symptoms at the Psychiatric Clinic of University Hospital Center Rijeka. The patient was diagnosed with a depressive episode. Clinical symptoms were dominated by depressive ideas, hopelessness, loss of self-confidence and suicidal thoughts. She was prescribed antidepressive and anxiolytic drugs. She arbitrarily stopped taking the medication six months later. Her son brought her to the hospital in April 2013. because his mother doesn't do household chores, doesn't function, is forgetful and cries a lot. Psychiatric evaluation shows time disorientation, slow responses to questions, depressive thoughts and interpretations, flattened mood.

Mini mental status examination (MMSE) was performed with the score 18. Those results led to the diagnosis of Alzheimer's disease, unspecified F00. Diagnosis was confirmed with a MRI scan in May 2013., which showed initial cortical atrophy. Patient has been given escitalopram, memantine and low dose of risperidone to which she responded well. She regularly takes medication and comes to control visits. She functions independently under her husband's supervision and is currently in remission.

To conclude, we emphasize the importance of differential diagnostic thinking when faced with late-onset depressive symptoms as a possible prodrome of Alzheimer's disease.

CONTACT: mila.prskalo91@gmail.com

Correlation between appearance and exacerbation of symptoms of an autoimmune disease with chronic psychological stress

Goran Glodić, Sarah Bjedov, Mirta Ciglar, Anton Mažuranić, Luka Perčin, Marijana Braš
University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Mixed connective tissue disease (MCTD), also known as Sharp's syndrome, is defined as a generalized connective tissue disorder characterized by the presence of high titer anti-U1 ribonucleoprotein (RNP) antibodies in combination with clinical features commonly seen in systemic lupus erythematosus (SLE), scleroderma (Scl), rheumatoid arthritis (RA) and polymyositis (PM). Clinical features of mixed connective tissue disease (MCTD) are nonspecific and may consist of general malaise, arthralgias, myalgias, and low-grade fever. There is very little information available regarding the prevalence and incidence of mixed connective tissue disease (MCTD).

A.M., a 40 year old female patient presents with pain and swelling in her joints, hair loss and fatigue after her pregnancy in 2004. After being examined by a rheumatologist, she was diagnosed with MCTD based on her clinical features and laboratory results. Despite her prescribed therapy, the patient's condition was deteriorating, in terms of extremity spasms, pain and numbness. This had a negative impact on her psychological health and she decided to seek help from a psychiatrist.

During her sessions, the psychiatrist became aware of the patient's severe exposure to stress since her early childhood. After her father had passed away, while she was an infant, the patient's mother started a new family and started neglecting her (subjective feeling of rejection). She attempted suicide at the age of 16. Several years later, when she was 23, her brother committed suicide. Her current psychological issues are caused by her marriage with a problematic husband and a failing business venture. There is a clear correlation between stressful events in her life and exacerbations of the symptoms of MCTD.

We present this case to emphasize the connection between autoimmune disorders and psychological stress, which is the main field of interest of Psychoneuroimmunology (PNI). By presenting this case we are trying to draw attention to the importance of a multidisciplinary approach in studying etiology, observation and treatment of autoimmune diseases.

CONTACT: sarahbjedov@gmail.com

Assessment of motor functioning in children after acquired traumatic brain injury

Milena Milićević[1], Srećko Potić[1], Iva Klić[2]
1.University of Belgrade, Faculty of Special Education and Rehabilitation, Belgrade, Serbia
2.University of Rijeka, Faculty of Law, Rijeka, Croatia

Traumatic brain injuries are one of the leading causes of acquired disability in children. They lead to disorders in cognitive, behavioral and social functioning of children, and they are often manifested as impairments of physical and neurological functioning, including cranial or peripheral nerves impairments, reduction of muscle strength and/or coordination and sensory impairments. These negative consequences may contribute to difficulties in everyday activities performing. In addition, they have a significant and long-lasting impact on a child's communication skills, behavior, adaptive functioning, academic achievement, social interaction, and participation in society.

The aim of this study is to allocate and present instruments of motor functioning assessment of children following acquired traumatic brain injury. Data on the main psychometric characteristics of the instruments, their availability, and the possibility of practical use in assessing of motor functioning, are systematized based upon available literature review.

Ten instruments created for the purpose of evaluation of child's motor abilities and intended for detection and identification of difficulties and disturbances in motor functioning, are here presented. Advantages and disadvantages are listed for each of them, in addition to description of the structure and characteristics of instruments. Results from the studies of their validity and reliability are compared.

Considering that every motor dysfunction leaves consequences in other developmental domains and compromises psychomotor development of a child, especially at an early age when motor development is the basis of psychomotor development, it is crucial to identify consequential disturbances, difficulties and developmental delays in the motor domain timely. Both good knowledge of the options and character of each assessment instruments, and their careful selection, represent the first step in the planning and development of intervention programs for children with acquired traumatic brain injury.

CONTACT: mileninaadresa@gmail.com

The nature of Developmental Coordination Disorder – Theoretical considerations

Milena Milićević[1], Iva Klić[2]
1.University of Belgrade, Faculty of Special Education and Rehabilitation, Belgrade, Serbia
2.University of Rijeka, Faculty of Law, Rijeka, Croatia

Developmental Coordination Disorder (DCD) is one of the motor functioning disorders that occur at the preschool and early school age. Its main characteristic is significant impairment in motor coordination development followed by difficulties in fine and/or gross motor skills learning with negative impact on daily life activities and/or on academic achievement. Defined based on the considerable motor performance difficulties, DCD cannot be explained by any other neurological or pervasive developmental disorders, and it persists even though children experienced opportunities for motor skills acquisition in the same extent as their peers.

The aim of this study to make a comparative review of theoretical and empirical scientific knowledge about the nature and variety of mechanisms that underlie DCD. This literature review is based on electronic databases search (Scopus, Medline, EBSCOHost, Free Medical), using the keyword developmental coordination disorder with at least one of the words: deficits, hypotheses and dysfunction. In addition, publications that were referenced in selected articles were added.

By summarizing the results, it was found that the nature of this disorder was most often considered in relation to its subtypes. Some of the hypotheses include following: activity deficit, kinesthetic dysfunction, visual-perceptual dysfunction or visual-spatial processing deficit, as well as vibrotactile sensory modality deficits and memory deficits hypotheses, particularly visible in visuospatial short-term and working memory. The most commonly used multisensory theory is the sensory integration theory according to which the cause of difficulties lies in the inability to simultaneously integrate information from various sensory modalities. In contrast, unisensory deficit theories place high priority on individual sensory modalities, primarily visual, vestibular and proprioception/kinesthetic.

Children with DCD are a heterogeneous group, with a variety of psychological, cognitive and neuromotor deficits. Additional theoretical and empirical research is needed in order to understand the interrelation of the various mechanisms and processes in DCD.

CONTACT: mileninaadresa@gmail.com

Sensory profile of adolescents with moderate intellectual disability

Srećko Potić, Mirjana Đorđević, Slobodan Banković
University of Belgrade, Faculty of Special Education and Rehabilitation, Belgrade, Serbia

Researches based on the theory of sensory integration are in the range of frameworks of determining the sensory status and deficits of sensory processing, estimation of the impact of sensory processing on behavior, as well as the evaluation of interventions aimed at the extension of sensory integration. However, few studies have dealt with the problem of sensory processing of persons with intellectual disabilities.

The aim of this study was to determine the sensory profile of persons with moderate intellectual disability and its comparison to the profile of the respondents from the typical population. The study sample included 60 adolescents aged between 14 and 20 years that were divided into two groups. The first group consisted of 30 patients with moderate intellectual disabilities and the other consisted of the same number of respondents from the typical population. The groups were matched by sex and age. The instrument used in this study is The Adolescent/Adult Sensory Profile (Brown & Dunn, 2002). The survey was conducted conducted during 2013th on the territory of the Republic of Serbia. Analysis and statistical analysis was performed using the package intended for statistical analysis for the social sciences (SPSS for Windows, Version 14.0, 2005). Statistical techniques that were used were ANOVA and Scheffe Post Hoc Analysis.

The obtained results indicate a statistically significant difference between the sensory profile of children with moderate intellectual disability in relation to the sensory profile of the respondents from the typical population of the instrument as a whole ($p=0.040$) , as well as the subscales Visual Processing ($p=0.006$) and Touch Processing ($p=0.016$). On the other subscales no statistically significant difference between the groups was observed. These findings are in accordance with previous studies which showed that the achievement of children with intellectual disability significantly deviate from expected norms in the field of sensory integration, which are monitored with dysfunction in cognitive and the motor domain.

CONTACT: sreckopotic@gmail.com

Influence of blindness on beliefs in a just world and anxiety levels

Đorđe Pojatić[1], Dunja Degmečić[2]
1.University of Osijek, Faculty of Medicine, Osijek, Croatia
2.University Hospital Centre Osijek, Department of Psychiatry, Osijek, Croatia

INTRODUCTION: Blindness is defined as visual acuity of less than 3/60 in the better eye with best possible correction. Onset of blindness can cause psychiatric disorders. It is unknown and necessary to determine whether there is a difference in anxiety rate and perception of a just world in people with long-lasting blindness.

AIM: The aim of this study was to determine the influence of long-lasting blindness on the level and type of anxiety of blind people and on their attitudes towards justice in the world.

METHODS: Anxiety levels were measured using the Beck Anxiety Inventory. Attitudes towards justice were measured using the General Belief in a Just World Scale. A group of blind people was interviewed by the researcher and healthy subjects from the control group solved the test themselves. There wasn`t gender and number difference (N = 27, 15 women, 12 men) or age difference (min.=33, max.=65, mean=48, s.d.= ± 10.8) between the two groups.

RESULTS: Blind patients had a significantly higher General Belief score compared to the control group ($p<0.02$). Blind people didn't have a significantly higher Beck Anxiety score compared to the control group, but the score pertaining to the questions of the test related to panic anxiety was significantly higher in the blind people compared to the control group ($p<0.001$). In both groups the General Belief score was significantly higher if the Beck Anxiety score was lower ($p<0.02$).

CONCLUSION: The results of this study revealed significantly better attitudes of blind people towards a just world, showed a reverse proportional ratio between good attitudes and anxiety score and showed a correlation between panic anxiety and blindness.

CONTACT: djolepojatic@gmail.com

How to recognize and treat Alzheimer's disease; literature review

Ivona Jovanoska[1], Sonja Jovanoska[3], Kornelija Gjorgjieska[1], Marija Jovanoska[1,2]
1.Ss. Cyril and Methodius University of Skopje, Faculty of Medicine, Skopje, Macedonia
2.University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia
3.Worcestershire Royal Hospital, NHS Trust, United Kingdom

BACKGROUND: Alzheimer's disease-AD is the most common cause of dementia, affecting around, as of 2013, 44.4 million people worldwide and an estimated 75.6 million in 2030. The term 'dementia' describes set of symptoms which can include loss of memory, mood changes and problems with communication and reasoning. AD is progressive neurodegenerative disease, as this happens, symptoms become more severe. Recognizing symptoms early is crucial because medications to control symptoms are most effective in the early stages. Our aim is, by literature review, to make students familiar with its early recognition and treatment.

RESULTS: AD is characterized by accumulation of senile plaques, neuritic tangles and progressive loss of neurons initially in transentorhinal region and then in hippocampal and mesial-temporal lobe structures and eventually in temporal lobes and basal forebrain. Clinical diagnosis is made by identifying progressive decline in memory with physical examination, memory tests and/or brain scans. The Mini Mental State Examination-MMSE is the most commonly used test. Although CT is able to demonstrate characteristic patterns of cortical atrophy, MRI is more sensitive and better able to exclude other causes of dementia. The only definitive diagnostic test is brain biopsy. A cerebrospinal fluid-CSF biomarkers as beta-amyloid, total tau and hyperphosphorylated tau are also being used to further help diagnosis. A combination of clinical features and neuroimaging are usually considered sufficient although significant number of cases due to many variants is misdiagnosed. A new CSF biobarcode assay test is also being studied in early detection of AD.

CONCLUSION: Alzheimer's usually is not diagnosed in early stages, because symptoms are usually misunderstood as normal signs of aging. AD has no current cure, but treatments for symptoms are available and they can temporarily slow the worsening of dementia symptoms and improve quality of life therefore, being aware of the early symptoms is the best way to catch it in its early stages.

CONTACT: ivonajovanoska@yahoo.com

Pineal Gland – Our Third Eye

Kornelija Gjorgjieska[1], Ivona Jovanoska[1], Marija Jovanoska [1,2]
1.Ss. Cyril and Methodius University of Skopje, Faculty of Medicine, Skopje, Macedonia
2.University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia

BACKGROUND: The third eye acts as a 'switch' which activates higher states of consciousness and experiences of spiritual vision.The main relationship between Pineal gland and the Eye lies in focusing our consciousness and trusting what we see. We do it all the time and we are not aware of the difference between our thoughts and those from higher frequency.

AIM: The aim of my research is to find a connection between the third eye and the pineal gland and how this can be controlled by ourselves.

Matherials and methods:In my survey, various of teams, mostly working in pairs have shown progress with participating in different exercises. They have been using their vision to help them stay focused and they have successfully managed their intuition, because each individual has a distinct perspective that widens the frame at the same time giving it the sharpen focus.Series of observation and analysishave shown progression with continuous exercise.. That's the main course that has been studied and examined in my research and development. Data was derived from Institute of Physiology, Republic of Macedonia.

RESULTS: A total number of 50 cases were reported, in which have participated women and men,eaqually represented. The age group 20-25 has shown best results. The more they master their technique, the more they were be able to release undesirable energies upwards, above the head.A considerable change has been noticed.

CONCLUSION: The importance of development of spiritual vision requires individual building of some new 'organs' of energy, of which the third eye is a master key. These new structures are not physical, nevertheless they are very real. Once fully developed, the perceptions coming through them appear clear, sharper and far more substantial than those coming from the physical senses.

CONTACT: korneli4e_pp@hotmail.com

Workshops

Sanja Kovačić
General Hospital Zabok, Zabok, Croatia

According to present Croatian law, 'the patient has the right to be informed on his/her health condition, on the proposed medical procedures, on the potential risks involved by each procedure, on the existing alternatives to the proposed procedures, including on the effects of non-application of a treatment and of non-compliance with the medical prescriptions, as well as on data regarding the diagnosis and the prognostic'. Considering the legal or even the forensic aspects of neurological patient, raise the question: to what extent and in what situations patients have the capacity to make decisions? This is the problem faced by doctors in hospitals of neurology: the patient gets information on his/her health condition, but does he/she have the capacity to understand it and to make the correct decision, even to assign a close person who should get information on his/her health condition? The brain investigation is possible except for the emergency cases. Otherwise, the only solution available is that the neurologist physician should only consider his own diagnosis and observations regarding the lack or reduced decision-making capacity, and to act correspondingly. The present regulations probably do not provide customized solutions for a real application of the patient's rights to be informed and to confidentiality. Moreover, they do not provide the legal support to protect the neurologist physician.

Another issue, both ethical and legal, is the following: the neurological patient has not assigned any person to get information on the diagnosis or to make decisions on his/her behalf. The neurologist, the anatomical pathologist or the radiologist is obviously breaching the law when providing information on the health condition of the patient, even if these persons are close relatives, without the patient's consent. But is this patient capable of good judgment? May his/her decisions be disputed before the Court?

In addition, we have to consider that the diagnosis by a specialist doctor, begins right after the period where the signs of a possible but uncertain mental alienation appear. Although the patient is legally not restricted yet, the neurological patient is supposed to have the decision making capacity. Thus, in theory, the doctor may communicate him/her the diagnosis or other information regarding his/her health, even if this communication is not understood or it has no effect on the neurological patient. The answers to the questions raised by doctors with regard to the existence of the reasoning, of the decision making capacity, or of the responsibility, or about the measure in which brain injuries affect only the personality of

the patient, and what is the limit between behaviour changes caused by the personality change and the behavioural changes caused by the total or partial loss of the decision/making capacity, or, in extreme situations, of the responsibility, all these can be found only by further investigations.

We can notice that the investigation is possible except for the emergency cases. Otherwise, in the absence of the necessary time for the start and application of the legal procedures for protection or for the professional investigation, and considering the potential risks to the patient health, the only solution available is that the neurologist physician should only consider his own diagnosis and observations regarding the lack or reduced decision-making capacity, and to act correspondingly. The present regulations do not provide customized solutions for a real application of the patient's rights to be informed and to confidentiality. Moreover, they do not provide the legal support to protect the neurologist physician, who is at the boundary between the quick medical decisions to be made to the patient's best interest and the conduct imposed by the legal provisions regulating the patient's rights that are extremely restrictive with regard to the decision making without the patient's consent. Thus, these medical situations should be considered and regulated, and the decision-making rights in emergency cases of the neurologist physician should be increased.

CONTACT: sanja.kovacic2@gmail.com

The technique of ceramics as a medium of expression emotions for people with intellectual disabilities and autism

Stanka Pinjuh
University of Zagreb, Academy of Fine Arts , Zagreb, Croatia

This research is part of the thesis, and takes place at the premises of the Center for Autism in Zagreb. The study involved Center's students and staff (teachers, psychologists and special education teachers).
The study was conducted on two groups:
1. Group of seven children whose primary diagnosis is intellectual disability
2. Group of five children whose primary diagnosis is autistic disorder

The study was conducted of art workshops in which children are guided with method of conversation, guided fantasy and using visual aids (simple drawings of basic emotions).

At the beginning of the workshop both groups were given identical tasks – recognition of elemental emotions such as 'emoticons' (happiness ,sadness, anger) ; personal view of happiness through modeling their favorite toys. But already the third workshop showed large and unbridgeable differences between the two groups-the 'fear' was too abstract emotions to express in clay for the group 'Autism'. Through guidance, students are showing the difference in behavior but are refusing to have it displayed in the third dimension, they do not even want to touch the clay.

Difficult tasks and abstract emotions showed evident differences in development of two groups.

The aim of this study is to highlight the importance of regular artistic and creative expression for the development of emotional intelligence for people with intellectual disabilities and autism.

CONTACT: pinjuha@gmail.com

Networking – building block of your experience

Ivona Namjesnik
University of Osijek, Department of Cultural Studies, Osijek, Croatia

In various dictionaries, networking is defined as 'socioeconomic activity by which groups of like-minded people recognize, create or act upon business opportunities.' Many people contend networking is a more cost effective method of generating new business than advertising or public relations. Today, networking is the single most powerful tactic to accelerate and sustain success for any individual. It's all about making connections and building enduring, mutually beneficial relationships which are, ultimately, catalyst for success.

The idea is to develop a network of friendly people who share information to help each other. It is best known as a strategy for opening the hidden job market, for getting a good job. Since networking is a planned, and ongoing effort, the workshop creates an environment in which you can openly communicate about projects and enables participants to seek advice or potential partners for projects planned upfront.

CONTACT: ivona.namjesnik@gmail.com

Siniša Dunatov
University Hospital Center Rijeka, Department of Neurology, Rijeka, Croatia

Neurological emergencies are: stroke, epileptic status and neuromuscular diseases with respiratory insufficiency. Stroke is important public health problem. There are two types of stroke: ischemic and hemorrhagic stroke. The most important risk factor for hemorrhagic stroke is arterial hypertension. Management of arterial hypertension is main goal in hemorrhagic stroke treatment. In the patients with decreased level of consciousness management of high intracranial pressure is necessary because of secondary brain injury prevention by maintaining optimal cerebral blood flow measured by cerebral perfusion pressure. According to current guidelines in hemorrhagic stroke treatment in some cases specific measures are needed. In spite of the fact that ischemic stroke is an important public health problem, until thrombolysis was established as a standard treatment for ischemic stroke there was no specific therapy for recanalization of occluded blood vessels. Efficacy of thrombolysis with recombinant tissue plasminogen activator (rt-PA) has been proven in a number of studies and currently is only approved therapy for acute ischemic stroke treatment. In order to improve outcome, ischemic stroke patients need to be treated in specialized units – stroke units. After early recognitions of stroke symptoms and urgent diagnosis these units are a prerequisite for an urgent start of therapy with purpose of early recanalization of blood vessels and reperfusion of brain parenchyma. This approach in management of ischemic stroke patients makes it possible for circulation to be restored in the ischemic region of the brain while neurons are still reversible damaged leading to an improved outcome at the end. Epileptic status, especially convulsive epileptic status is true neurological emergency due to potential cerebral injury and high mortality if status is prolonged. Epileptic status must be terminated promptly to limit cerebral injury. Neuromuscular disorders are emergencies in cases of respiratory muscles involment and subsequent respiratory insufficiency.

CONTACT: dunatov@net.hr

‘Mindless sex’

Goran Arbanas
General Hospital Karlovac, Karlovac, Croatia

The workshop will have three parts. In part one, the coordinator will demonstrate working in a sex therapy office. He will be himself (the sex therapist) and he will demonstrate how does the first contact between the patient/client and the sex therapist look like. He will try to evoke the real situation that consists of talking about sexuality, getting history data, interviewing the patient, giving advice, agreeing on therapy.

After that, in the second part of the workshop, senior students will have the opportunity to sit in a sex therapist’s chair. Learning from the example of the coordinator (in the first part of the workshop), they will try to lead a diagnostic interview, to give guidance on improvement of a client’s sex life, improvement of sexual problems and to shatter some well established myths.

The coordinator will help them to produce the real situation. The aim of this part is for the participants to feel the emotions that therapist can have during the interview and counselling.

The third part of the workshop will consist of the short presentation, and longer discussion, on sex counselling, sex therapy and other therapeutic modalities for people who cannot include their brains (i.e. central nervous systems) in their sex response cycle.

CONTACT: goran.arbanas@ka.t-com.hr

Acknowledgements

ORGANIZED BY

FOSS *MedRi*
Braće Branchetta 20
HR–51000 Rijeka

CO-ORGANIZED BY

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 4th Student Congress of Neuroscience – NEURI 2014

Pod visokim pokroviteljstvom
predsjednika Republike Hrvatske
prof. dr. sc. Ive Josipovića

Republika Hrvatska
Ministarstvo znanosti,
obrazovanja i sporta

ACADEMIA SCIENTIARUM ET ARTIUM CROATICA
MDCCCLXI

MEDRI
MEDICINSKI FAKULTET SVEUČILIŠTA U RIJECI

SVEUČILIŠTE U RIJECI

SPONSORS

We would like to thank the following sponsors for their generosity and support during the 4th Student Congress of Neuroscience – NEURI 2014

jgl
Kao kap vode na dlanu

ERSTE BANK

ROSE
beauty studio

GKTD "MURVICA" d.o.o

LUKA RIJEKA d.d.
HAFEN RIJEKA e.o. PORT RIJEKA s.a.

Medicinsko biokemijski laboratorij
Goran Bulatović, mag. med. biochem., spec. med.

Privatna neurološka ordinacija
mr. sci. dr. Maja Roje Novak, spec. neurolog

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